Planning Guide for Area Business Continuity
~ Area BCM Toolkits ~

Version 2

Main Volume

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Contents

Main Volume

Supplemental Volume: Tools for Area BCM

I Understanding Area BCM

1 Introduction

1.1 Why is Area BCM Necessary?

Area Business Continuity Management (Area BCM) is a cooperative approach by those who wish to improve capacity for continuity and/or early recovery of businesses in their area in the event of emergency such as natural disasters that affect the entire area. You are stakeholders of the area, both from public and private sectors, who should join in the Area BCM to share information on disaster risks, problems of the area, and ways to solve the problems for continuity and early recovery of businesses of the area. You are required to define your responsibilities in the cooperative approach.

Area BCM is also beneficial for your organization. It supports and encourages you to start and/or to enhance approaches of your organization, such as Business Continuity Management (BCM) and disaster risk management, to improve your capacity for continuity and/or early recovery of your business.

The Great East Japan Earthquake and Tsunami in Japan and the Flood of the Chao Phraya River in Thailand both occurring in 2011 showed us the high risks of business disruption. These disasters not only caused heavy damages to private enterprises in the area, but also gave a blow to national, regional, and world economies.

They also reminded us that, in the event of a large scale natural disaster, organizations are limited in their abilities to cope with the disaster without the cooperative approach taken by the stakeholders of the public and private sectors in those areas. Regardless of the amount of effort put into an organization, it struggles to continue business, mainly due to the malfunctioning of transport infrastructure, shortages of basic supplies such as electricity, water and information, and disrupted supply chains.

For those circumstances, a new cooperative approach, Area BCM, is proposed to improve the resilience of your business as well as the businesses of the area as a whole. Area BCM provides a common understanding of the weakness of the area in times of disasters, unifies your efforts in the area and directs all of you toward a common goal. Participating in Area BCM has a positive impact on your business. Your efforts are integrated and lead to improving further the resilience of businesses of the area or local economy. You will have an advantage to attract investments from your home country, as well as from abroad.

1.2 Purpose and Scope of the Guidebook

Purpose

This guidebook is a reference document to help you to start and implement Area BCM in your area. The guidebook gives you a step-by-step instruction that follows 5 elements of the Area BCM cycle, shown in Figure 1.1. The 5 elements are "Understanding the Area", "Determining Area BCM Strategy", "Developing Area BCP", "Implementing and Reviewing", and "Improving Area BCM".

Scope of the Guidebook

This guidebook is designed for those who are wishing to enhance the resilience of businesses of their area against natural disasters, but are new to Area BCM. You may belong to any type of organization of public sector, private sector, academic society, and civil society.

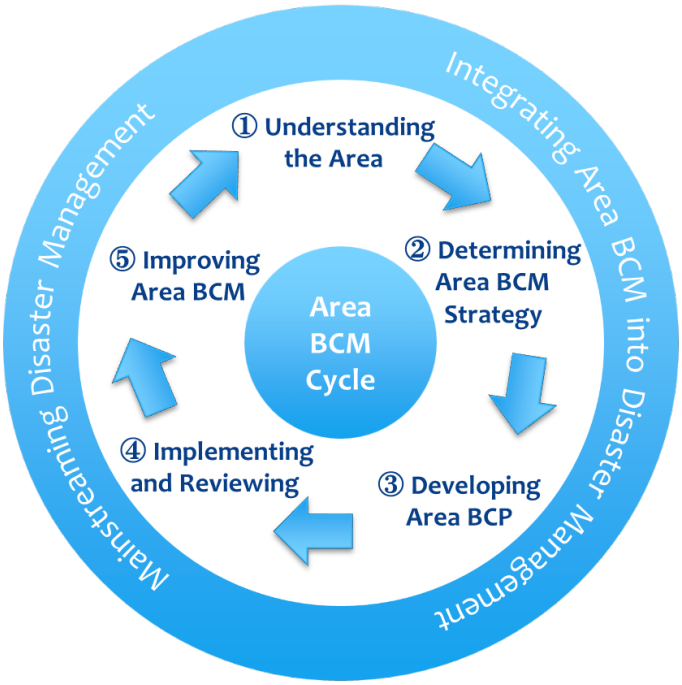


Figure 1.1

Area Business Continuity Management (Area BCM) Cycle

You can apply an approach of Area BCM described in the guidebook to anything from a single industrial park to an industrial agglomerated area covering several local administrations. Although it has been developed through pilot studies for floods, typhoons, storm surges, earthquakes, tsunamis and volcanic eruptions that may have a severe impact over a wide area, this guidebook is applicable to all types of natural hazards you face in your area.

This is the first version of the guidebook prepared using experiences from studies carried out for three pilot areas in three countries in ASEAN, namely Indonesia, the Philippines and Vietnam. The guidebook should be updated when further information and lessons are obtained through the implementation of Area BCM by you, in your part of the world.

1.3 Using This Guidebook

The guidebook is composed of a main volume and a supplemental volume. The main volume is a step-by-step guide describing procedures for implementing Area BCM. The supplemental volume contains four tool documents.

The main volume is composed of Part I "Understanding Area BCM" which contains Chapters 1 and 2, Part II "Procedures for Area BCM" which contains Chapters 3 to 7, and three Appendices. Part I, Chapters 1 and 2, explains more about Area BCM, and Part II, Chapters 3 to 7, gives you guidance on how to start and implement Area BCM in your area.

Chapter 1 of Part I is an introduction to this guidebook: introducing Area BCM; describing the necessity of Area BCM; defining the purpose and scope of the guidebook; and giving directions on how to use this guidebook.

Chapter 2 explains more about Area BCM; including the definition of Area BCM and its distinctive features; suggestions on how to integrate Area BCM into your approaches for BCM and disaster risk reduction; stakeholders of Area BCM; tips on how to implement Area BCM; and benefits of Area BCM.

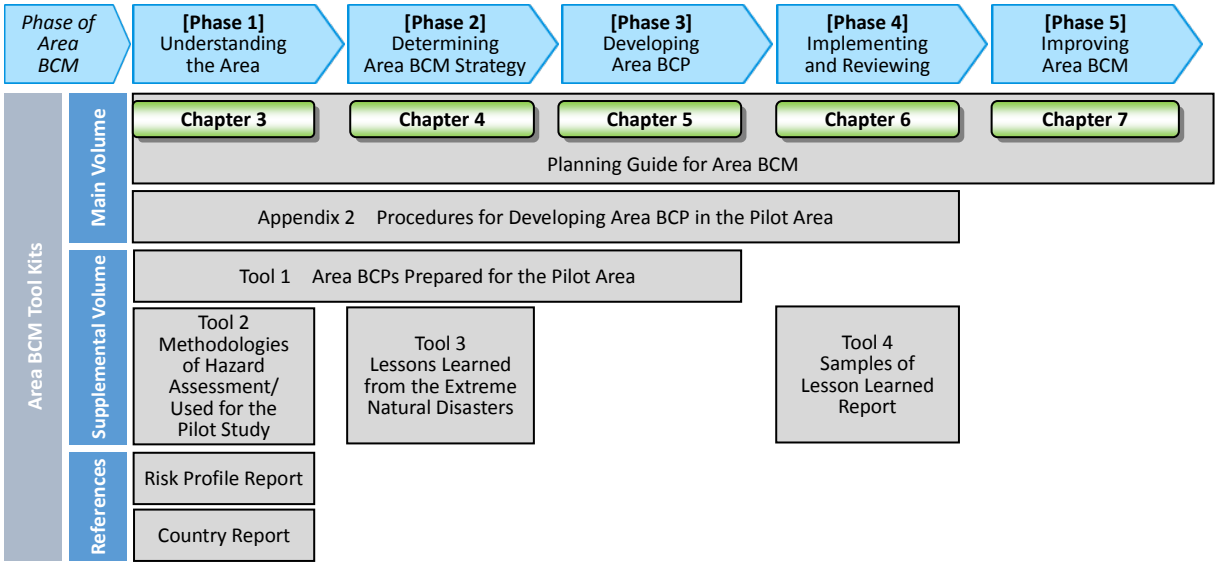
Part II, Chapters 3 to 7, gives you step-by-step guidance through the five elements that make up the Area BCM cycle; namely "Understanding the Area", "Determining Area BCM Strategy", "Developing Area BCP", "Implementing and Reviewing", and "Improving Area BCM".

Three appendices are, "Glossary of Terms", "Procedures for Developing Area BCP", and "References". "Procedures for Developing Area BCP" describes the procedures employed in the pilot study in pilot countries, namely Indonesia, the Philippines and Vietnam. Sample formats used in the pilot study are also provided.

Four supplemental documents are "Area BCPs Prepared for the Pilot Areas", "Methodologies of Hazard Assessment / Used for the Pilot Study", "Lesson Learned from the Extreme Natural Disasters", and "Samples of Lesson Learned Report". These can be used as reference documents when you start and implement Area BCM in your area. Corresponding phases in Area BCM cycle are suggested in Figure 1.2.

Additionally, two types of documents are available to you. They are Country Reports for 10

ASEAN Member States, and Risk Profile Reports for the pilot areas, namely: Karawang and Bekasi Regencies in Indonesia; Cavite and Laguna States, and the Southern Part of Metro Manila in the Philippines; and, Haiphong City in Vietnam. These can be used as reference materials for "Understanding the Area" in the cycle of Area BCM as well as for implementing BCM and activities of disaster risk reduction of individual organizations of private and public sectors. It is recommended that the national government improve upon a Country Report, and the national government and/or local government administer the area improve upon a Risk Profile Report.



Note: Improvement of Country Reports by the national governments is necessary. It is recommended that a Risk Profile Report for an area be prepared by the national government and/or local government in order to assist implementing Area BCM and BCM.

Figure 1.2 Reference Documents and Materials to Support Implementing Area BCM

2 Area BCM

2.1 What is Area BCM?

Area BCM and its Distinctive Features

Area BCM is a holistic management process that helps to manage the risks of continuity and/or early recovery of businesses of the area in an emergency such as natural disasters that affect the entire area.

Area BCM has the following distinctive features:

- Cooperative approach for an area by you;
- Sharing information among stakeholders;
- Risk-informed decision making;
- Highlighting importance of critical external resources;
- Scalability of Area BCM framework and risk management.

Cooperative Approach for an Area by You

Since Area BCM is a cooperative approach by all the stakeholders of the area, the cooperative relationships are built among the stakeholders who are wishing to join in the Area BCM. The Area BCM will create and/or enhance:

- Public and private partnership;
- Multi-sector involvement; and
- Involvement of different size of enterprises, from large enterprises to small and medium enterprises (SMEs) in the area.

During the course of Area BCM all of you will discuss the following major issues:

- Who are the stakeholders that will operate/protect the businesses and respond against a disaster in the area?
- What are the key businesses of the area and relational structure of all the businesses?
- What are the critical activities and resources required to operate the businesses?
- What are the risks to these critical activities and resources?
- How will all stakeholders maintain these critical activities and resources in a disaster?
- What are the activities for improving Area BCM?

Sharing Information among Stakeholders

Sharing information among the stakeholders in the area is another important feature of Area BCM. You can share information of the area (refer to Chapter 3) and key issues of the area discussed above. Most importantly, you will be able to share:

- How the other stakeholders plan to prepare, respond, and rehabilitate;
- How the other stakeholders can help you; and
- How you can help the other stakeholders in an emergency.

Risk-Informed Decision Making

Risk-informed decision making in the process of Area BCM is a key for Area BCM where the various stakeholders are involved. This is the bases of commonly understanding the weaknesses of businesses in the area of concern, and formulating strategies and plans for the area. Scientific methods available in your country will be used, such as:

- Multi-hazard risk assessment and identification of dominant hazard;
- Probabilistic evaluation of the risks; and
- Business Impact Analysis based on various scenarios of disasters.

Management of Critical External Resources

Area BCM aims to effectively reduce damages of common business resources such as energy, water and transport infrastructures in times of disaster, and restore and allocate those resources for business operation as well as for securing community life as quickly as possible. In the event of an emergency that imposes limited allocation of those resources, collaborative efforts are required between the private sector, public sector, and the local community to maintain these critical external resources.

- Identifying critical external resources; and
- Strategy and plan of resource management including the strengthening of transport infrastructures and lifeline utilities considering area-wide business continuity.

Scalability of Area BCM Framework and Risk Management

In contrast to BCM which focuses on a, Area BCM is a scalable framework in terms of the size of coordination by participants. The scope of risk management also needs to be adaptable to various scenarios of disasters as well as changing situations.

- Expandable size of coordination framework in accordance with participating partners; and
- Flexible adaptability of risk management to various types of disasters, geographical scale of affected area and changing situation at the time of contingency.

2.2 Integrating Area BCM into Your Approaches

Position of Area BCM in Your Approaches

Area BCM has a unique position between individual organizations and the area as shown in Figure 2.1. Participating in Area BCM would be beneficial for your organizations as well as for your area by:

- Enhancing BCM and disaster risk management of your organization;
- Integrating Area BCM into disaster risk reduction of your area; and
- Encouraging sustainable development of your area.

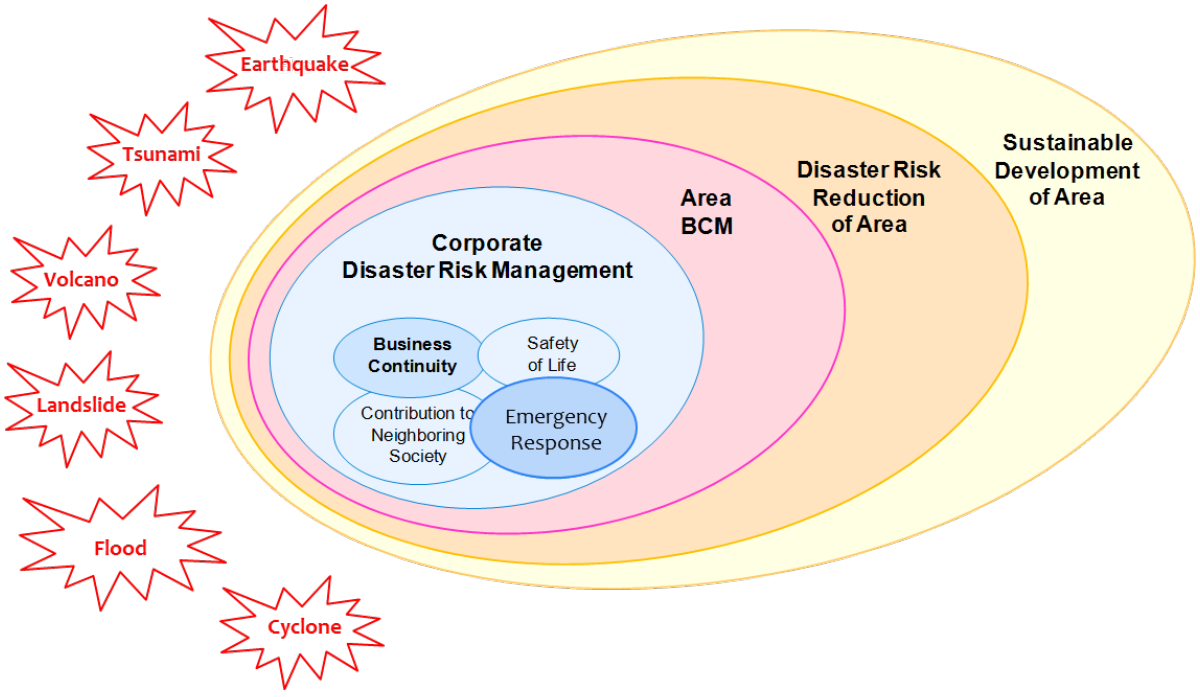


Figure 2.1 Position of Area BCM in Your Approach

Enhancing Your BCM and Disaster Risk Management

BCM focuses on the business continuity for individual organizations. On the other side, Area BCM focuses on improving the resilience of businesses of the area as a whole.

BCM and Area BCM are deeply related to each other, and the business continuity for individual organizations and the resilience of businesses of the area are improved interactively, as demonstrated in Figure 2.2.

Participating in Area BCM is a good chance to start or to enhance individual BCM and/or disaster risk reduction measures of your organizations. Some of the activities in Area BCM are in common with those of BCM. Information collected and discussions made in "Understanding the Area" and "Developing Area BCP" during implementing the Area BCM can be used directly for formulating your BCP, and disaster risk management plans. This is particularly important for small and medium enterprises (SMEs) that are normally lacking information and capacity to undertake risk analysis.

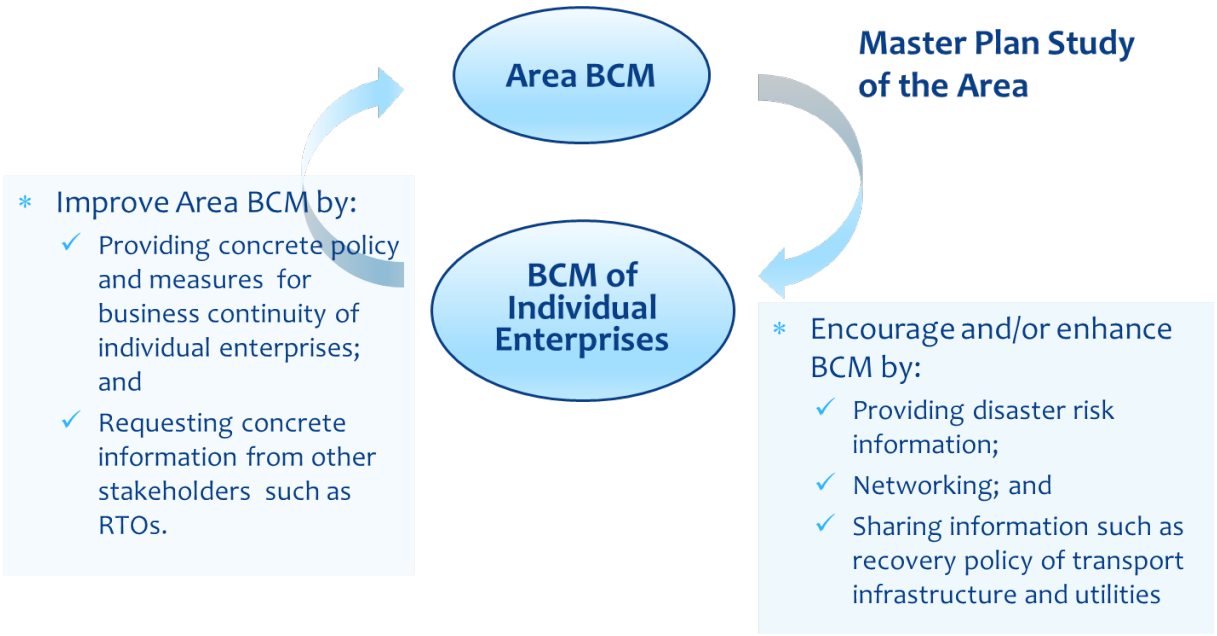


Figure 2.2 Position of Area BCM in Your Approach

Area BCM of the area and BCMs of individual organizations are mutually related and interactive. Through Area BCM, you will be able to access information described in Area BCP such as disaster risks of the area, approaches and capacities of other stakeholders for disaster risk reduction, and a common and agreed direction of measures of the area for the disaster risk reduction.

On the other hand, you are requested in the process of Area BCM to provide information, which is the basis of your BCP and disaster management plan, to form Area BCP. Area BCM encourages an organization to solidify their measures. Repetition of the cycle of Area BCM would improve both Area BCP and your BCPs, and enhance linkage and integrity between them.

Integrating Area BCM into Disaster Risk Reduction of Your Area

Through global efforts (Hyogo Framework for Action), good progress is being made especially in early warning, preparedness and response. On the other hand, difficulties remain in regulating investment and development in a way that reduces disaster risk. Area BCM provides a new approach embedding disaster risk management in businesses in the area upon which future resilience and sustainability depend.

The approach of Area BCM is characterized by the participation of a wide range of stakeholders from private and public sectors, academic / professional societies and civil society in the area, knowing and sharing disaster risks among the stakeholders, and encouraging the forming of ownership of Area BCM among the stakeholders. These are keys for successful implementation of Area BCM as well as disaster risk reduction of your area.

Encouraging Sustainable Development of Your Area

Solutions for bottlenecks of business continuity of the area during disasters often coincide with requirements for development of the area. Construction of a new port, for example, is planned for further development of businesses in the area as well as for an alternative method for maintain supply chains during disasters.

Risk communication among the stakeholders in the area during implementing Area BCM will support to prioritize activities for sustainable development of the area. Supports from all stakeholders of public and private sectors would secure the mainstreaming of disaster risk reduction in the process of development of the area.

Area BCM may give the area such merits as social stability, raising the value of assets, appeal for investment and reducing premium rates of insurance for disasters.

2.3 Who are Stakeholders of Area BCM?

Since Area BCM is a cooperative approach by all the stakeholders of the area, the first step of Area BCP is identifying stakeholders. They are from both public and private sectors, and also from various other sectors.

Stakeholders of an Area

To improve the resilience of businesses of the area, of course, individual efforts of stakeholders are fundamental. Additionally, the cooperation of stakeholders of public and private sectors is essential as they are in the same boat when a large scale natural disaster strikes the area. Once disaster strikes the area, it causes serious impacts to all stakeholders in

the area as schematically demonstrated in Figure 2.3.

There are many stakeholders for business continuity in the area, such as ministries and agencies of the national government, local governments, operators of transport infrastructure (example: road, railway, sea port, airport) and lifeline utilities (example: power, gas, water, sewage, communication), enterprises and industrial parks, governmental research institutes and universities, industrial associations, and others.

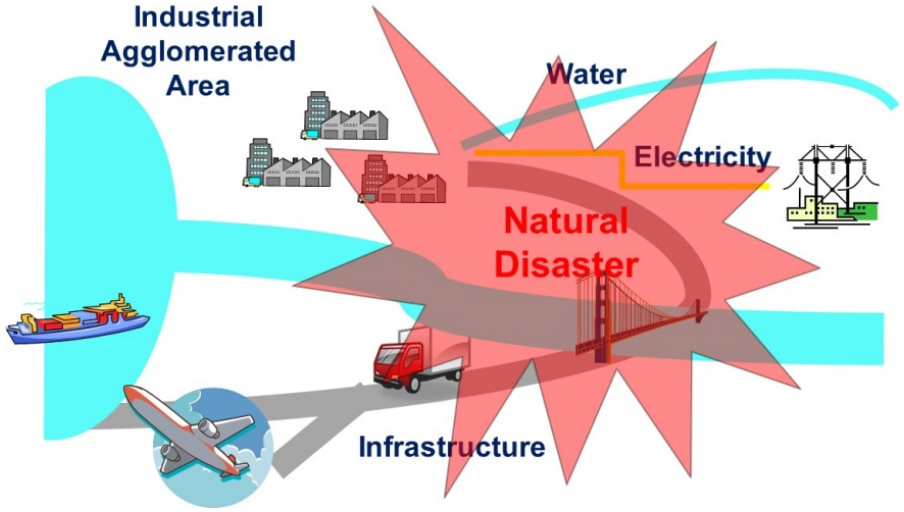


Figure 2.3 All the Stakeholders Share the Same Risk

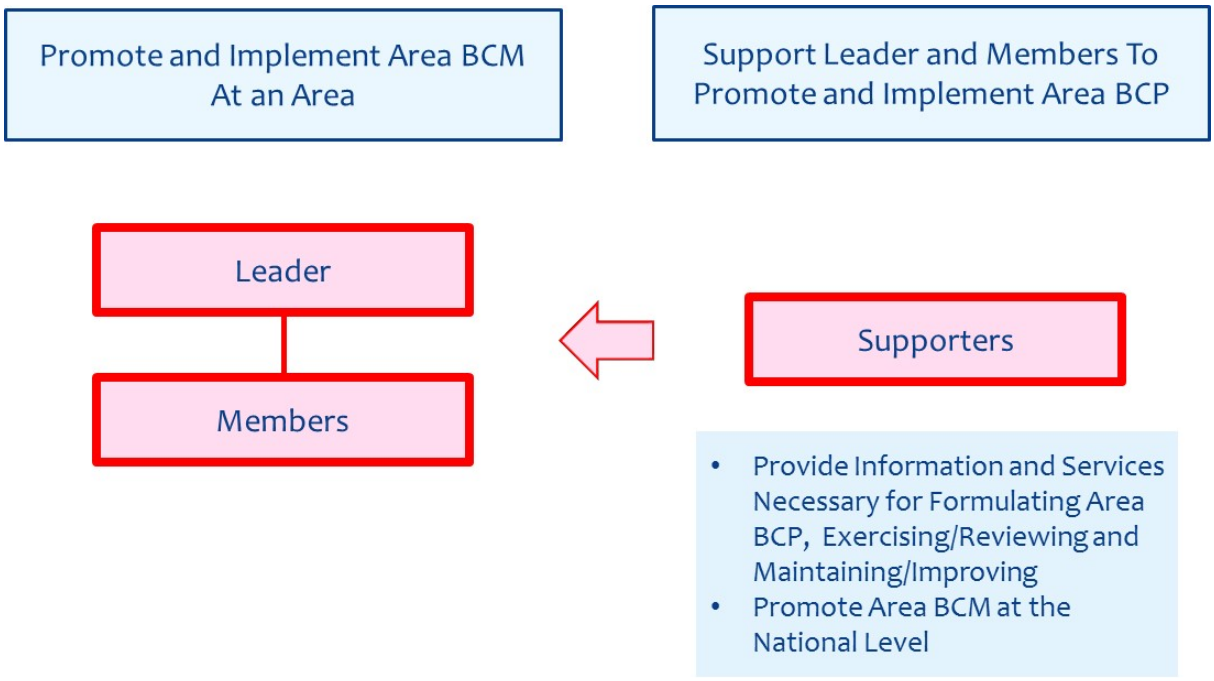
Organizing Stakeholders for Area BCM

The stakeholders of the area are identified, and they are encouraged to participate in Area BCM. The stakeholders are divided into roles as leader, members, and supporters.

The leader is responsible to promote Area BCM, and to develop and maintain Area BCP. The leader demonstrates the leadership to the members and supporters, encourages them to participate, and organizes them to implement Area BCM. The success of Area BCM deeply depends on the leadership of the leader. The leader can be an organization(s) who has authority and capacity to lead the members and supporters (Example: Local government in many cases).

The members participate in Area BCM to develop Area BCP. The members provide information necessary for Area BCM as well as promote disaster management measures and BCP of their own organization. (example: local governments, municipalities, emergency responders, local offices of the national government, operators of traffic infrastructure and lifeline utilities, industrial parks, private enterprises, local chamber of commerce and industries, universities in the area, communities, and others).

The supporters support Area BCM implemented by the leader and the members (example: ministries and agencies of the national government, governmental research institutions, universities, and others). They are institutional or technical advisors to the leader and the members for smooth implementation of Area BCM. They are also requested to provide information on hazard and risks, and technical services such as hazard and risk assessments. The supporters are expected to work as catalysts to promote Area BCM nationwide.



Note: Detailed lists of the stakeholders who participated in the pilot studies in Indonesia, the Philippine and Vietnam are given in Appendix B of ***Tool 1***.

Figure 2.4 Grouping Stakeholders for Implementing Area BCM

2.4 How to Implement Area BCM

Leadership and Ownership

Since Area BCM is the cooperative work of the stakeholders of the area, the governance of the framework with leadership and ownership by the leader is a key for successful implementation of Area BCM. Understanding and support from top management of the members and supporters are also equally important.

Forming a Steering Committee and a Working Group

As a governance body to implement Area BCM smoothly, it is recommended to form a steering committee and a working group. Members of the steering committee should be from the management of key stakeholders. The committee will direct the working group and approve outcomes from the working group. Meetings of the committee will be organized and chaired by the leader. The working group is composed of the area stakeholders, and act as an arm of the steering committee for implementing Area BCM as described in this guidebook.

The leader has a responsibility to lead activities of Area BCM such as meetings, workshops, studies and other necessary works. A coordinator should be assigned from the staff of the leader to manage the activities. In the event that a suitable person is not available, a member or outsourced person can be assigned to the task.

Implementing Area BCM Cycle

The leader builds the process of ongoing activities of Area BCM. Area BCM is implemented following the management cycle which is presented in Figure 1.1. By repeating the cycle, the process of Area BCM as well as Area BCP will be improved progressively because it is difficult to achieve a sufficient level at the first step of the approach.

- Phase 1: Understanding the Area
- Phase 2: Determining Area BCM Strategy
- Phase 3: Developing Area BCP
- Phase 4: Implementing and Reviewing
- Phase 5: Improving Area BCM

The leader organizes a series of workshops following the phases of the cycle so that stakeholders attend them and discuss the issues related to strategy of Area BCM and forming Area BCP (Figure 2.5). Discussion based exercises and/or table top exercises can be used in the workshops.

Prior to each workshop, the leader prepares the topics to be discussed, and the workshop agenda. It is recommended that homework be sent to stakeholders before a workshop and their responses are summarized for smooth implementation of the workshop.

To assist designing and implementing the workshops, the procedures employed in the pilot studies in Indonesia, the Philippines, and Vietnam for developing Area BCP are given in ***Appendix 2***.

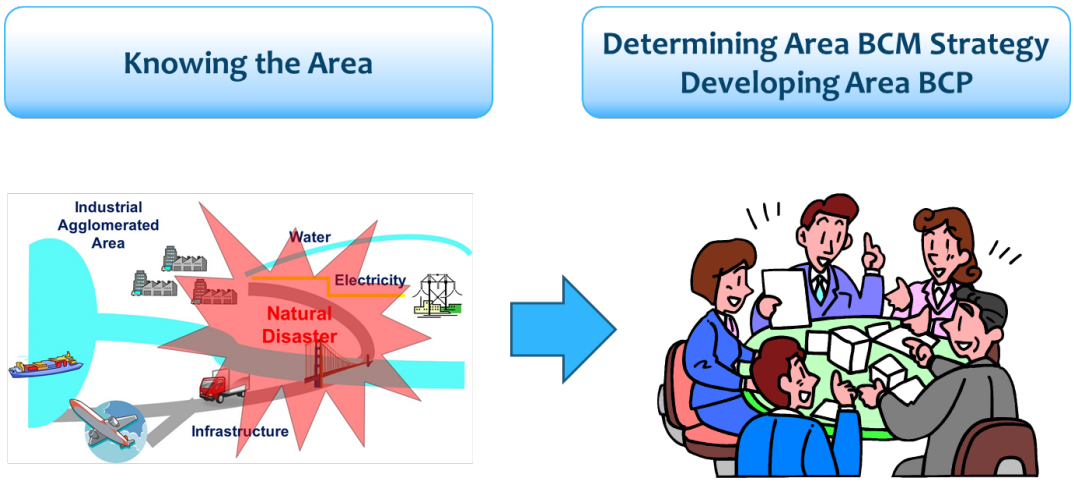


Figure 2.5 Discussion Based Exercise and Table Top Exercise in Area BCM

2.5 Benefits of Area BCM

Promoting Cooperative Approach

Area BCM unifies the efforts of the stakeholders of the area, directs them toward a common goal, and enables the area to achieve restoration and reconstruction quickly, efficiently and effectively.

Building Trust among Stakeholders

Area BCM increases responsibility of stakeholders under the coordination of the Area BCM. Even a company who had no BCP/BCM yet may start to prepare its own BCP/BCM.

Public sector is also encouraged to invest more in robust infrastructure.

Improving Resilience of Local Economy

Since regeneration of local jobs, reconstruction of people's living environments and normalization of socio-economic activities are essential for the earliest rehabilitation of the locality, it is important for both public and private parties to enhance capability as an area for responding to disasters. Linking individual efforts of companies with public organizations, the opportunities under the Area BCM will vitalize the strategic operation, even in normal business, to avoid any threats, and to eventually contribute to disaster prevention as well as sustainable growth of all concerned parties.

Area BCM is also beneficial for individual organizations. Under the strategy of the area, via shared area information, the individual organizations will be able to start and/or to enhance

approaches of their business continuity management (BCM) and disaster risk management. These individual efforts would be integrated and lead to improve the resilience of the economy and business of the area as a whole.

Increasing Investment Opportunity

Although it is premature to evaluate the total benefits of the areas who has the Area BCM, the increased resilience of the area would reflect in the asset value as an investment environment which could further pull down the disaster insurance costs of enterprises. If reduction follows, it will attract more investment to the industrial area. Enhanced continuity of the business in the area as a result could help to develop the local economy and promote employment, which may have huge impacts nationally.

II Procedures for Area BCM

[Phase 1]

3 Understanding the Area

The first step you need to do in the Area BCM cycle is to understand the area of your concern or target area. Information required includes on stakeholders, businesses to protect, and essential transport infrastructures and lifeline utilities for the businesses of the area.

Some information can be found in your organizations, which will be shared with other stakeholders in Area BCM process. You can find other information from relevant offices of the national and local governments, governmental research institutions, universities, and others.

You may be required to carry out scientific assessments of hazard and risk of the area when they are not available from existing sources. To do this you may need supports from professionals such as governmental research institutes, universities or private consulting firms.

3.1 What is an Area

The industrial agglomerated area is a location where industrial parks and/or enterprises are agglomerated. The industrial agglomerated area for Area BCM can be a single industrial park, a location within one administrative area, or a location covering more than several administrative areas. For practical reasons, an industrial agglomerated area confined within one administrative area is relatively easy to implement Area BCM.

The area of your concern or target area covers an industrial agglomerated area where you would like to reduce disaster risks on business continuity, and also locations where transport infrastructures and lifeline utilities, which are essential for business continuity, are located. An image of the area and the industrial agglomerated area is depicted in Figure 3.1.

The area is scalable. You may be required to expand the area to cover more industrial parks and/or enterprises, and transport infrastructures and utility facilities during a course of Area BCM process. The area affected by hazards is variable. Earthquakes or tsunamis affect wider area than floods or landslides, even when considering the same industrial agglomerated area.

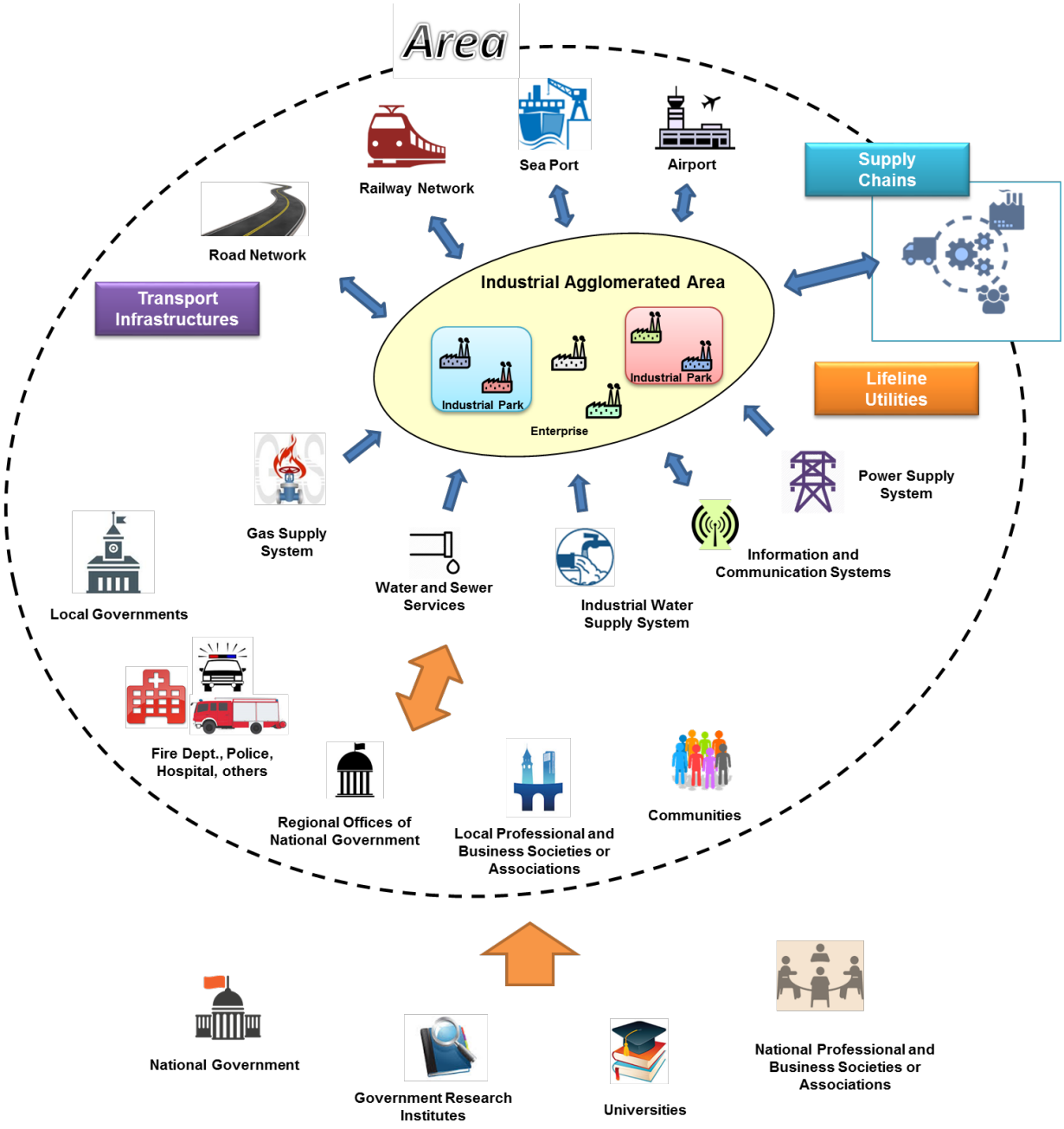


Figure 3.1 Area, Industrial Agglomerated Area and Stakeholders of Area BCM

3.2 Knowing Stakeholders

You need to identify stakeholders who participate in Area BCM. They include, as shown in Figure 3.1, enterprises and industrial parks in an industrial agglomerated area concerned, operators of transport infrastructures and lifeline utilities, local government(s) who administer the area, regional offices of the national government, local chamber of commerce and industry, and the community. Ministries or agencies of the national government, governmental research institutes, universities, professional societies and associations such as chamber of

commerce and industry can be stakeholders of Area BCM.

The stakeholders are divided into a leader, members and supporters as described in Section 2.3. The leader can be, depending on the spatial extent of the industrial agglomerated area, either the management of an industrial park, a local government, or an organization which handles several administrative units.

Supply chains of individual enterprises are also necessary to know for developing strategies of Area BCM.

3.3 Understanding the Area

What You Need to Know?

You should understand the characteristics of the Area to build your Area BCM. The necessary information to be collected includes:

- General Information
- Businesses
- Local Administrations
- Transport Infrastructures
- Lifeline Utilities
- Communities
- Natural Hazards

General Information:

The general information to be collected regarding the local economy of the area is:

- National and local legislations regarding to disaster management
- Administrative boundaries
- Distribution of the industrial parks
- Main category of the business in the area
- Regional GDP (Gross Domestic Product)
- Foreign Investment
- Others

This information may be available from the national government, and the local administrations or Chamber of Commerce and Industry of the area.

Businesses:

The characteristics of the industrial parks are collected from the operating company of the park. The information of the companies that are not included in the industrial park is collected from each company if necessary.

- List of tenant companies and their category of business
- Administrative structures of industrial parks and tenant companies
- Lifeline utilities used in the park
- Transport infrastructures used by the companies in the park
- Experiences of business interruption
- BCPs and/or disaster management of tenant companies
- Supply chains
- Logistics
- Communication with other industrial parks
- Communication with local community
- Others

Local Administrations:

The information regarding the local government that the industrial parks are located is collected.

- Administrative structures
- Disaster management system
- Response activities being conducted in case of disasters
- Information relevant to disaster risk assessment
- BCPs of local administrators
- Others

Transport Infrastructures:

The information of transport infrastructures upon which the industry in the area relies is collected from each administrator or infrastructures. Roads, Railways, Ports and Airports are included in this category. The necessary information about transport infrastructure is:

- Description and location of major facilities
- Operating organization and responsible local government office
- Disaster management system
- Administrative structures
- BCPs or contingency operation plans of infrastructures

- Others

Lifeline Utilities:

The information of lifeline utilities upon which industry in the area is relies is collected from each operating organization. Electricity, Gas, Telecommunication, Water supply and Sewage are mainly used as the lifeline utilities. The necessary information about lifeline utilities is:

- Description and location of major facilities
- Operating organization and responsible local government office
- Disaster management system
- Administrative structures
- BCPs or contingency operation plans of utilities
- Others

Communities:

The information of the communities where most of the workers of the companies are living is collected from local administrations, management companies of the parks, and companies of the area. The necessary information about communities is:

- Employees' place of residence
- Means of commuting to the companies
- Type of dwelling
- Candidates of shelters-in-place
- Others

Natural Hazards:

The experiences of natural hazards that have affected the area are collected. Not only the hazards that directly cause damage to facilities in industrial parks, but also hazards that attack nearby areas and cause business interruption to the area is collected. The information is collected from the companies, management companies of the industrial parks, local administrations and local universities.

If hazard maps of concerned disasters are available from the local administrations, governmental research institutes and/or universities, they are very useful.

Internal Resources and External Resources

The elements of business resources that are crucial for production and distribution can be classified into Internal and External. The classification of Internal and External is not absolute but defined based on the stakeholders. For example, electricity is external resource for most private enterprises; however it is internal resource for an electric power company.

Table 3.1 gives an example of a private enterprise. Internal resources, such as company buildings, facilities, parts and raw materials, are controllable by each enterprise. External resources, on the other hand, such as energy, water and transport infrastructures, are managed normally by the public sector and not controllable by private enterprises. The external resources are also distributed not only for business purposes but also for securing community life.

Table 3.1 Internal and External Resources (Private Enterprise)

	Human	Substance	Finance	Information
Internal Resources	● Managers ● Employees ● Temporary workers	● Buildings and facilities ● Equipment, ● Parts, raw materials, and fuels	● Money ● Account system, ● Assets	● Computer systems ● Operation data ● Archives
External Resources	● Public officers	● Energy (Electricity, Gas) ● Water supply ● Sanitary and sewerage ● Transport infrastructure (Road, Railway, Seaport and Airport)	● Banking ● Transaction system	● Internet ● Telephone and facsimile ● Communication system

How to Collect Information?

You can basically collect the necessary information from members of the working group. Existing related documents, such as the yearly report by ministries and agencies of the national government and the governmental research institutes, may be useful. The interview or questionnaire survey is effective if existing information is not sufficient.

If the reports, including the necessary information that was mentioned in this section, are prepared by the national government or local administration, they are very helpful. An

example of a country wide report and a report for the pilot area are listed in ***Appendix 3***.

How to Present Information for Discussion?

The maps showing collected information are useful for discussion in the working group. Plot the location of industrial parks, transportation infrastructures, lifeline utilities, disasters and others, on the base map, such as a town map, area map or topographic map. Mapping is easier when GIS (Geographical Information System) is used.

Other information, such as the list of industrial parks, tenant companies, contact information, etc., is tabulated.

3.4 Assessment of Hazards and Risks

You need to select the risk caused by natural hazards that threaten the area or interrupt the business of the area in the near future. In other words, this activity is to assume the target disaster situation for developing Area BCM strategy. Basically, this process is carried out through discussion in the working group.

There are two ways of selecting the target disaster situation: the first is by considering past experiences in the area, and the other is by carrying out numerical hazard and risk assessments.

If the area has experienced the business interruption(s) in the past from natural hazard(s), it is highly probable that the same type(s) of hazard will occur at the same or larger scale in the near future. If the members of the working group agree to consider the past hazard(s) as the object hazard(s) for planning, the disaster records of the past events can be used as target situation(s). If the area has experienced different types of hazards, the working group may choose one type for the first cycle of Area BCM, and others for the following cycles of Area BCM.

In the event that the area has no reliable records of the past disaster(s), one needs to decide or assess the predominant hazard of the area that may interrupt businesses, the scale of the hazard, and the disaster risks caused by the hazard.

The following analyses are necessary.

1. Identify predominant risk caused by natural hazard
2. Target setting of disaster scale
3. Hazard assessment of the area
4. Risk assessment of the area

As the analyses and assessments need scientific knowledge and technical capacity, these may

be implemented by governmental research institutes, universities or private consulting firms. Members of the working group provide the necessary information for the analyses.

If the object disaster risk caused by natural hazard is recognized widely in the area and the working group agrees with it, the analysis can start from Step (3) “hazard assessment”. If the hazard assessment has been already conducted by the governmental research institutes or universities and the results are readily available, the first three Steps (1) to (3) can be skipped.

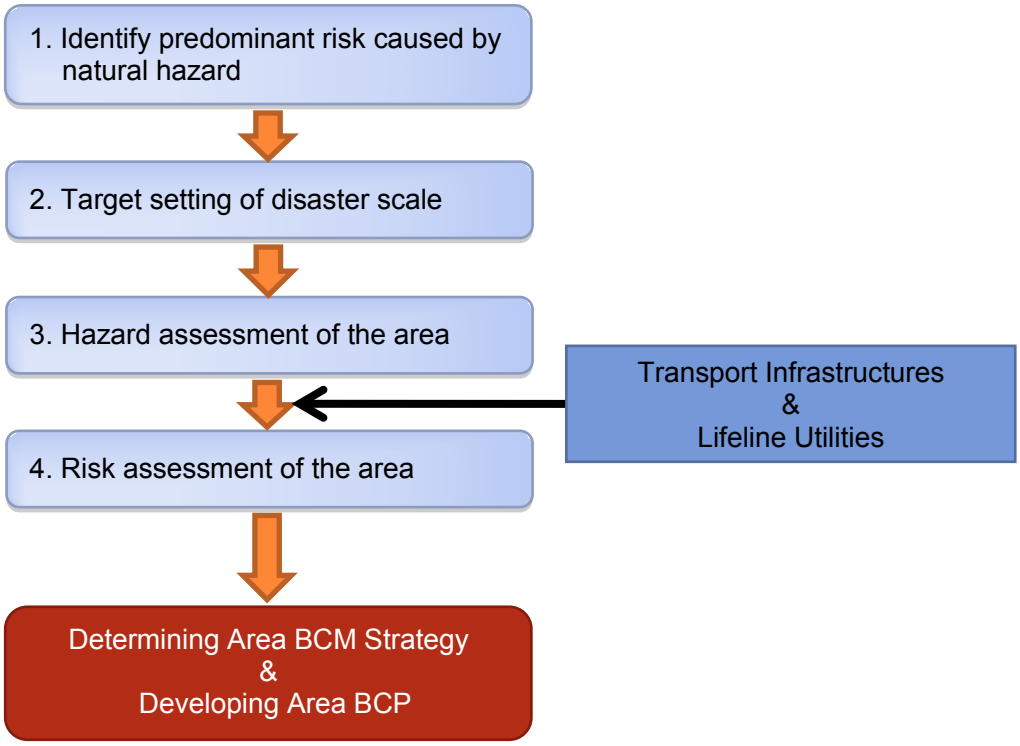


Figure 3.2 Flowchart of hazard and risk assessment

Identify Predominant Risk Caused by Natural Hazard

You should identify the predominant risk caused by natural hazard in the area. The natural hazards you need to consider include:

- Earthquake
- Tsunami
- Volcanic Eruption
- Flood
- Typhoon/Cyclone
- Storm Surge
- Landslide
- Draught

The process is as follows:

Step 1 Collecting Existing Disaster Records

Step 2 Identifying Predominant Disaster Risk

Collecting Existing Disaster Records:

You should collect the existing disaster records in the area from international and national databases. The major disaster databases are listed in Appendix 3. Necessary information includes the type of hazard, date of occurrence, location of disaster, casualty damage, monetary loss, etc.

Identifying Predominant Risk:

Risk is the combination of the probability of a hazard and its negative consequences. If only one type of hazard record is collected in the area or disasters caused by a specific hazard type have been encountered in the area, this hazard can be identified as the predominant one. In this consideration, the frequency of the hazard should be studied.

If several types of hazards affected the area and the prevailing disaster is not clear, the analysis of collected data is effective to define the predominant risk. In the process of identifying predominant risk, you should consider both the probability of the hazards and their impacts. The analyses may be implemented by the governmental research institutes, universities, or private consulting firms. The working group will decide the predominant risk in discussion.

A schematic drawing of the analysis is shown in Figure 3.3. The horizontal axis represents the frequency of the hazard and vertical axis represents the severity of the disaster. In this example, the predominant hazard due to high probability of occurrence is flood, and if low probability but high risk is assumed, earthquake is selected. It is necessary to compare multiple hazards for same probability.

If the hazard record is not available, one solution is to conduct hazard and risk assessment for several types of hazards, and select one that caused the most severe consequence as the predominant risk.

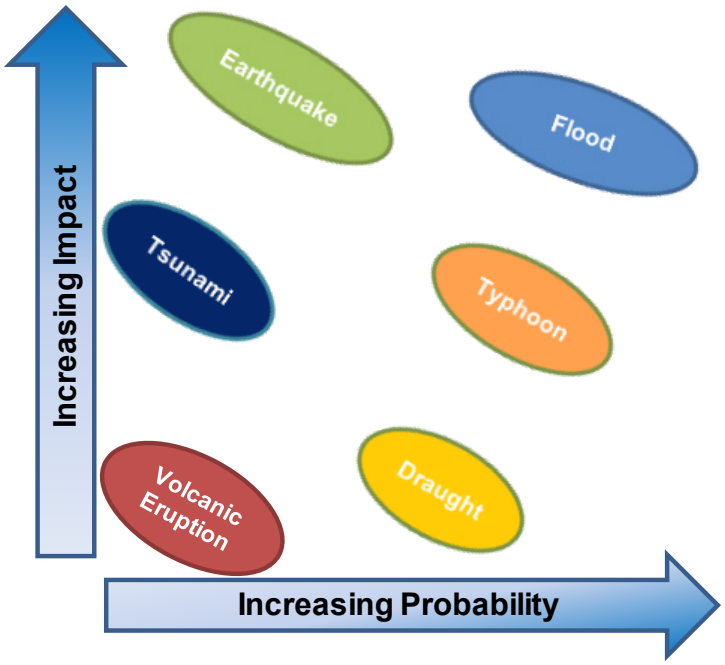


Figure 3.3 Schematic drawing of analysis to identify predominant risk

Target Setting of Disaster Scale

As shown in Figure 3.3, the probability of occurrence of a large scale disaster is lower than a small scale one; but the impact to the business from the large scale disaster might be much worse. You need to decide which disaster scale is the target of Area BCM. If the area is already able to protect business in the event of small but frequent disasters, a medium to large scale disaster will be selected for the target. The target disaster scale should be discussed in the working group referring to the disaster scenario in the disaster risk reduction plan of the local area and enterprises. This step is a recursive process in many cases. Target disaster scale can be modified after risk assessment or business impact analysis.

Hazard Assessment of the Area

The selected natural hazards that are of predominant risk to the area are numerically assessed. The specific assessed parameters are: the magnitude and distribution of the seismic intensity for earthquake; tsunami wave height for tsunami; depth of inundation for flood, etc. The duration of inundation is also estimated for flood.

The following are options in hazard assessment:

- Use the existing hazard maps
- Hazard simulation based on the existing information
- Hazard simulation using the surveyed data

Use the Existing Hazard Maps:

In many countries, governmental research institutes and universities have studied hazards and prepared hazard maps of the country, including the preparation of a catalogue of historical disasters. If maps cover your area and they are sufficient for discussions on planning, you can use these existing maps. In this case, the probability of the hazard is necessary to be decided, for example, by using the catalogue of hazards.

Hazard simulation based on existing information:

If existing hazard maps are not available, hazard simulation based on existing information should be implemented by the professionals, such as the governmental research institutes, universities, or private consulting firms. The necessary data to be collected for simulation depend on the type of hazard. They include topographic maps, bathymetry maps, earthquake catalogues, precipitation records, typhoon tracks, etc. The data and information may be obtained from the governmental research institutes and universities, or from open source data bases through the internet.

The probability of the hazard should be decided before the simulation. Frequency of once in 20, 50, 100 or 200 years is considered. The disaster becomes more severe if low probability is selected. The working group members should decide the probability considering hazard experiences in the area and the target disaster scale, which is set in Step 2 with the support from experts.

The methodologies of hazard simulation used for the pilot areas are shown in ***Tool 2***.

Hazard simulation using the surveyed data:

The accuracy of hazard simulation can be improved if more precise data is available by field survey. For example, ground elevation data is available in digital format for all areas around the world. The horizontal resolution of currently available data is about 30 meters. If one can prepare more precise ground elevation models via field survey, the accuracy of the simulation, especially tsunami simulation and flood simulation will be improved.

The field survey may be subcontracted to the specialist.

For examples of the hazard assessment, please refer to ***Tool 2***.

Risk Assessment of the Area

Risk assessment means to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, facility and services. Vulnerability means the characteristics of a

facility or system that makes it susceptible to the damaging effects of hazard.

Damage to factory buildings, transport infrastructures, and lifeline utilities are the focus of risk assessment. The suspension of services is assessed as well as direct damage to facilities. Vulnerability of the facility or system is different from site to site as it is deeply dependent on local conditions. Risks are assessed mainly based on past experiences. If the area has experienced disaster from the target hazard, it is the best to use this information to assess the risks.

Information from experiences in the other parts of the world is also useful.

The process of risk assessment is as follows:

Step 1 The working group shares hazard information

Step 2 The member organizations of the working group study the risks

Step 3 The working group shares the risks of the member organizations

The working group shares hazard information:

Locations of the industrial parks, transport infrastructures, lifeline utilities, and others are plotted on the hazard maps prepared. The maps are shared in the working group.

The member organizations of the working group study the risks:

The members of the working group bring the maps back to their organizations and study their own risks by using information contained in the maps and other supplemental sources. Governmental research institutes or universities can provide the supplemental information, including damage functions that are suitable for local conditions and examples of disaster risk that can be referred to.

The working group shares the risks of the member organizations:

The members present and share their studied risks in the working group among the members. Your risks can be modified after studying the outcomes from other members.

The examples of disaster risks of the infrastructures based on the experiences in the other parts of the world are listed in Table 3.2. For your reference, examples of risk assessment results are provided in ***Tool 1***.

Table 3.2 Examples of disaster risks of the infrastructures

	Transport Infrastructure	Lifeline Utilities	Factories and Others
Flood	・ Roads and railways will be closed until flood waters receded. ・ Ports will stop its operation during flooding and may be extended if loading cranes are broken.	・ Lifeline utilities stop their operation during flooding. If electrical equipment is inundated, it will take a long time to recover.	・ If factories are inundated, the machines in the buildings may be damaged and it will take a longer time to recover than that of the duration of the flooding. ・ If the homes of the workers are inundated, they may be absent.
Storm Surge	・ Roads and railroads will be closed until inundation finishes. ・ Ports will stop its operation during flooding and may be extended if loading cranes become broken.	・ Lifeline utilities near the coast stop their operation during inundation and may take a long time to recover.	・ If the factories are inundated by sea water, the machines in the buildings may be severely damaged and it will take a longer time to recover.
Earthquake	・ Buildings, roads, railroads, ports, airports and lifeline utilities may suffer damage from the ground vibration. ・ If the ground is liquefied, roads, ports and pipelines under the ground suffer severe damage. *The relations of damage and ground vibration based on the past disaster are compiled as the "Damage Function". The recovery functions are also available. ex.) ATC-13, ATC-25, Hazus, etc.*		
Tsunami	・ Roads and railroads will suffer severe damage because tsunami dredges the roadbed. ・ Ports will stop its operation for a long time because of the collapse of the seawall and pier.		・ Buildings and facilities in the inundated area suffer severe damage not only by the seawater but by drifted woods, debris and sometimes by fire due to spilled oil.
Volcanic Eruption	・ Road traffic may become difficult due to ash fall from volcanic eruption. If rainy, the road becomes muddy and slippery. ・ Air traffic will be stopped because of the ash fall. The influenced airspace may vary depending on the wind direction.		
Landslide	・ Road and railroad will be stopped if they are running in the affected area by the landslide.		

[Phase 2]

4 Determining Area BCM Strategy

Area BCM Strategy is a strategy to improve the capacity for continuity and early recovery of economy or business of an area as a whole (or area business continuity) against the assumed disasters, and it is composed of deciding the objectives of area business continuity and directing the activities of improvement for area business continuity.

To determine the strategy, you must first understand the area as described in Chapter 3, and then you can follow the steps with the outcomes from "Understanding the Area" and the information from individual organizations (Figure 4.1).

(1) Disaster Scenario Creation
(2) Individual Business Impact Analysis (Individual BIA)
(3) Area Business Impact Analysis (Area BIA)
(4) Identifying Bottlenecks of the Area
(5) Determining Objectives of Area Business Continuity
(6) Planning Activities of Improvement

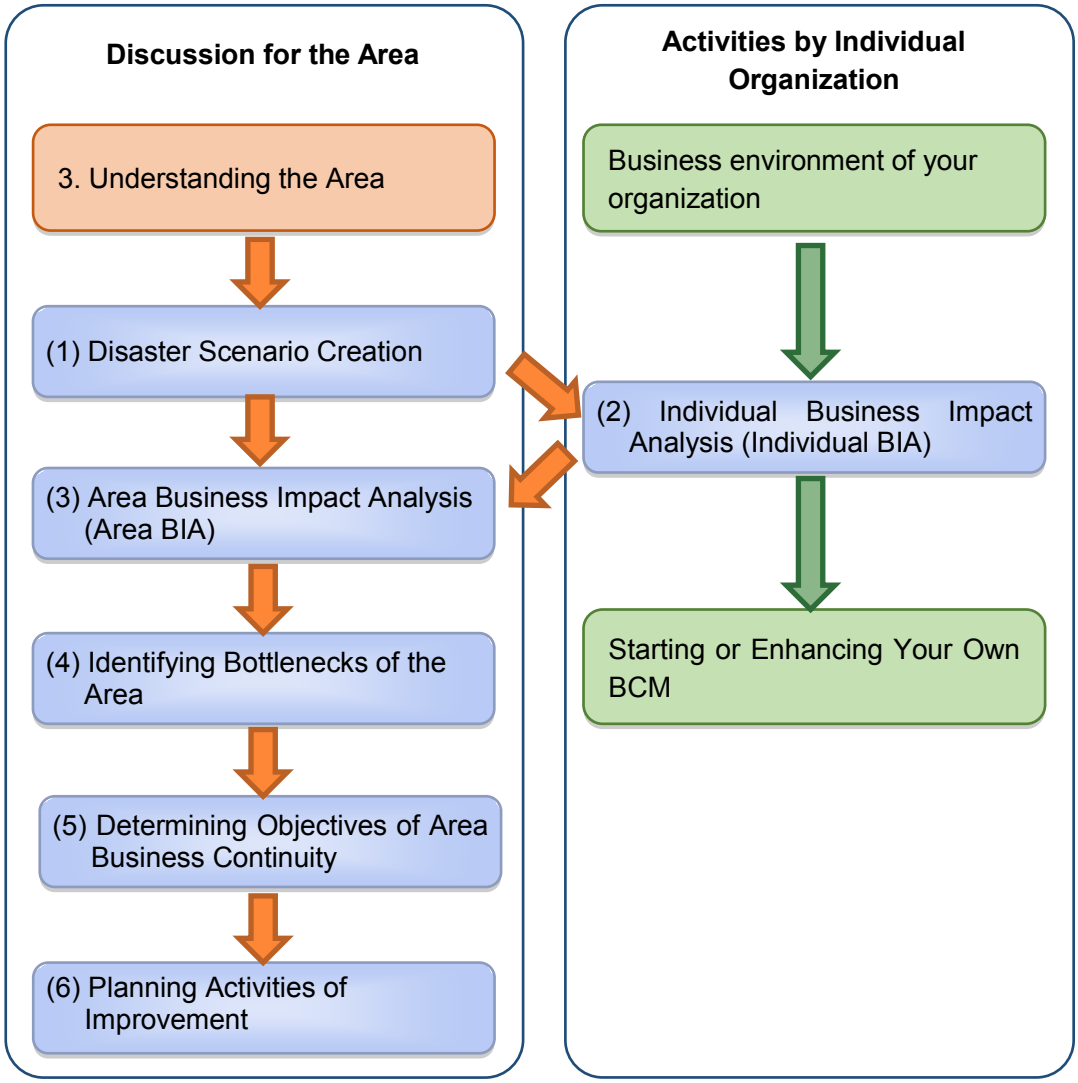


Figure 4.1 Steps to determine Area BCM strategy

4.1 Disaster Scenario Creation

Disaster scenario is a description of the damages to the facilities and their recovery over time after the disaster strikes. The suspension of the services and the recovery time of the transport infrastructure and lifeline utilities should be included. The disaster scenario is essential for the discussion of Area BCM strategy.

An example disaster scenario is given in Tables 4.1 and 4.2.

Table 4.1 Example of disaster scenario for electric power supply in case of earthquake

Time after earthquake	Disaster scenario
0 hour	All the power supply to the industrial park is suspended because of the damage to the power plants and substations. Some factories in the industrial park are still operating using the backup power supply.
12 hours	All the power supply is suspended. Backup power supply is stopped due to fuel exhaustion.
1 day	20% of power supply recovers, but power failure frequently occurs.
7 days	50% of power supply recovers.
1 month	100% of power supply recovers.

Table 4.2 Example of disaster scenario for super typhoon

Time before and after landing	Disaster scenario
5 days before	The course of typhoon and the time of landing is predicted and announced.
3 days before	Disaster headquarter is established.
1 day before	Service suspension of road and railroad is planned and announced.
12 hours before	Some factories stop operation and return workers to home.
6 hours before	Traffic services stop operation. Power supply to the industrial park is partly suspended.
6 hour after	Disaster situation to the traffic infrastructures and lifeline utilities are surveyed. Recovery plan is made and announced.

You can create disaster scenario based on the assessed disaster risks, and capacity of disaster management of individual enterprises, industrial parks, operators of transport infrastructure and lifeline utilities, and the national and local governments.

The process of the disaster scenario creation is as follows:

Step 1　Determining recovery process of traffic infrastructures and lifeline utilities

Step 2　Studying the responses of members

Step 3　Documenting the scenario

Determining recovery process of traffic infrastructures and lifeline utilities:

Firstly, operators of traffic infrastructure and lifeline utilities in the working group determine the process and time frame of recovery after the occurrence of the disaster. Some operators have already prepared for their own operation. If permitted, provide the information to the working group. If not, operators are required to estimate the process and time frame of

recovery considering the available manpower and materials for the restoration work through discussion within their organizations.

Studying the correspondence of members:

Operators of traffic infrastructure and lifeline utilities present the recovery process and time frame of recovery to the working group. Other members study their process and timeframe of recovery by referring to inputs from the operators of traffic infrastructure and lifeline utilities.

Documenting the scenario:

By summarizing the outputs from the working group members, draft and finalize the disaster scenario of the area. The governmental research institutes or universities may support or lead this process.

4.2 Individual Business Impact Analysis (Individual BIA)

Firstly, it is necessary to assess the impact of the disasters on businesses of individual organizations in the area as elements composing the business continuity of the area. Outcomes from the impact analyses of individual organizations (Individual BIA) will be integrated and become the basis of discussion on business impact analysis of the area (Area BIA) and the strategy of business continuity of the area (Area BCM Strategy).

Impacts of individual business should be analyzed quantitatively as much as possible because the quality of Area BCM Strategy depends on the quality of the analysis.

Outcomes from Individual BIA of your organization can be used to improve your own BCM. Or, carrying out of Individual BIA for Area BCM can be a trigger for staring your BCM.

Steps for Individual BIA are as follows:

Step 1 Selecting members for analyzing

Step 2 Individual Business Impact Analysis (Individual BIA)

Step 3 Preparing an activity report for Area BCM

Selecting members for analyzing:

The progress and effectiveness of Area BCM are shared in your organization. It is recommended that the board members in your organization get interested in Area BCM.

Key persons as members for analyzing your individual business impacts are selected, and

approval of them from the top management of your organization is received.

Individual Business Impact Analysis (Individual BIA):

Then impacts on your business resources and business operations are analyzed with the created scenario of disaster (results of "Understanding the Area" in Chapter 3). Output of this individual BIA should be reflected to the analysis of area-wide impacts, as described on 4.3, on other business enterprises through supply chains, on use of common business resources or on any relating activities needed.

- Impacts to business resources (ex. staff, facilities)
- Impacts to business (ex. suspension), predicted recovery time
- Expectation of your organization from other stakeholders, expected recovery time
- Priority of improvement activities

Initially, the administrators of transport infrastructures and lifeline utilities conduct an individual BIA and provide the results of recovery time to other members. Then the other members conduct an individual BIA based on the results as the constraints of external resources (refer to Table 3.1).

Preparing an activity report for Area BCM:

An activity report is made about the analysis which includes for example the date, members, conclusion, and other important issues of the analysis such as impacts to business resources (ex. staff, facilities), business (ex. suspension), predicted recovery time, etc. Afterward, the information of the report is provided to Area BCM so that it can be referred to the consideration of Sec.4.3-4.6 to determine the Area BCM Strategy.

4.3 Area Business Impact Analysis (Area BIA)

The impacts to the society and businesses of the area are analyzed which are caused by the assumed disaster. It is called Area Business Impact Analysis (Area BIA) and the impacts are analyzed with the results of individual BIAs in Section 4.2 and "Understanding the Area" in Chapter 3. Area BIA and individual BIAs should be analyzed interactively because they are mutually related to each other.

The result of Area BIA helps stakeholders to notice the necessity of improvement activities.

This process is carried out through the workshops with the leadership of the leader, the relevant information by the members, the administrative and technical advices by the supporters, and the participation by all members.

Step 1　Considering the flow for analyzing

Step 2 Collecting necessary information

Step 3 Analyzing the impacts

Step 4 Making an agreement among stakeholders

Considering the flow for analyzing:

A flow is considered to analyze the impacts to the society and businesses by referring the relation among disaster, businesses, business resources, and society of the area. For example, as Figure 4.2 shows, a disaster causes direct damages to things such as people, business resources, and transport infrastructures and lifeline utilities. Additionally, they cause indirect damages such as security, bankruptcy of companies and lay off of employees.

Collecting necessary information:

Necessary information is collected according to the flow of Step1. It is effective to use the results of "Understanding the Area" in Chapter 3 such as assessment of hazards and risks, and the results of individual BIAs in Section 4.2 such as impacts to business resources, business, and predicted recovery time of individual organizations.

Analyzing the impacts:

The impacts to society and businesses of the area are analyzed such as reduction of population, local economy, employment, security, etc. They are analyzed with the collected information according to the analysis flow. In the first stage, the analysis may be qualitative, however it is expected to be quantitative in the consecutive Area BCM cycles.

Making an agreement among stakeholders:

An agreement is made among stakeholders about the result of analyzing the impacts through the workshops. A review will be conducted when more accurate information or new information is obtained.

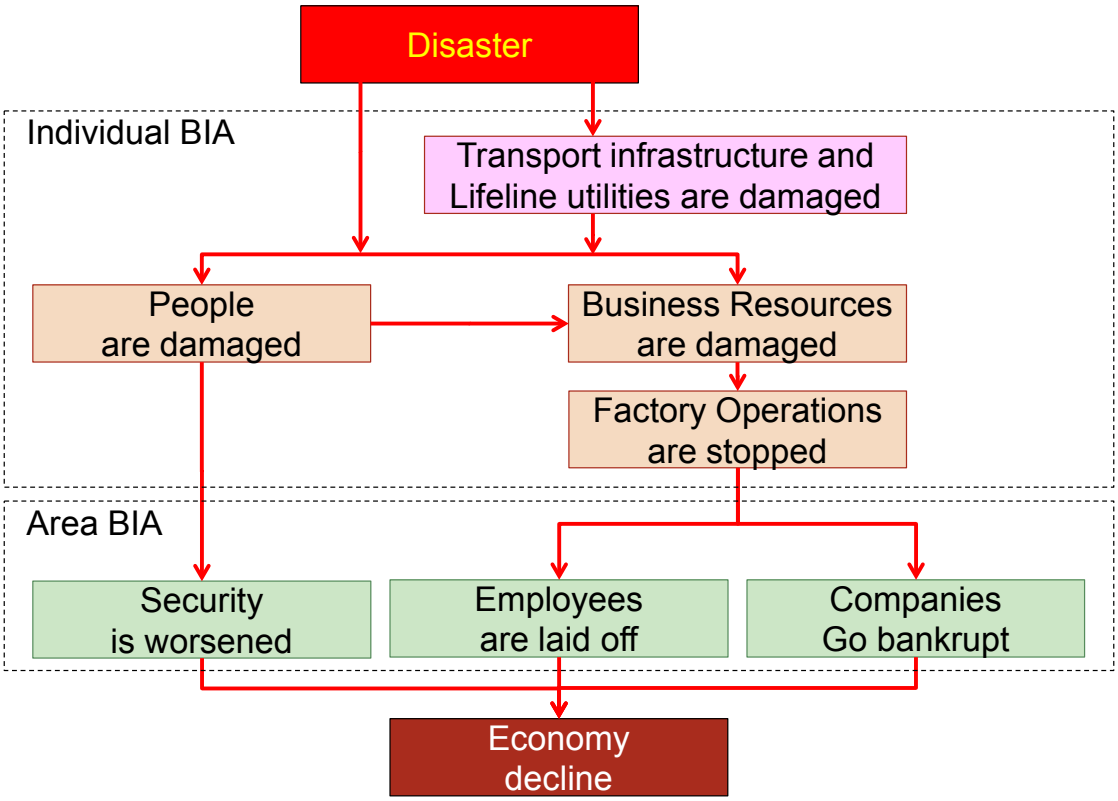


Figure 4.2 An example of the flow of BIA when a flood is assumed

4.4 Identifying Bottlenecks of the Area

The bottlenecks of the area[1] are critical factors which exacerbate damage of the area or delay the recovery of society and businesses of the area. There are two types of bottlenecks as follows.

- Structural damages of social infrastructures such as dikes
- Functional damages of social infrastructures such as transport infrastructures and lifeline utilities

The bottlenecks of the area are identified in order to take necessary measures against them, and improve the capability of business continuity of the area through Area BCM. They are identified with the results of individual BIAs in Section 4.2 and Area BIA in Section 4.3.

This process is carried out through the workshops with the leadership of the leader and participation by all members.

[1] The definition of bottleneck in the ISO Standard (ISO22301:2012) has nothing to do with a specific disaster, however here bottleneck is used as a factor which causes serious impacts to society and businesses of the area in an assumed disaster.

Structural damages of social infrastructures such as dikes

Step 1 – Collecting information from each organization

Step 2 – Taking an agreement among stakeholders

Step 3 – Making an activity report

Collecting information from each organization:

The information of the current disaster prevention measures from local government and other relevant organizations is collected. It is effective to refer to the results of individual BIAs in Section 4.2.

Making an agreement among stakeholders:

As the bottleneck which gives exacerbate damage of the area, the insufficient disaster prevention measures, for example for the dike, are chosen in regard to infrastructures, and an agreement is made among stakeholders about the bottleneck through the workshops.

Making an activity report:

An activity report is made about the results of identifying the bottlenecks.

Functional damages of social infrastructures such as transport infrastructures and lifeline utilities

Some external resources often become common bottlenecks for effective business continuity in a wide area when affected by disaster. Disruption of transportation systems, for example, could force all companies to stop delivery of products and parts. It also causes workers and staff to become stranded in the place they are at the moment that the event occurs. If the recovery time objective is too long to transport them back home, the area all will face difficulties in regard to food, water, and sanitation. However, if area-wide measures for those stranded is prepared by Area BCM framework, they can effectively solve the problem by area wide coordination.

Step 1 Collecting the information from each organization

Step 2 Making an agreement among stakeholders

Step 3 Making an activity report

Collecting the information from each organization:

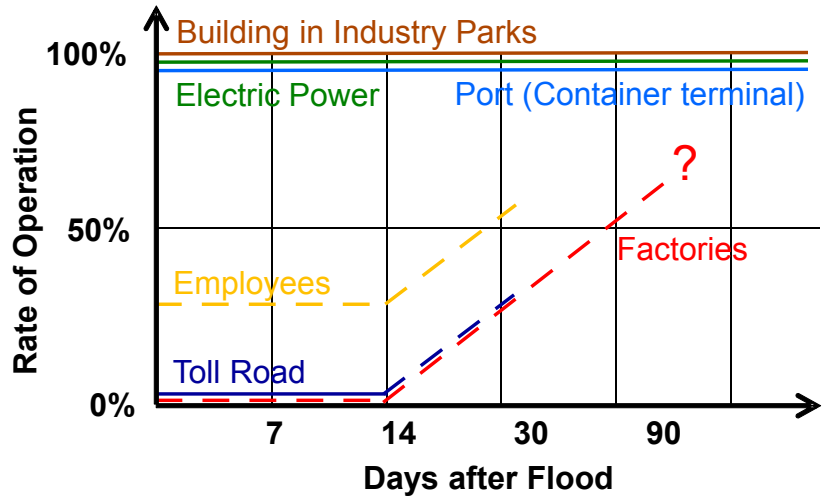
The information of the impacts to business resources and their recovery time from the administrators of transport infrastructures and lifeline utilities and other relevant organizations is collected. It is effective to refer the results of individual BIAs in Section 4.2.

Making an agreement among stakeholders:

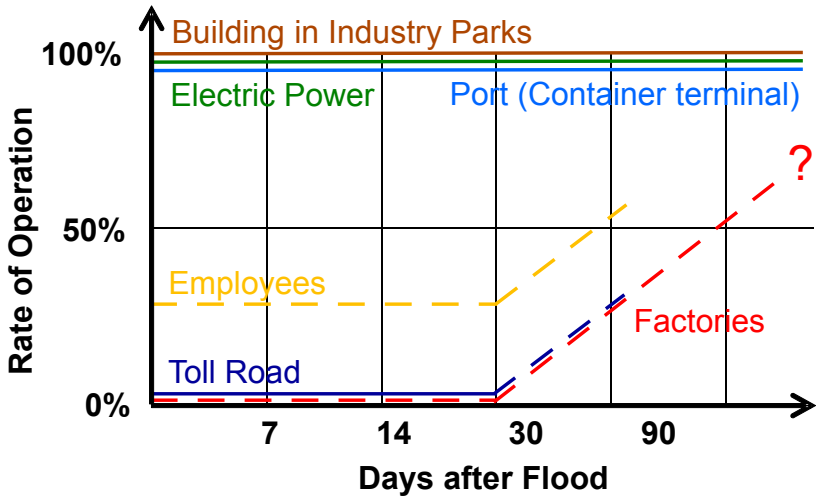
The resources are chosen which delay the recovery of society and businesses of the area such as transport infrastructures and lifeline utilities, and an agreement is made among stakeholders about the bottlenecks through the workshops.

Making an activity report:

An activity report is made about the results of identifying the bottlenecks.



(1) With limited structural damages of social infrastructures such as dikes



(2) With serious structural damages of social infrastructures such as dikes

Figure 4.3 An example of recovery curves including the functional damages of social infrastructures

4.5 Determining Objectives of Area Business Continuity

Objectives of Area Business Continuity are the objectives which show what the Area BCM tries to achieve with a high priority.

They are determined with the results of issues in Section 4.2-4.4, and an agreement is made among stakeholders so that the activities of all stakeholders can be integrated toward the same direction. Initially, the objectives may be qualitative, however they are expected to be quantitative in terms of recovery time/level in the consecutive Area BCM cycles.

This process is carried out through the workshops with the leadership of the leader, the

participation by all members, and the commitment to the objectives by the executives of all organizations.

Step 1　Making a draft of objectives

Step 2　Understanding by executives of all stakeholders

Making a draft of objectives:

All participate in a discussion and determine a draft of the objectives of Area Business Continuity.

Understanding by executives of all stakeholders:

Each of you makes the executives of your organizations understand the objectives, and it is desired to get their commitments to the objectives if possible.

Table 4.3 Examples of objectives[*1]

Flood	・In the assumed flood, the production activities in the industrial agglomerations could be continued or recovered at an early stage, and the scale of production and employment would be kept as large as before the disaster.
	・To achieve the above, the living condition of people and the service of infrastructure and lifeline utility would be recovered at an early stage with great effort.
	・For other residual risks, the risk shall be estimated accurately and some practical activities will be operated to reduce the risk.
Earthquake	・In the assumed earthquake, the production activities in the industrial agglomerations could be continued or recovered at an early stage, and the scale of production and employment would be kept as large as before the disaster.
	・To achieve the above, the living condition of people and the service of infrastructure and lifeline utility would be recovered at an early stage with great effort.

*1: The above examples are the results of the pilot areas in Indonesia and the Philippines.

4.6 Planning Activities of Improvement

The adequate measures are chosen and the activities of improvement are planned in order to address bottlenecks and manage their progress. The progress is shared among all members, and the improvement activities are promoted continuously.

This process is carried out through workshops with promotion from the leader, the proposal of candidate measures by all members, the additional deep consideration of those candidates by

the executors, and the execution of measures from the responsibility of executors.

Step 1 Collecting the information from each organization

Step 2 Making a consensus of the common direction of measures among stakeholders

Step 3 Making a plan

Step 4 Managing the progress

Step 5 – Response for Emergency

Collecting the information from each organization:

Information from local government and other relevant organizations regarding current anti-disaster measures is collected to address bottlenecks. It is effective to refer to the results of individual BIAs in Section 4.2.

Each measure in linked with a category and a stage shown in Tables 4.5 and 4.6.

Making a consensus of the common direction of measures among stakeholders:

Initially, effective and realistic measures for each stakeholder are chosen from the candidates and shared among stakeholders. This is followed by a consensus about common important measures for the area is made among stakeholders. Finally, each measure is carried out by its executor.

Making a plan:

A plan of improvement activities like that in Table 4.4 is made. It is expected that the measures will be carried out step-by-step, according to the agreement among stakeholders based on a certain kind of local institutional frame, if possible.

Managing the progress:

The leader manages the progress. The executers report the progress to the leader, and the leader confirms the progress among all members. Cycle of Step1-4 is repeated through Area BCM cycle.

Response for Emergency

In the above steps, many planning activities are concerned with prevention, mitigation, and preparedness of the disaster management cycle. In general, the activities concerned with emergency response and recovery are described in other documents such as the disaster management/response plan. Some of them need collaboration and coordination among the

stakeholders of the area, and they are necessary as a part of Area BCM. Information from the ISO Standard, ISO22320:2011, and Area Command of ICS (Incident Command System) is helpful for planning and implementing the activities concerned.

As Figure 4.4 shows, the coordination of information gathering and sharing, assessment of situation and forecast, planning, and decision making among stakeholders under the emergency situation are common to the activities of Area BCM.

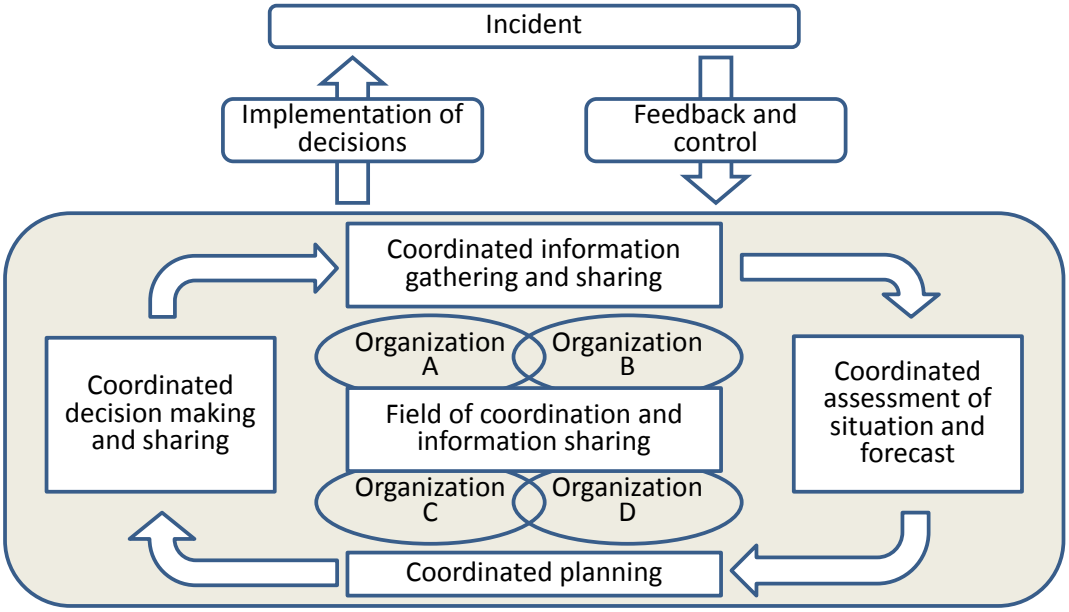


Figure 4.4 Circular chart for multiple hierarchical command and control process with enhanced relevance of coordination (ISO22320:2011)

Table 4.4 An image of planning activities of improvement in a pilot area

Severity	Bottleneck	Stakeholder	Category	Proposed measures	Stage
Most critical concern (Assumed disaster)	The reduction of transport function of major roads	Administrator of Road	Mitigation	To promote measures such as the reinforcement of major roads and expansion of major roads/ development of bypass road	Idea
		Administrator of Road	Recovery	To proceed with the early restoration of damaged roads, and to carry out a traffic control	Idea
		Local Government + Administrator of Road	Mitigation/ Recovery	To designate priority roads, reinforce them in normal time, and restore them in disaster as high priority	Idea
	The reduction of transport function of Manila port	Administrator of Port	Mitigation	To promote measures such as the reinforcement of major facilities	Idea
		Local Government + Administrator of Port	Mitigation	To designate Batangas port or Subic port as the alternative port, and promote the installation and the use expansion in normal time	
		Administrator of Port + other stakeholders	Response	To develop a Port-BCP in advance and achieve a quick recovery of transport function in disaster.	Idea
	The power failure	Power operator	Mitigation	To promote the measures such as the reinforcement of substations and other major facilities	Idea
			Recovery	To proceed with the early restoration of damaged facilities	Idea
		Company	Mitigation	To prepare an emergency generator and fuel	Idea
	The reduction of water supply/ sewage function	water supply/ sewage operator	Mitigation	To promote the measures such as the reinforcement of major facilities	Idea
			Recovery	To proceed with the early restoration of damaged facilities	Idea
		Company	Mitigation	To prepare the alternative means like underground water or a water wagon.	Idea

Table 4.5 Types of categories

Category	Content
Prevention	The outright avoidance of adverse impacts of hazards and related disasters.
Mitigation	The lessening or limitation of the adverse impacts of hazards and related disasters.
Preparedness	The knowledge and capacities developed by organizations and individuals to effectively anticipate, respond to, and recover from, the impacts of hazard.
Response	The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.
Recovery	The restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors.

Reference: The United Nations International Strategy for Disaster Reduction

Table 4.6 Types of progress stages

Stage	Situation
Idea	Just ideas from stakeholders.
Concept	The official conceptual plan is agreed upon by administrator.
Implement	The budget is ensured and the schedule is planned.
Achieved	The measure is achieved.

Table 4.7 Tactics for keeping or quick recovering of the business resources

Tactics
1) Strengthening existing area-wide capacity for risk reduction and damage mitigation through infrastructure improvement (for example),
2) preparing alternative measures, such as second lines of transportation, networking of power distribution and ground water extraction facilities, and
3) making temporary back-up systems, such as emergency batteries and temporary accommodation facilities.

Reference: Hitoshi Baba (JICA), AREA WIDE SCALE PARTICIPATION OF ALL PRIVATE AND PUBLIC SECTORS IN DISASTER RISK MANAGEMENT, UNISDR INPUT PAPER, May 30, 2014

[Phase 3]

5 Developing Area BCP

5.1 Developing Area BCP

The leader and members will formulate a plan, Area BCP, based on the work results of "Understanding the Area" and "Determining Area BCM Strategy".

Area BCP[2] is a document set of procedures and information that is necessary to promote continuity and/or early recovery of businesses of an area in an emergency such as natural disasters that affect the entire area. The plan should be shared among the stakeholders in the area.

Area BCP is formulated via the following steps, in consideration of different situations depending on country or region.

Step 1 The concept and schedule of the plan is indicated by the steering committee. The workshops (WSs) will be organized by the leader, in which the working group (WG) members will participant and develop the plan.

Step 2 In WSs, the contents of the plan will be discussed. The information to fill the contents will be collected by sharing among the leader and WG members.

Step 3 The draft plan will be created by the WG members.

Step 4 The plan will be reviewed by the steering committee and approved officially by the leader or the local government.

Step 5 The activities of Area BCM will be carried out by all members according to the plan.

Step 6 After the activities, the steering committee will order to revise the plan as appropriate.

The procedures for developing Area BCP in the pilot area are attached as "***Appendix 2***" of this guidebook.

[2] In individual BCM, action plans at an incident are formulated, for example, plans for incident management, business continuity and business recovery. In Area BCM, a plan is formulates to implement Area BCM and improve the capability of area business continuity. In Area BCM, the action plans of individual stakeholders are shared and adjusted, and some measures for their optimization are proposed.

5.2 Contents of Area BCP

In this plan, you will describe contents related to the implementation of Area BCM and the results of activities of Area BCM.

The contents include the following items, though they differ depending on the situations of a country and an area.

Purpose and Scope:

The purpose and scope of Area BCM are described explicitly.

Document Owner and Maintainer:

The organization, name of the document owner, and maintainer of Area BCP are described.

Members of Steering Committee and Working Group:

The lists of these members are attached.

Roles and responsibilities:

The roles and responsibilities of organizations to participate in Area BCM are described. These organizations are classified to leader, members and supporters.

Description of the area:

A brief overview of the area is described based on “Understanding the Area”, including the following items.

- General Information regarding the local economy of the area
- The characteristics of the industrial parks
- Local administration(s) where the industrial park(s) are located
- Transport infrastructures that the industry in the area is dependent on
- Lifeline utilities that the industry in the area is dependent on
- The experiences of Natural Hazards that have affected the area

Description of Area BCM strategies:

The strategies are described based on “Determining Area BCM Strategy”, including the following items.

- Results of hazards and risks assessments
- Results of business impact analysis and bottlenecks for area business continuity
- Objectives of area business continuity

■ Activities to improve the capability of area business continuity

Issues for improvement:

Lessons and issues for improvement of Area BCM are described. These will be considered in the next cycle of Area BCM.

The plans developed by the pilot projects are attached in Appendix 1 of this guidebook, and an example of their contents is shown in Table 5.1. They would be useful as reference documents when you prepare the Area BCP.

Table 5.1 An example of contents of Area BCP (Developted by the pilot project)

1 Purpose of the Plan
2 Scope of the Plan
  2.1 Organization
  2.2 Area
  2.3 Hazard
  2.4 Formulation Process and Version Management
3 Understanding of the Area
  3.1 Area stakeholders
  3.2 Structure of the Local industry
  3.3 Infrastructures in the Area
  3.4 Disaster Risks that threaten the Local Industry
4 Impact Analysis of the Area
  4.1 Impact to the Area by Disaster
  4.2 Concerns of the Industry Continuity
5 Strategies for Industry Continuity
  5.1 Recovery Objectives in Disaster
  5.2 Role of the Stakeholders
6 Improvement Activities for Capability of Industry Continuity
  6.1 Category of Improvement Measures
  6.2 Progress Management of Improvement Measures
7 Implementation of the Plan
  7.1 Area BCM
  7.2 System of Implementing Area BCM
  7.3 Implementing and Reviewing
  7.4 Improving Area BCM
  7.5 Reporting
  7.6 Issues and Items for Improvement
  7.7 Next Steps (Proposed)
8 Definitions of Terms
Appendix A Activity of Workshop
Appendix B List of Stakeholders

[Phase 4]

6 Implementing and Reviewing

6.1 Implementing

Implementing Measures

Although Area BCP will give you a common and agreed direction of measures, you have a responsibility to plan and implement measures for your organization. You will have benefits from Area BCP by sharing information on topics such as hazards, disaster risks, transport infrastructure, lifeline utilities, and capacities and approaches of other organizations of the area.

An activity report should be prepared by each organization to describe the achievements, experiences and lessons learned. The experiences and lessons learned from the implementation of measures should be evaluated in workshop(s) of Area BCM in order to improve the Area BCM of your area.

Summing up the achievements would lead to enhancement of the resilience of businesses of the area as a whole.

Exercising based on Area BCP

You can test your Area BCM by using the methods such as discussion based exercises, table-top exercises, training and seminars, and live exercises. A live exercise is suitable for your organizations to conduct activities such as evacuation drills. Although it is possible, the live exercises for Area BCM arrangements where a large number of organizations are involved is a complex and difficult task even for one component of Area BCM.

Some examples of exercises based on Area BCP are provided in Table 6.1. Implementation of measures by individual organizations is also an exercise for improvement of Area BCP.

Table 6.1 Activities for Exercising based on Area BCP

Exercise	Method	Output
Implementation of measures by individual organizations	• Planning and implementation of measures by individual organizations • Summary of achievements, experiences and lessons learned	• Activity report

Summing up of measures by individual organizations	• Summing up achievements of measures, experiences and lessons of individual organizations through workshop(s) for improvement of AreaBCM / Area BCP	• Review Report of Area BCM / Area BCP
Promotion and awareness raising	• Discussion within your organizations • Training and seminars for your staff and other stakeholders in your area	• Activity report
Studying conformity and integrity of Area BCP with your BCP and/or disaster risk reduction plans	• Discussions within your organizations • Table-top exercises within your organization by using a scenario (s) of the Area BCP	• Activity report
Study lessons from natural disasters that have occurred in your area, surroundings or elsewhere	• Field survey, interview, and questionnaires	• Lessons learned report

Promotion and Awareness Raising:

The discussions regarding conformity and integrity in your organization should be utilized as opportunities to disseminate and raise awareness of Area BCM among executives and key staff of related sections/departments. If necessary, training programs and seminars are planned and implemented for your organization as well as for other parties on local and national levels.

It is also important to record and evaluate the events, and to write up an activity report immediately after the events.

Studying Conformity and Integrity of Area BCP with Your BCP and Disaster Risk Reduction Plans:

Since Area BCP provides various useful information of your area, studying conformity and integrity is beneficial for you to improve your own BCP and/or disaster risk reduction plans. Your BCP and/or disaster risk reduction plans can also provide useful inputs into Area BCP.

The discussion based exercise and the table-top exercise are suitable where executives and key staff of related sections/departments attend discussion. For the table-top exercise the scenarios, prepared for developing the Area BCP can be used.

Items to be discussed include impacts to the area, strategies for business continuation, actions for business continuity, roles and responsibilities of members, related plans and documents owned by you, and the persons in your organization responsible for Area BCM and their contact details.

It is important to summarize outcomes of the discussions, including issues and proposals for improvements of Area BCM/Area BCP, in an activity report.

You can also revise and/or formulate your own BCP and disaster risk reduction plans from the outcomes of the exercises.

Study Lessons from Natural Disasters Occurred in the Area and Surroundings:

If a natural hazard occurs within your area and surroundings, or in the country, you can record the hazard, damages and response of you and other stakeholders through a field survey and/or interviews and questionnaires. A lessons learned report should be prepared including outlines of the hazard, outlines of the damages, responses of the stakeholders, issues to consider and lessons. The report will be used to improve your Area BCM arrangements. Examples of lesson learned report are provided in Supplemental Report of this guidebook.

Preparation of Maintenance and Exercise Program

It is recommended to prepare a maintenance and exercise program, which is describing an annual plan of maintenance and exercises.

6.2 Reviewing

Your Area BCM arrangements should be reviewed either through experts (or auditors) or self-assessment. The review should confirm that:

- you have identified all key stakeholders, and their plans, activities and resources;
- you have identified all risks, and important elements of the area such as industries, infrastructure, lifelines and others;
- you have identified bottlenecks and measures of the area for business continuity, and they are fit for the purpose, and appropriate to the level of the risk; and
- you have established Area BCM maintenance and exercise programs and effectively implement them.

The review should be recorded, and the leader is required to validate and approve the review.

[Phase 5]

7 Improving Area BCM

7.1 Improving Area BCM

Area BCM arrangements and Area BCP established for your area cannot be considered workable until they are exercised and tested. Continuous improvement is required to keep your Area BCP and Area BCM up to date.

Improvement of Area BCP

Methods of exercising and testing of Area BCP are given in Table 6.1. First step would be validation of Area BCP by your organization; rehearsing key staff of your organization; integrating the plan with your BCP and/or disaster risk management plan; and awareness raising of other stakeholders in your area.

Improvement of Area BCM

After putting Area BCM system in place, you are required to improve your Area BCM arrangements by repeating the cycle in order to cope with the changing conditions of the area such as:

- changes in the composition of stakeholders;
- changes in the target area of Area BCM ;
- new natural disaster risk (s) emerged;
- following lessons learned from exercising and reviewing;
- following lessons learned from natural disasters in the area and other locations; and
- other necessary occasions.

For updating the Area BCM arrangements, if necessary, you may be required to conduct activities such as desk studies, field works and risk assessments. An updated plan or a newly formed plan is prepared through workshops organized by the leader and attended by the members and supporters. The leader validates and approves the updated plan after receiving advices from experts and discussions by the working group.

During a course of updating the plan, processes and effectiveness of Area BCM arrangements are reviewed. Outputs are summarized in a review report of Area BCM.

A maintenance program is prepared that ensures the plans are up to date.

7.2 Documentation of Improving Process

Outputs from exercising/reviewing and maintaining/improving are summarized in the following reports or plans.

- Activity report
- Lesson learned report
- Updated plan
- Plan for new risks
- Review report of Area BCM
- Maintenance program

Appendices

Appendix 1 Glossary of Terms

Appendix 2 Procedures for Developing Area BCP

Appendix 3 References

Appendix 1 Glossary of Terms

A

Area Business Continuity Management (Area BCM)

A management process that helps to manage the risks of continuity and/or early recovery of businesses of an area in an emergency such as natural disasters that affect the entire area.
[SOURCE: JICA Study Team]

A cyclic process of understanding risks and impacts, determining common strategy of risk management, developing the Area BCP, implementing planned actions and monitoring to continuously improve the Area BCM System, in coordination among stakeholders including individual enterprises, industrial area managers, local authorities and administrator of the infrastructures as well as communities, in order to improve the resilience of the local economy to disasters.
[SOURCE: Hitoshi Baba (2014) Area Business Continuity Management, a new opportunity for public-private partnerships. Proceedings of the International Disaster and Risk Conference Davos 2014, Pp.74-78]

Area Business Continuity Management System (Area BCMS)

Overall management system which includes understanding the Area, determining Area BCM Strategy, formulating Area BCP, exercising/reviewing, and maintaining/improving.
[SOURCE: JICA Study Team]

Area Business Continuity Plan (Area BCP)

A document set of procedures and information intended to promote continuity and/or early recovery of businesses of an area in an emergency such as natural disasters that affect the entire area.
[SOURCE: JICA Study Team]

A document describing a framework and direction of actions of disaster risk management by stakeholders as well as cooperation and coordination among them to facilitate business continuation of the industrial agglomerated area as a whole.
[SOURCE: Baba, H; Itsu, Adachi; Hiroshi, Takabayashi; Noriaki, Nagatomo; Shiro, Nakasone; Hideaki, Matsumoto and Toshiyuki, Shimano (2013). Introductory study on Disaster Risk Assessment and Area Business Continuity Planning in industry agglomerated areas in the ASEAN. Journal of Integrated Disaster Management (IDRiM Journal), Vol.3 No.2, Dec. 2013, pp184-195.]

Area Business Impact Analysis (Area BIA)

Process of analyzing impacts to the society and industry of the area caused by the assumed disaster

NOTE Typically this covers the impacts to local community (ex. casualty, outflow of people, peace and order) and local industry (ex. production, bankruptcy, employment). Area BIA and Individual BIAs of the stakeholders of the area should be conducted interactively as they are closely related to each other.

[SOURCE: JICA Study Team]

B

Bathymetric map

The map illustrating the submarine topography, or the depth and shapes of underwater terrain.

[SOURCE: JICA Study Team]

Biological Hazard

Process or phenomenon of organic origin or conveyed by biological vectors, including exposure to pathogenic micro-organisms, toxins and bioactive substances that may cause loss of life, injury, illness or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Comment: Examples of biological hazards include outbreaks of epidemic diseases, plant or animal contagion, insect or other animal plagues and infestations.

[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Bottleneck

The definition of bottleneck in ISO22301:2012 has nothing to do with a specific disaster, however here bottleneck is used as factor which caused serious impacts to society and industry of the area in an assumed disaster.

The original definition is the narrow part of a bottle by the lip. Here it means, in business continuity and operation recovery, the key elements without which the entire process is prevented from progressing.

[SOURCE: Cabinet Office of Japan(2005) : "Business Continuity Guidelines 1st ed. "]

Business Continuity Management (BCM)

Holistic management process that identifies potential threats to an organization and the impacts to business operations those threats, if realized, might cause, and which provides a framework for building organizational resilience with the capability of an effective response

that safeguards the interests of its key stakeholders, reputation, brand and value-creating activities
[SOURCE: ISO 22301:2012]

Business Continuity Management system (BCMS)
Part of the overall management system that establishes, implements, operates, monitors, reviews, maintains and improves business continuity
NOTE The management system includes organizational structure, policies, planning activities, responsibilities, procedures, processes and resources.
[SOURCE: ISO 22301:2012]

Business Continuity Plan (BCP)
Documented procedures that guide organizations to respond, recover, resume, and restore to a pre-defined level of operation following disruption
NOTE Typically this covers resources, services and activities required to ensure the continuity of critical business functions.
[SOURCE: ISO 22301:2012]

Business Impact Analysis (BIA）
The definition of BIA in ISO22301:2012 has nothing to do with a specific disaster, however here BIA is used as analysis of the impacts caused by an assumed disaster.

Process of analyzing activities and the effect that a business disruption might have upon them [SOURCE: ISO22300] [SOURCE: ISO 22301:2012]

C

Capacity
The combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve agreed goals.
Comment: Capacity may include infrastructure and physical means, institutions, societal coping abilities, as well as human knowledge, skills and collective attributes such as social relationships, leadership and management.
Capacity also may be described as capability. Capacity assessment is a term for the process by which the capacity of a group is reviewed against desired goals, and the capacity gaps are identified for further action.
[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Capacity Development

The process by which people, organizations and society systematically stimulate and develop their capacities over time to achieve social and economic goals, including through improvement of knowledge, skills, systems, and institutions.

Comment: Capacity development is a concept that extends the term of capacity building to encompass all aspects of creating and sustaining capacity growth over time.

It involves learning and various types of training, but also continuous efforts to develop institutions, political awareness, financial resources, technology systems, and the wider social and cultural enabling environment.

[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Contingency Planning

A management process that analyses specific potential events or emerging situations that might threaten society or the environment and establishes arrangements in advance to enable timely, effective and appropriate responses to such events and situations.

Comment: Contingency planning results in organized and coordinated courses of action with clearly-identified institutional roles and resources, information processes, and operational arrangements for specific actors at times of need. Based on scenarios of possible emergency conditions or disaster events, it allows key actors to envision, anticipate and solve problems that can arise during crises. Contingency planning is an important part of overall preparedness.

Contingency plans need to be regularly updated and exercised.

[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Continual Improvement

Recurring activity to enhance performance

[SOURCE: ISO 22301:2012]

Coping Capacity

The ability of people, organizations and systems, using available skills and resources, to face and manage adverse conditions, emergencies or disasters.

Comment: The capacity to cope requires continuing awareness, resources and good management, both in normal times as well as during crises or adverse conditions.

Coping capacities contribute to the reduction of disaster risks.

[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Correction

Action to eliminate a detected nonconformity
[SOURCE: ISO 22301:2012]

Critical Facilities
The primary physical structures, technical facilities and systems which are socially, economically or operationally essential to the functioning of a society or community, both in routine circumstances and in the extreme circumstances of an emergency.
Comment: Critical facilities are elements of the infrastructure that support essential services in a society. They include such things as transport systems, air and sea ports, electricity, water and communications systems, hospitals and health clinics, and centres for fire, police and public administration services.
[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Cyclone
(See **Typhoon)**

D

Damage
The direct harmful effect due to the hazard on property or human life. Indirect effects are not included.
[SOURCE: JICA Study Team]

Debris Flow
Phenomenon in which debris deposits on a valley bottom or slope of a valley, or debris caused by hillside collapse, abruptly flows down a slope or stream valley together with water.
[SOURCE: JICA Study Team]

Disaster
A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.
Comment: Disasters are often described as a result of the combination of: the exposure to a hazard; the conditions of vulnerability that are present; and insufficient capacity or measures to reduce or cope with the potential negative consequences. Disaster impacts may include loss of life, injury, disease and other negative effects on human physical, mental and social well-being, together with damage to property, destruction of assets, loss of services, social and economic disruption and environmental degradation.

[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Disaster Risk

The potential disaster losses, in lives, health status, livelihoods, assets and services, which could occur to a particular community or a society over some specified future time period.

Comment: The definition of disaster risk reflects the concept of disasters as the outcome of continuously present conditions of risk. Disaster risk comprises different types of potential losses which are often difficult to quantify. Nevertheless, with knowledge of the prevailing hazards and the patterns of population and socio-economic development, disaster risks can be assessed and mapped, in broad terms at least.

[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Disaster Risk Management

The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster.

Comment: This term is an extension of the more general term "risk management" to address the specific issue of disaster risks.

Disaster risk management aims to avoid, lessen or transfer the adverse effects of hazards through activities and measures for prevention, mitigation and preparedness.

[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Disaster Risk Reduction

The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.

Comment: A comprehensive approach to reduce disaster risks is set out in the United Nations-endorsed Hyogo Framework for Action, adopted in 2005, whose expected outcome is "The substantial reduction of disaster losses, in lives and the social, economic and environmental assets of communities and countries." The International strategy for Disaster Reduction (ISDR)system provides a vehicle for cooperation among Governments, organizations and civil society actors to assist in the implementation of the Framework. Note that while the term "disaster reduction" is sometimes used, the term "disaster risk reduction" provides a better recognition of the ongoing nature of disaster risks and the ongoing potential to reduce these risks.

[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Disaster Risk Reduction Plan *

A document prepared by an authority, sector, organization or enterprise that sets out goals and specific objectives for reducing disaster risks together with related actions to accomplish these objectives.

Comment: *Disaster risk reduction plans should be guided by the Hyogo Framework and considered and coordinated within relevant development plans, resources allocations and programme activities.*

National level plans needs to be specific to each level of administrative responsibility and adapted to the different social and geographical circumstances that are present. The time frame and responsibilities for implementation and the sources of funding should be specified in the plan.

Linkages to climate change adaptation plans should be made where possible.

* Emerging new concepts that are not in widespread use but are of growing professional relevance; the definition of these terms remain to be widely consulted upon and may change in future.

[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Disaster Scenario

The document describing the analysed effect on humans, damage to the properties or facilities should the estimated or simulated hazard occurs. Scenario is used as the assumed condition of disaster reduction plan or business continuity plan, and for exercise.

[SOURCE: JICA Study Team]

E

Earthquake

A phenomenon in which underground rocks displace each other rapidly at a certain boundary. The shaking of the ground by this phenomenon and the shaking associated with volcanic activity is also referred as the earthquake.

[SOURCE: JICA Study Team]

Emergency Management

The organization and management of resources and responsibilities for addressing all aspects of emergencies, in particular preparedness, response and initial recovery steps.

Comment: *A crisis or emergency is a threatening condition that requires urgent action. Effective emergency action can avoid the escalation of an event into a disaster. Emergency management involves plans and institutional arrangements to engage and guide the efforts of government, non-government, voluntary and private agencies in comprehensive and coordinated ways to respond to the entire spectrum of emergency needs. The expression*

"disaster management" is sometimes used instead of emergency management.
[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Emergency Services
The set of specialized agencies that have specific responsibilities and objectives in serving and protecting people and property in emergency situations.
Comment: Emergency services include agencies such as civil protection authorities, police, fire, ambulance, paramedic and emergency medicine services, Red Cross and Red Crescent societies, and specialized emergency units of electricity, transportation, communications and other related services organization
[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Exercise
Process to train for, assess, practice, and improve performance in an organization
NOTE 1 Exercises can be used for: validating policies, plans, procedures, training, equipment, and inter-organizational agreements; clarifying and training personnel in roles and responsibilities; improving inter-organizational coordination and communications; identifying gaps in resources; improving individual performance; and identifying opportunities for improvement, and controlled opportunity to practice improvisation.
NOTE 2 A test is a unique and particular type of exercise, which incorporates an expectation of a pass or fail element within the goal or objectives of the exercise being planned.
[SOURCE: ISO 22301:2012]

External resources
Goods and services which are independent of the business management but are essential for business continuity.
[SOURCE: Baba, H; Itsu, Adachi; Hiroshi, Takabayashi; Noriaki, Nagatomo; Shiro, Nakasone; Hideaki, Matsumoto and Toshiyuki, Shimano (2013). Introductory study on Disaster Risk Assessment and Area Business Continuity Planning in industry agglomerated areas in the ASEAN. Journal of Integrated Disaster Management (IDRiM Journal), Vol.3 No.2, Dec. 2013, pp184-195.]

F

Flash Flood
A short-term flood characterized by a rapid stream rise due to the heavy rain, discharge of a dam, and rapid snowmelt.

[SOURCE: JICA Study Team]

Flood

A phenomenon in which river water or lake water overflows the natural or artificial embankment onto normally dry land.

[SOURCE: JICA Study Team]

G

Geological Hazard

Geological process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Comment: Geological hazards include internal earth processes, such as earthquakes, volcanic activity and emissions, and related geophysical processes such as mass movements, landslides, rockslides, surface collapses, and debris or mud flows. Hydrometeorological factors are important contributors to some of these processes.

Tsunamis are difficult to categorize; although they are triggered by undersea earthquakes and other geological events, they are essentially an oceanic process that is manifested as a coastal water-related hazard.

[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Geographic Information System (GIS)

Analysis that combine relational databases with spatial interpretation and outputs often in form of maps. A more elaborate definition is that of computer programs for capturing, storing, checking, integrating, analyzing and displaying data about the earth that is spatially referenced.

Comment: Geographical information systems are increasingly being utilized for hazard and vulnerability mapping and analysis, as well as for the application of disaster risk management measures.

[SOURCE: Living with Risk (2004) : "A global review of disaster reduction initiatives"]

H

Hazard

A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Comment: The hazards of concern to disaster risk reduction as stated in footnote 3 of the Hyogo Framework are"... hazards of natural origin and related environmental and technological hazards and risks." Such hazards arise from a variety of geological, meteorological, hydrological, oceanic, biological, and technological sources, sometimes acting in combination. In technical settings, hazards are described quantitatively by the likely frequency of occurrence of different intensities for different areas, as determined from historical data or scientific analysis.
[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Hazard Assessment
A process designed to determine the nature and extent of hazard. The process includes hazard identification and hazard characterization. The process focuses on the hazard, in contrast to risk assessment, where vulnerability and exposure analysis are distinct.
[SOURCE: JICA Study Team]

Hurricane
(See **Typhoon)**

Hydrometeorological Hazard
Process or phenomenon of atmospheric, hydrological or oceanographic nature that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.
Comment: Hydrometeorological hazards include tropical cyclones (also known as typhoons and hurricanes), thunderstorms, hailstorms, tornados, blizzards, heavy snowfall, avalanches, coastal storm surges, floods including flash floods, drought, heatwaves and cold spells. Hydrometeorological conditions also can be a factor in other hazards such as landslides, wildland fires, locust plagues, epidemics, and in the transport and dispersal of toxic substances and volcanic eruption material.
[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

I

Incident
An event that causes disruption to your organisation.
[SOURCE: UK : "Business Continuity Management Toolkit"]

Individual Business Impact Analysis (Individual BIA)
Process of analyzing impacts to the individual business/operation of the stakeholders of the

area caused by the assumed disaster

NOTE Area BIA and Individual BIAs of stakeholders of the area should be conducted interactively because they are closely related to each other.

Industrial Agglomerated Area

Area where many industrial parks, factories, and/or other industrial functions are agglomerated.

[SOURCE: JICA Study Team]

Industrial Park

Place where the land of a constant division is maintained as an industrial site, and factories, warehouses, and other industrial functions are located premeditatedly.

[SOURCE: JICA Study Team]

Infrastructure

Social resource that is necessary to industrial continuity such as a road, port, power supply, water supply, and other functions.

NOTE In this guideline (toolkit), infrastructure is sometimes used as being related to transportation.

[SOURCE: JICA Study Team]

Inland Flooding

Rain water inundating phenomenon in a city when the ability to drain to a river via the sewer or pump is insufficient to the rainfall, or an inability to drain due to the high water level of the river.

[SOURCE: JICA Study Team]

Inundation

The condition of water covering normally dry land.

[SOURCE: JICA Study Team]

ISO 22301:2012 Social security – Business continuity management systems –Requirements

International Standard that specifies the requirements of business continuity management to plan, establish, implement, operate, monitor, review, maintain, and continually improve a documented management system to protect against, reduce the likelihood of occurrence, prepare for, respond to, and recover from disruptive incidents when they arise.

[SOURCE: JICA Study Team]

L

Lifeline Utility
Social infrastructure that is necessary to normal life and industrial continuity such as power supply, water supply, communication, sewage, gas supply and other functions.
[SOURCE: JICA Study Team]

Liquefaction
A phenomenon whereby a water-saturated sands temporarily lose strength and behave as a liquid. This effect can be caused by the earthquake vibration.
[SOURCE: JICA Study Team]

M

Mitigation
The lessening or limitation of the adverse impacts of hazards and related disasters.
Comment: The adverse impacts of hazards often cannot be prevented fully, but their scale or severity can be substantially lessened by various strategies and actions. Mitigation measures encompass engineering techniques and hazard-resistant construction as well as improved environmental policies and public awareness. It should be noted that in climate change policy, "mitigation" is defined differently, being the term used for the reduction of greenhouse gas emissions that are the SOURCE: of climate change.
[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

N

Natural Disaster
A disaster caused by natural hazards, such as earthquake, tsunami, flood and volcanic eruption.
[SOURCE: JICA Study Team]

Natural Hazard
Natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.
Comment: Natural hazards are a sub-set of all hazards. The term is used to describe actual

hazard events as well as the latent hazard conditions that may give rise to future events. Natural hazard events can be characterized by their magnitude or intensity, speed of onset, duration, and area of extent. For example, earthquakes have short durations and usually affect a relatively small region, whereas droughts are slow to develop and fade away and often affect large regions. In some cases hazards may be coupled, as in the flood caused by a hurricane or the tsunami that is created by an earthquake.
[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

P

Performance
Measurable result
NOTE 1 Performance can relate either to quantitative or qualitative findings.
NOTE 2 Performance can relate to the management of activities, processes, products (including services), systems or organizations.
[SOURCE: ISO 22301:2012]

Performance Evaluation
process of determining measurable results
[SOURCE: ISO 22301:2012]

Preparedness
The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions.
Comment: Preparedness action is carried out within the context of disaster risk management and aims to build the capacities needed to efficiently manage all types of emergencies and achieve orderly transitions from response through to sustained recovery. Preparedness is based on a sound analysis of disaster risks and good linkages with early warning systems, and includes such activities as contingency planning, stockpiling of equipment and supplies, the development of arrangements for coordination, evacuation and public information, and associated training and field exercises. These must be supported by formal institutional, legal and budgetary capacities. The related term "readiness" describes the ability to quickly and appropriately respond when required.
[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Prevention
The outright avoidance of adverse impacts of hazards and related disasters.

Comment: Prevention (i.e. disaster prevention) expresses the concept and intention to completely avoid potential adverse impacts through action taken in advance. Examples include dams or embankments that eliminate flood risks, land-use regulations that do not permit any settlement in high risk zones, and seismic engineering designs that ensure the survival and function of a critical building in any likely earthquake. Very often the complete avoidance of losses is not feasible and the task transforms to that of mitigation. Partly for this reason, the terms prevention and mitigation are sometimes used interchangeably in casual use.

[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Probability

The likelihood that a considered occurrence will take place. Usually, the probability of hazards are expressed as "x% in y years" or "once in y years".

[SOURCE: JICA Study Team]

R

Recovery

The restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors.

Comment: The recovery task of rehabilitation and reconstruction begins soon after the emergency phase has ended, and should be based on pre-existing strategies and policies that facilitate clear institutional responsibilities for recovery.

[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Recovery Time Objective (RTO)

Period of time following an incident within which

— product or service must be resumed, or

— activity must be resumed, or

— resources must be recovered

NOTE For products, services and activities, the recovery time objective must be less than the time it would take for the adverse impacts that would arise as a result of not providing a product/service or performing an activity to become unacceptable.

[SOURCE: ISO 22301:2012]

Resilience

The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner,

including through the preservation and restoration of its essential basic structures and functions.

Comment: Resilience means the ability to "resile from" or "spring back from" a shock.

The resilience of a community in respect to potential hazard events is determined by the degree to which the community has the necessary resources and is capable of organizing itself both prior to and during times of need.

[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Resources

All assets, people, skills, information, technology (including plant and equipment), premises, and supplies and information (whether electronic or not) that an organization has to have available to use, when needed, in order to operate and meet its objective

[SOURCE: ISO 22301:2012]

Response

The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

Comment: Disaster response is predominantly focused on immediate and short-term needs and is sometimes called "disaster relief". The division between this response stage and the subsequent recovery stage is not clear-cut. Some response actions, such as the supply of temporary housing and water supplies, may extend well into the recovery stage.

[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Risk

The combination of the probability of an event and its negative consequences.

Comment: This definition closely follows the definition of the ISO/IEC Guide 73. The word "risk" has two distinctive connotations: in popular usage the emphasis is usually placed on the concept of chance or possibility, such as in "the risk of an accident"; whereas in technical settings the emphasis is usually placed on the consequences, in terms of "potential losses" for some particular cause, place and period.

It can be noted that people do not necessarily share the same perceptions of the significance and underlying causes of different risks.

[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Risk Assessment

A methodology to determine the nature and extent of risk by analysing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed

people, property, services, livelihoods and the environment on which they depend.
Comment: Risk assessments (and associated risk mapping) include: a review of the technical characteristics of hazards such as their location, intensity, frequency and probability; the analysis of exposure and vulnerability including the physical social, health, economic and environmental dimensions; and the evaluation of the effectiveness of prevailing and alternative coping capacities in respect to likely risk scenarios. This series of activities is sometimes known as a risk analysis process.
[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Risk Management
The systematic approach and practice of managing uncertainty to minimize potential harm and loss.
Comment: Risk management comprises risk assessment and analysis, and the implementation of strategies and specific actions to control, reduce and transfer risks.
It is widely practiced by organizations to minimise risk in investment decisions and to address operational risks such as those of business disruption, production failure, environmental damage, social impacts and damage from fire and natural hazards. Risk management is a core issue for sectors such as water supply, energy and agriculture whose production is directly affected by extremes of weather and climate.
[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Risk Transfer
The process of formally or informally shifting the financial consequences of particular risks from one party to another whereby a household, community, enterprise or state authority will obtain resources from the other party after a disaster occurs, in exchange for ongoing or compensatory social or financial benefits provided to that other party.
Comment: Insurance is a well-known form of risk transfer, where coverage of a risk is obtained from an insurer in exchange for ongoing premiums paid to the insurer. Risk transfer can occur informally within family and community networks where there are reciprocal expectations of mutual aid by means of gifts or credit, as well as formally where governments, insurers, multi-lateral banks and other large risk-bearing entities establish mechanisms to help cope with losses in major events. Such mechanisms include insurance and re-insurance contracts, catastrophe bonds, contingent credit facilities and reserve funds, where the costs are covered by premiums, investor contributions, interest rates and past savings, respectively.
[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Runoff
A phenomenon that part of precipitation flows into the streams on the surface of the ground or

within the ground.
[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

S

Seismic Intensity
A number indicating the severity of an earthquake motion at a certain place in terms of its effects on the ground, human and structures.
[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Stakeholders
Interests that are related to Area Business Continuity such as national/local governments, governmental research institutions, operators of infrastructure and lifelines, industrial parks, private enterprises, and other organizations.
[SOURCE: JICA Study Team]

Storm Surge
The local change in the elevation of the ocean along a shore due to a suction effect by low pressure and wind drug effect by strong wind caused by a storm.
[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Structural and Non-Structural Measures
Structural measures: Any physical construction to reduce or avoid possible impacts of hazards, or application of engineering techniques to achieve hazard-resistance and resilience in structures or systems; Non-structural measures: Any measure not involving physical construction that uses knowledge, practice or agreement to reduce risks and impacts, in particular through policies and laws, public awareness raising, training and education.
Comment: Common structural measures for disaster risk reduction include dams, flood levees, ocean wave barriers, earthquake-resistant construction, and evacuation shelters. Common non-structural measures include building codes, land use planning laws and their enforcement, research and assessment, information resources, and public awareness programmes. Note that in civil and structural engineering, the term "structural" is used in a more restricted sense to mean just the load-bearing structure, with other parts such as wall cladding and interior fittings being termed non-structural.
[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Supply Chain

Defined as a series of business linkages that connect suppliers to consumers, including development, procurement, manufacture, distribution, and sales. Supply chain involves suppliers, manufacturers,
distributors (wholesalers), retailers, and consumers. Management method that attempts to have integrated management of and more efficient placement and receipt of orders between clients, procurement of materials and component parts, inventory, production and delivery of products and
improve corporate income is called "Supply Chain Management."
[SOURCE: Cabinet Office of Japan(2005) : "Business Continuity Guidelines 1st ed. "]

T

Technological Hazard
A hazard originating from technological or industrial conditions, including accidents, dangerous procedures, infrastructure failures or specific human activities, that may cause loss of life, injury, illness or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.
Comment: Examples of technological hazards include industrial pollution, nuclear radiation, toxic wastes, dam failures, transport accidents, factory explosions, fires, and chemical spills. Technological hazards also may arise directly as a result of the impacts of a natural hazard event.
[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Transportation
Social infrastructure that is necessary to normal life and industrial continuity such as roads, railways, seaports, airports, and other functions.
[SOURCE: JICA Study Team]

Tsunami
A phenomenon in which a wave is generated by seafloor deformation from an earthquake and/or volcanic activity propagated through the ocean.
[SOURCE: JICA Study Team]

Typhoon (also known as "Cyclone" and "Hurricane")
A developed tropical cyclone that has formed in the North Pacific Ocean. Those that appear in the Indian Ocean and South Pacific Ocean are referred to as "Cyclone", and those in the northeast Pacific Ocean and the Atlantic Ocean are referred to as "Hurricane".
[SOURCE: JICA Study Team]

V

Version Control

Technique to control access to and modification of documents and to track versions of a document when it is revised.

[SOURCE: UK : "Business Continuity Management Toolkit"]

Vulnerability

The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard.

Comment: There are many aspects of vulnerability, arising from various physical,social, economic, and environmental factors. Examples may include poor designand construction of buildings, inadequate protection of assets, lack of public information and awareness, limited official recognition of risks and preparedness measures, and disregard for wise environmental management. Vulnerability varies significantly within a community and overtime. This definition identifies vulnerability as a characteristic of the element of interest (community, system or asset) which is independent of its exposure.

However, in common use the word is often used more broadly to include the element's exposure.

[SOURCE: UNISDR(2009) : "Terminology on Disaster Risk Reduction"]

Appendix 2 Procedures for Developing Area BCP in the Pilot Areas

Table of Contents

1. Introduction

Appendix 2, Procedures for Developing Area BCP in the Pilot Areas, describes the procedures of Area BCM used for the pilot study by AHA Centre and JICA during February 2013 to March 2015. The pilot study was carried out for:

- Industrial agglomerated area distributed over Bekasi and Karawang Regencies and Kota Bekasi, Indonesia;
- Industrial agglomerated area distributed over Cavite and Laguna States, and the southern part of Metropolitan Manila, the Philippines; and
- Industrial agglomerated area distributed in the city of Haiphong, Vietnam.

The study was aimed to develop a concept and procedures of Area BCM, so that the procedure described in Appendix 2 are experimental; some were too detailed and the others were not sufficient. You may be required to modify and improve the procedures in order to suite with the local conditions of your area.

2. Forming Working Groups

There are many stakeholders of business continuity of the area such as national government and local governments, operators of transport infrastructures and lifeline utilities, enterprises and industrial parks, research institutes and universities, industrial associations. Through the discussion with key stakeholders such as national/local government and other organizations who are in charge of the disaster management or industrial promotion of the area, the stakeholders are selected who should be involved in the Area BCM.

Then it is recommended to form a steering committee and a working group as Sec.2.3 describes. For example, since the steering committee was not formed in the pilot areas at the first stage, JICA study team had twice of meetings before starting developing Area BCP in order to involve stakeholders in a working group.

In the pilot areas, involving private sector was one of problems. It's was necessary to explain of the necessity and benefit that private should sector participate in Area BCM.

Table A2-1 The number of working group member

	Leader	Member	Supporter
Indonesia	1	39	14
Philippines	4	30	9
Viet Nam	2	25	11

Table A2-2　List of working group member in Indonesia

Sub Group		Organization
Leader		BAPPEDA (Local Planning and Development Agency), Province of West Java
Member	Advisory	BBWS (Balai Besar Wilayah Sungai) Citarum (Citarum River Basin Management Unit), Ministry of Public Works BPBD (Local Disaster Management Agency),Province of West Java DISHUB (Department of Transportation),Province of West Java POLDA (Regional Police),Province of West Java BPLHD (Natural Environment Management Agency),Province of West Java KODAM III/SLW, (Indonesian National Armed Force-West Java Territorial) BAPPEDA (Local Planning and Development Agency),Bekasi Regency BPBD (Local Disaster Management Agency),Bekasi Regency BPLHD (Natural Environment Management Agency),Bekasi Regency Diskominfo (Transportation, Communication & Infomatic Agency),Bekasi Regency Kesbanglinmas (Agency of National Unity, Politics & Civil Protection),Bekasi Regency Dinas Kebakaran (Fire Brigade Agency),Bekasi Regency BAPPEDA (Local Planning and Development Agency),Karawang Regency BPBD (Local Disaster Management Agency),Karawang Regency BPLHD (Natural Environment Management Agency),Karawang Regency Dishubkominfo (Transportation, Communication & Infomatic Agency),Karawang Regency Dinas Bina Marga & Pengairan (Department of Road and Irrigation), Karawang Regency Dinas Perindustrian ,Perdagangan, Pertambangan dan Energy (Industry, Trade, Mineral and Energy Agency),Karawang Regency Kesbanglinpol (Agency of National Unity, Politics &Politic),Karawang Regency Dinas Sosial dan Penanggulangan Bencana (Social Affaire and Disaster Management Agency),Karawang Regency Dishub (Transportation Agency),Kota Bekasi Disbimarta (Road and Water Agency),Kota Bekasi
	Transportation infrastructures	PT. Jasa Marga PT. Kereta Api Indonesia(Train Operating Company)
	Lifeline utilities	PDAM Bekashi Regency(District Water Company) PDAM Tirta Tarum Karawang(District Water Company) PT Telkom PT Telkom Bekasi PT Telkom Karawang Perum Jasa Tirta(Management of Jatiluhur Dam)
	Private sector	PT Maligi KIIC MM2100 Industrial Park PT KBN Sharp Electronics Indonesia PT. Toyota PT. TMMIN PT. Jotun Indonesia PT. HM Sampoerna PT Lookman Djaya(Transportation Company)

Supporter	BNPB Ministry of Home Affairs Ministry of Industry Ministry of Cooperation & Small-Medium Enterprises Ministry of Research and Technology Bandung Institute of Technology Coordinating Ministry of Economic AffairsMinistry of Public Work Ministry of BUMN National Planning Agency (Bappenas) Ministry of Transportation The Indonesian Employers Association (Asosiasi Pengusaha Indonesia) Indonesian Chamber of Commerce and Industry (Kamar Dagang dan Industri) Kabar Gapura (local newspaper) Universities

Table A2-3 List of working group member in Philippines

Sub Group		Organization
Leader		Philippine Economic Zone Authority (PEZA) – Lead Office of Civil Defense (OCD) – Co-Lead for Areas outside Metro Manila Metropolitan Manila Development Authority – for the National Capital Region (NCR) Department of Interior and Local Government – for LGU involvement
Member	Advisory	Cavite Provincial Government Office of Public Safety, Province of Laguna Fire Marshal, Province of Laguna Provincial Disaster Risk Management Office Santa Rosa city Disaster and Risk Reduction Management Office LLDA (Laguna Lake Development Authority) OCD (Office of Civil Defense), Region IV-A OCD (Office of Civil Defense), National Capital Region PEZA (Philippine Economic Zone Authority), Region IV-A NEDA (National Economic Development Authority), Region IV-A DILG (Department of Interior and Local Government), National Capital Region DPWH (Department of Public Works and Highways), Region IV-A
	Transportation infrastructures	PPA (Philippine Ports Authority) Skyway CAVITEX (Cavite Express Way)
	Lifeline utilities	Local Water Utilities Administration Maynilad Water Services, Inc. Manila Water Company, Inc. MERALCO (Manila Electric Company) National Grid Corporation of the Philippines TRANSCO

	Private sector	PEZA (Philippine Economic Zone Authority) – Cavite Economic Zone PEZA (Philippine Economic Zone Authority) – Laguna Techno Park Laguna Techno Park Terumo Corp (Philippines) Yazaki-Torres Manufacturing, Incorporated Nippon Express Phils Corp. ROHM Electronics Phils, Incorporated Philippine Chamber of Commerce and Industry Laguna Chamber of Commerce and Industry
Supporter		OCD (Office of Civil defense) PEZA (Philippines Economic Zone Authority) DOE (Department of Energy) DOTC (Department of Transportation and Communication) DOST (Department of Science and Technology) DSWD (Department of Social Welfare and Development) PHIVOLCS (Philippine Institute of Volcanology and Seismology) PAGASA (Philippines Atmospheric, Geophysical and Astronomical Services Administration) MGB (Mines and Geosciences Bureau)

Table A2-4 List of working group member in Viet Nam

Sub Group		Organization
Leader (Line authority/ lead role player)		Hai Phong People's Committee (Line authority) Dyke and Flood & Storm Control Department, Department of Agriculture and Rural Development (DARD) (lead role player)
Member	Advisory	Hai Phong Economic Zone Management Board Industry and Trade Department Information and Communication Department Planning and Investment Department Natural Resources and Environment Department Department of Construction Department of Transportation Fire Fighter of Hai Phong Management Board of Hai Phong Industrial Zone Infrastructure Project Hai Phong Port Authority Hai Phong Office of Vietnam Chamber of Commerce and Industry
	Transportation infrastructures	Hai Phong Port Limited Liability Company Cat Bi Air Port
	Lifeline utilities	Hai Phong Power One Member Limited Company Hai Phong Water Supply Company
	Private sector	Nomura Hai Phong Industrial Zone Nam Cau Kien Industrial Zone

		Dinh Vu Industrial Zone Do Son Industrial Zone Yazaki HP VN Co., Ltd. Tohoku Pioneer Co., Ltd. Toyota Gosei HaiPhong Co., Ltd. PVTEX Dai Duong Building Ship Joint Stock Company VIJA Group
Supporter		DMC (Disaster Management Centre), MARD (Ministry of Agriculture and Rural Development) VAST (Vietnam Academy of Science and Technology) Geoenvironmental and Technical Institute Space Technology Institute Hydro-Meteorological Forecasting (NCHMF) Hanoi University of Science, Vietnam National University Asia Foundation Hai Phong Radio and Television Hai Phong Security Newspaper Hai Phong Newspaper Hai Phong Electricity Newspaper

3. Understanding the Area

The required information for Area BCM, method of data collection in pilot project and suggestion for data collection is shown in Table A3-1.a.

Table A3-1.a List of required information and method of collection in pilot project

Required Information	Method of Collection	Suggestions
General Information		
National and local legislations regarding to disaster management	A, D	Interview to the local disaster management office is effective.
Administrative boundaries	D	These are usually available on the internet.
Distribution of the industrial parks	B, D	
Main category of the business in the area	B	General economic information is available from the statistical data book by chamber of commerce and industry or trade organization.
Regional GDP	B	
Foreign Investment	B	
Businesses		
List of tenant companies and their category of business	A, C	Only data of selected industrial parks was collected. Return rate on questionnaire was poor. Participation of operating company of the industrial parks and tenant companies to the working group is effective to collect more information.
Administrative structures of industrial parks and tenant companies	A, C	
Lifeline utilities used in the park	A, C	
Transport infrastructures used by the companies in the park	A, C	
Experiences of business interruption	C	
BCPs of tenant companies	C	
Supply chains	X	These are effective for BIA; however necessary much effort to collect because they are highly confidential in many cases.
Logistics	X	
Communication with other industrial parks	X	These can be added to questionnaire.
Communication with local community	X	
Local Administrations		
Administrative structures	A, D	Some information is available on the internet but limited or insufficient. Interview is necessary.
Disaster management system	A, D	
Response activities being conducted in case of disaster	A, C	
Information relevant to disaster risk assessment	A, D	
BCPs of local administrators	C	
Transport Infrastructures		
Description and location of major facilities	A, D, E	Only limited data is available on the internet. Visited and interviewed in the pilot project but collected information is limited due to the security reasons. Detailed
Operation organization and responsible local government office	A	
Disaster management system	A, C	

Administrative structures	A, C	specification of the facilities is not available. Participation of operating companies is strongly advisable.
BCPs or contingency operation plans of infrastructures	A, C	
Lifeline Utilities		
Description and location of major facilities	A, D, E	Only limited data is available on the internet. Visited and interviewed in the pilot project but collected information is limited due to the security reasons. Detailed specification of the facilities is not available. Participation of operating companies is strongly advisable.
Operation organization and responsible local government office	A	
Disaster management system	A, C	
Administrative structures	A, C	
BCPs or contingency operation plans of utilities	A, C	
Communities		
Worker's place of residence	A	They are useful for BIA. Interview is necessary for collection.
Means of commuting to the industrial park	A	
Type of dwelling houses	X	Research institute or university may have the information.
Candidate of sheltering place	X	Interview to local disaster management office is necessary.
Natural Hazards		
Experiences of natural hazards	A, C	This information is most important for hazard and risk assessment. The service suspension can be assessed by this data.
Hazard maps	D	Governmental research institutes and universities may have prepared the hazard maps.

[Method of Collection]

A: Site visit and interview
B: Statistical data
C: Questionnaire survey
D: Collected from related web sites
E: Estimated from satellite image
X: Not collected in pilot project

Tables A3-1.b to A3-1.d are the instruction sheets presented to the local consultants for data collection.

Table A3-1.b List of required data for collection - Infrastructure -

No.	Data	Description	Format
I Urban Plan			
1	Traffic plan		
2	Industrial promotion plan		
3	Urban and land use plans		
4	Disaster prevention plan		
II Energy			
1	Pipeline	Use	
		Location od line	GIS
		Type of pipes, discharge and diameter of pipelines	
		Administration and organization chart	
2	Gas	Gas supply network	GIS
		Supplied amount	
		Type of pipe	

		Pressure	
		Administration and organization chart	
3	Electricity	Location of sub-station	GIS
		Supply network and locations of its lines	GIS
		Voltage and electric mode	
		Administration and organization chart	
III Communication			
1	Telephone	Location of telephone office	GIS
		Subscription of fixed-telephone	
		Subscription of mobile-cellar telephone	
		Administration and organization chart	
2	Internet and wire	Internet network	GIS
		Subscription of fixed -internet	
		Communication with fire-fighting headquarter	
		Administration and organization chart	
IV Transportation			
1	Road	Road network	GIS
		Type and class of roads , width and number of lanes of road	
		Traffic volume	
		Congestion condition, and its control	
		Number of vehicle, and type and percentage of each vehicle	
		Route for trucks and quake resistance of structure	GIS
		Administration and organization chart	
2	Railway	Railway network	GIS
		Location of station and number of passenger	GIS
		Time table and route for commuting	
		Cargo volume and type of cargo on rail	
		Location of bridge	
		Administration and organization chart	
3	Airport	Access from industrial estates to airport	
		Airlines in airport, and those destination	
		Cargo volume, and type of cargo	
		Number of passenger	
		Administration and organization chart	
4	Port	Number and length of berth	
		Type of berth in use	
		Depth of berth	
		depth, width, length and route of channel	
		Access from industrial estates to port	
		Tons and TEU of Cargo, and goods and material types	
		Facilities behind port like Container terminal, Freight station, Staking yard and so on	
		Waterways around red river	
		Administration and organization chart	
V Industrial Estates			
1	Local government	Name of local government, and department, address, person in charge of hazard	GIS
		Location of local government	
		Disaster-prevention facilities around industrial estate (police, fire station and meteorological research center and so on); Address, call number, e-mail, parson in charge	GIS
		Profiles of organizations	
VI Environmental			
1	Water supply	Location and specification of reservoir, intake, weir and other water facilities.	GIS
		Location of lines	GIS
		Type of pipe and discharge into industrial estate	
		Administration and organization chart	

2	Sewerage	Location and specification of sewerage pipes and treatment facilities	GIS
		Type, Diameter and treating volume	
		Sewerage network	
		Administration and organization chart	
3	Garbage - disposal facilities	Location and specification of garbage-disposal facilities	GIS
		Treatment type and volume of general garbage	
		Volume of industrial garbage	
		Administration and organization chart	
4	Disaster prevention	Location and specification of fire station, and district in charge	GIS
		Structure of prevention works	
		Administration and organization chart	
5	Water control facility	Location and specification of reservoir, and those reserve volume and use	GIS
		Location of Canals, weirs ,revetment, dyke for river and sea protection	
		Section of each facilities	
		Administration and organization chart	
6	School	Location and type of schools	GIS
		Number of schools	
7	Hospital	Location and type of hospitals	GIS
		Number of hospitals and beds	
8	Apartment	Location and type of homes of Japanese and local workers	GIS
		Means of commuting and those route	
9	General conditions	Location of supermarket, amusement centers, public offices and the others	Maps, GIS

Table A3-1.c List of required data for collection - Existing Measures -

No.	Classification	Surveyed Items
I Industrial Parks		
1	General description of the industrial park	Address (location) of the industrial park; contact information; website address; map, longitude and altitude of the industrial park
		Developer; contact information; website address
		Number of tenant companies; number of Japanese tenant companies
		Investment amount; future development plans
		Number of members of the management body of the industrial park
		Availability of voluntary disaster response team of the industrial park/number of team members
		Availability of voluntary fire fighter team of the industrial park/number of voluntary fire fighters
2	Major Industry	Industry sectors in which the tenant companies operate; number of tenant companies classified in each industry sector
		Major industry and information helpful in reviewing each industry sector (turnover by industry, etc.)
3	Lifeline utilities used by the industrial park	Name, address, contact information of lifeline utility operators
		Interruption or failure of lifeline utility services which occurred in the past (frequency, duration of failure, causes, etc.)
4	Major traffic infrastructure used by the tenant companies, etc. in the industrial park	Number of roads linking to the industrial park; risk of all roads linking to the industrial park being flooded simultaneously
		The nearest highway and interchange; major routes from the industrial park
		The nearest port; major route from the industrial park; the main products of the industrial park handled by the port
		The nearest airport; major route from the industrial park; the main products of the industrial park handled by the airport
		The nearest railway and railway station; the main products of the industrial park handled by the railway
5	Others	Incidents and natural disasters, etc. which interrupted the operation of the industrial park in the past (how the operation was interrupted, duration of interruption)
		Information on known hazards/risks, source of information, and how public information is utilized
		Matter of concern with respect to business continuity when disaster such as floods, typhoon,

		storm surge or earthquake occurs
		Whether the employees attend to work or not in times of a disaster such as floods, typhoon, storm surge or earthquake
		Problems in implementing BCP and Area BCP, and method of solving those problems
		Requests to the local government, lifeline utility companies and traffic infrastructure companies with respect to disaster control measures
		The relevant authorities and their jurisdiction (Related departments of the local government, fire fighter, police, and other emergency responders).
II Lifeline Utility Companies		
1	General description of the company	Company name; address; contact information; website address; latitude and altitude of main office and major branch offices.
		Number of employees; number of affiliated companies/number of employees of the affiliated companies
		Service coverage area, size of business (number of users, etc.).
		Description of major facilities and their location (electric power plant, electrical substations, telephone switchboards, water treatment plant, sewage plant, high-pressure gas tanks, etc.); latitude and altitude of the major facilities; map of the facilities.
		Maintenance and recovery system; whether the service is outsourced or not.
		Possession of construction machines necessary for maintenance and recovery; whether they are owned by the company instead of being rented.
2	Disaster management under normal circumstances	Incidents that pose a threat to continuity of lifeline and priority thereof (earthquakes, floods, volcanic eruption, act of terrorism, etc.)
		Status of earthquake safety plans (makes the facilities more resistant to earthquakes; fix machines on stable surface, etc.).
		Status of flood management plans (leveling the facilities, installation of water bars, etc.)
		Types, capacity, duration of emergency power source.
		Types and number of lines available for emergency communication methods (satellite-based mobile phones and others)
		Status of securing alternative methods to continue provision of services (water truck, power generating trucks, emergency toilets and others).
		Status of stock of consumable supplies (medicines and others).
		Status of stock of supplies such as water and food for employees.
		Whether cooperation agreement on disaster management is executed between concerned parties (between maintenance service companies, consumable goods supplying companies and others).
		Status of formulation of disaster prevention, response, emergency recovery and rehabilitation plans, and BCP.
		Status of implementation of emergency drills (details, frequency of emergency drill practice).
		Other countermeasures against disasters
3	Response in case of disaster	Recovery priorities following a large-scale earthquake/flood (residents or industrial parks or other)
		Recovery time objectives following a large-scale earthquake/flood (for residents, industrial parks and others)
		Matters of concern with respect to business continuity when disaster such as earthquakes or floods occurs
		Whether the employees are required attend to work or not in times of a disaster such as earthquake and floods.
		Method of coordination/adjustments with other lifeline utility companies, traffic infrastructure companies, and local and central governments.
4	Others	Incidents and natural disasters and others, which interrupted the function (power outage, water failure and others) in the past; how the operation was interrupted, duration of interruption.
		Information on known hazards/risks; source of information; how public information is utilized.
		Problems in implementing disaster management measures under normal circumstances and method to solve those problems
		Problems in implementing BCP and Area BCP and method of solving those problems
		Requests to the local and national governments, and traffic infrastructure companies with respect to disaster control measures.

III Traffic Infrastructure Companies		
1	General description of the company	Company name; address; contact information; website address; latitude and altitude of main office and major branch offices
		Number of employees; number of affiliated companies/number of employees of the affiliated companies
		Service coverage area, size of business (such as extended operation period, number of quays)
		Description and location of major facilities(highway interchanges, quays, etc.): ; latitude and altitude of the major facilities; map of the facilities.
		Maintenance and recovery system; whether the service is outsourced or not.
		Possession of construction machines necessary for maintenance and recovery; whether they are owned by the company or being rented.
2	Disaster management under normal circumstances	Incidents that pose a threat to continuity of lifeline and priority thereof (earthquakes, floods, volcanic eruption, act of terrorism, etc.)
		Status of earthquake safety plans (makes the facilities more resistant to earthquakes; fix machines on stable surface, etc.)
		Status of flood management plans (leveling the facility, installation of water bars, etc.)
		Types, capacity, duration of emergency power source
		Types and number of lines available for emergency communication methods (satellite-based mobile phones and others)
		Status of stock of materials for construction work
		Status of stock of supplies such as water and food for employees.
		Whether cooperation agreement on disaster management is executed between concerned parties (between maintenance service companies, consumable goods suppliers and others)
		Status of formulation of disaster prevention, response, emergency recovery and rehabilitation plans, and BCP
		Status of implementation of emergency drills (details, frequency of emergency drill practice)
		Other countermeasures against disasters
3	Response in case of disaster	Recovery priorities following a large-scale earthquake/flood (residents or industrial parks or other)
		Recovery time objectives following a large-scale earthquake/flood (for residents, industrial parks and for others)
		Matter of concern with respect to business continuity when disaster such as earthquakes or floods occurs
		Whether the employees are required attend to work in times of a disaster such as earthquake and floods
		Method of coordination/adjustments with other lifeline utility companies, traffic infrastructure companies, and local and central governments
4	Others	Incidents and natural disasters and others, which interrupted the function (power outage, water failure and others) in the past; how the operation was interrupted, duration of interruption.
		Information on known hazards/risks; source of information; how public information is utilized.
		Problems in implementing disaster management measures under normal circumstances and method to solve those problems
		Problems in implementing BCP and Area BCP and method of solving those problems
		Requests to the local and national governments and lifeline utility companies with respect to disaster control measures.
IV Local Governments		
1	General description of the local government	Local government's name; contact information; website address; latitude and altitude of city hall.
		Number of employees; number of temporary staffs.
		Lifeline utility and traffic infrastructure which local government is operating; name; contact information; website address if available; latitude and altitude of the major offices.
		Emergency operators, such as fire fighter, police; name; contact information; website address if available; latitude and altitude of the major offices.
2	Disaster management under normal circumstances	Disaster management system of the local government
		Status of formulation of disaster prevention, response, emergency recovery and rehabilitation plans, and BCP of the local government.
		Researched carried out by the local government for damage prediction by natural disasters.

		Description of prevention plan (earthquake-resistant, bank/embankment/dike, land raising, land use plan, and others)
		Problems in implementing disaster management measures under normal circumstances and method to solve those problems
3	Response in case of disaster	Description of support for residents in case of disaster (securing evacuate houses, supporting lives, etc.)
		Description of support for companies or industrial parks in case of disaster (priority recovery for lifeline utility and traffic infrastructure, simplification of procedures concerning approval and authorization, financial supports, etc.)
		Role sharing of responses in case of disaster among the national government and other public organizations and others)
		Problems in responses of the local government in case of disaster and method to solve those problems
4	Others	Damages in the area under the jurisdiction of the local government caused by the past natural disasters, and the influences on the function of the local government
		Information on hazards/risks utilized by the local government; source of information.
		Problems in implementing BCP and Area BCP, and approach of solving those problems.
		Requests to the national government, lifeline utility companies and traffic infrastructure companies with respect to disaster control measures.

Table A3-1.d List of required data for collection - Data for Hazard Assessment -

No.	Data	Description	Format
I Earthquake			
1	Hazard Map	Area map is attached. Scale: 1/50,000 - 25,000	Map, GIS
2	Hazard Map making method	Whether applicable method is available for other ASEAN countries. Whether applicable data exist for other ASEAN countries.	
3	List of Active Fault	Area: Whole country	Digital
4	Active Fault Map	Area: Whole country	Map, GIS
5	Geomorphology Map	Area map is attached. Scale: 1/50,000 - 25,000	Map, GIS
6	Geology Map	Area map is attached. Scale: 1/50,000 - 25,000	Map, GIS
II Tsunami			
1	Hazard Map	Area map is attached. Map Scale: 1/10,000 - 5,000	Map, GIS
III Volcano			
1	Hazard Map	Area: Whole Country Map Scale: 1/25,000	Map, GIS
IV Cyclone			
1	Meteorological Station	Location	Map, GIS
2	Observed Data at the Station	Atmospheric Pressure Wind Direction Wind Speed Tide Level (at least three stations)	Digital
3	Observed Tide Level Data	Observed and astronomical tide level (at least five years)	Digital
4	Observed Tide Level in case of Typhoon	Interval: one hour (at least ten cases)	Digital
5	Observed Annual Maximum Wind Speed	(at least 60 years) (at least three stations)	Digital
6	Observed Annual Maximum Daily Rainfall	(at least 60 years) (at least three stations)	Digital

V Flood			
1	Hazard Map		Map, GIS
2	Inundation Map		Map, GIS
3	Topography Map	Scale: 1/25,000	Map, GIS
4	Hourly (or Daily) Rainfall	Including past flood cases (at least three stations)	Digital
5	Annual Maximum Daily Rainfall	10 to 30 years (at least three stations)	Digital
6	Flood Discharge	Hydrograph and Peak Discharge Including past flood cases at the stations in pilot area	Digital
7	Cross Section of River		Digital, CAD, GIS
8	Water Level at Stations	Including past flood cases at the stations in pilot area	Digital
9	Existing Flood Information/ Warning System		
10	Master Plan of the River		
11	Existing or Planned Flood Prevention Structural Measures		
12	Past Flood Depth and Duration	Depth: meters Duration: in Hours or Days	
13	Damage by Past Flood	Casualties, Damage, Loss, etc.	
14	Flood Risks to Industries	at selected Industrial Zones List of flood risks regarding materials and operation at industries	
15	Flood Risks to Lifeline and Traffic Infrastructures	at selected Industrial Zones List of flood risks regarding transport, electricity, gas, water supply, information network and others	
16	Natural Disaster Prevention Plan	National and Local	
17	Questionnaire Survey about natural disaster risks	40 to 50	

4. Determining Area BCM Strategy through Workshops

4.1 Planning Workshops

The leader plans workshops so that the stakeholders discuss the topics for developing Area BCP together and share the important information among them.

The leader has a responsibility to lead activities of Area BCM such as meetings, workshops, studies and other necessary works as Sec.2.3 describes. For example, since the leader was not chosen in the pilot areas at the first stage, JICA study team held 3 times of workshops for developing Area BCP.

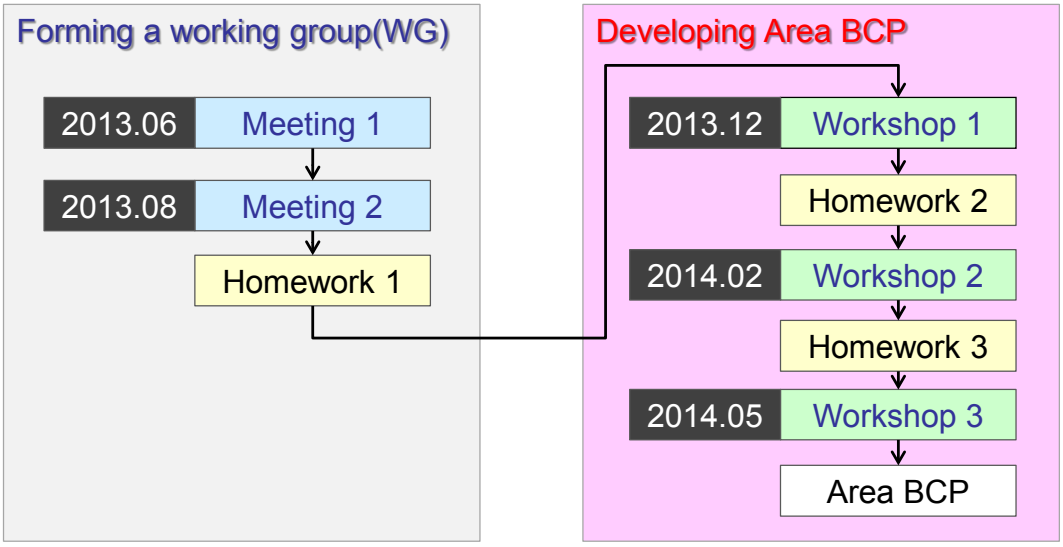


Figure A4-1. Procedures for developing Area BCP in the pilot areas

Table A4-1. Outline of workshops for developing Area BCP in the pilot areas

Workshop (Homework)	Objectives of Workshop	Area BCM Cycle
Workshop 1 (Homework 1)	* Hazards affecting the industrial agglomerated area * Business environment during disaster situation * Limitations of Individual BCP	* Understanding the Area
Workshop 2 (Homework 2)	* Impact of disaster on industries in the Industrial Agglomerated Area * Problems of the industrial agglomerated area for business continuity * Measures to address the problems	* Understanding the Area * Determining Are BCM Strategy

Workshop 3 (Homework 3)	* Draft plan of Area BCP * Improvements of Draft plan and previous workshops * Future activities	* Developing Area BCP

4.2 Homework

In the pilot areas, Homework was e-mailed to stakeholders from JICA study team before each workshop. The answers of homework were analyzed and reflected to the material of next workshop.

In the pilot areas, the answers were not so many. It may be a reason that some of stakeholders didn't have an idea for homework or didn't have an interest in homework.

Table A4-2. Outline of homework for developing Area BCP in the pilot areas

Homework	Topics of Homework
Homework 1	1 Area BCM Policy 1-1 Organization's Policy on BCM/Disaster Prevention 1-2 Area BCM Policy at **** 2 Organization's Business Continuity 2-1 BCM Activities on your organization 2-2 What are the hazards considered by your organization? 2-3 Critical issues of organization in a disaster. 3 Expectations to this Work Shop
Homework 2	1 Business Impact by Disaster 1-1 Damage of Business by Disaster and Recovery Time 1-2 Weak point and Measures on Business Continuity 1-3 The impact on Management or Governance 1-4 Other Disasters to consider 2 Request for Information
Homework 3	No homework. Before workshop 3, the topics I group work 3were e-mailed to attendants with the draft plan so that they could read it and consider the topics in advance.

4.3 Workshops

In each workshop in the pilot areas, at first JICA study team gave inputs of fundamental information and the method of group work. And then participants were divided into 4-6 groups (Advisory, Lifeline utility, Transportation infrastructure, and Private sector) to discuss the topics in the group work. Lastly presenters of each group made a presentation, and the results were summarized by facilitators with a template.

Before each workshop, a training program was held in order to train facilitators who lead a group work, and to check the whole process of the group work in advance.

Table A4-3. Outline of agenda at workshops in the pilot area (the Philippines)

	Outline of agenda
Workshop 1 (9:00-13:00)	Welcome Address Orientation for the Workshop Inputs from the Study Team and Q&A * Guidance of Area BCP * Natural Disaster Risk Assessment and Disaster Scenario * Schedule of workshop Coffee Break Group Work Presentation by the Groups and Q&A Wrap up
Workshop 2 (9:00-13:00)	Welcome Address Inputs from the Study Team and Q&A * Progress of the Project and Summary of WS1 * Orientation of WS2 and Summary of Homework 2 * Review of Natural Disaster Risk Assessment and Disaster Scenario Coffee Break Group Work Presentation by the Groups and Q&A Wrap up
Workshop 3 (9:00-12:50)	Welcome Address Inputs from the Study Team and Q&A * Review of the first and second workshops * Draft Area BCP (Plan) * Next Steps Coffee Break Group Work Presentation by the Groups and Q&A Wrap up

Table A4-4. Topics of group works in the pilot areas

	Topics at group works in the pilot areas
Workshop 1	[Q1] Fundamental policy of Area Business Continuity [Q2] Critical Hazards to be considered in Area BCP/BCM

	[Q3] Critical problems for Business Continuity
Workshop 2	[Q1] Impacts on the local community and industry by Disaster [Q2] Critical Problems (Bottlenecks) for Area Business Continuity [Q3] Measures for Area Business Continuity
Workshop 3	[Topic 1] 1) Do you think that this plan is useful for the industry continuity of *** area? 2) Do you think which contents of this plan will be improved? [Topic 2] 1) Which organization is suitable for the owner/maintainer to promote Area BCP in **** area? 2) Which resources and system are needed to continue Area BCM? [Topic 3] 1) What activities do you expect in the next step of Area BCM?

Figure A4-2. Photos of TOT to train facilitators in the pilot areas

Figure A4-3. Photos of inputs from JICA Study Team in the workshops in the pilot areas

Figure A4-4. Photos of group work in the workshops in the pilot areas

The results of homework and group work discussion are documented to share them among stakeholders and to refer them to Area BCP.

For example, in the pilot areas, the following templates were provided for homework and group work in each workshop. In the homework each stakeholder answered with these templates, and in the group work facilitators summarized the results with these templates.

Table A4-5 Templates of homework 1 in the pilot area

Templates of homework 1 in the pilot area

AreaBCP Worksheet (1st)

○Please fill out, and reply to Ms. Akira Watanabe (Coordinator: ***@***.***.**) by October 24.
○The answers can be prepared through discussion among staff concerned. Not necessary to be authorized by the organization belonged. .
○On the 1st Workshop, total results of answers for each member will be introduced by JICA Study Team.

Name of Organization	
Address	
Name of Department	
Position of Respondent	
Type of Organization (☒=Yes: Single Select)	☐Central or Local government ☐Research institute ☐Industrial association (ex: Chamber of commerce and industry) ☐Lifeline operators (ex: Electricity, Gas, Water, Sewerage, Telecommunications,Wastedisposal) ☐Transportation operators (ex: Roads, Railways, Airports, Ports) ☐Industrial park administrator ☐Tenant company

1 Policy of AreaBCM

1-1 Your organization's policy of disaster mitigation or BCM

・Please answer your organization's attitude of **disaster mitigation or BCM**.(☑=Yes: Multiple Select)

☐In disaster, your organization would work to ensure safety of employees and regional residents.
☐In disaster, your organization would work to recover the own business early.
☐In disaster, safety and recovery of the regional community should be important for your organization.
☐Your organization wants to plan yourself on disaster mitigation or BCM in cooperation with lifeline and transportation operators.
☐Your organization wants to have leading the activities of AreaBCM, in cooperation with other organizations.
☐Others (the contents:)

1-2 The area's policy of AreaBCM

・The policy of AreaBCM will be written and agreed among local government, infrastructure operators, industrial parks, companies.
・The following is a draft by JICA Study Team. Please discuss with executives of your organization, and write the revised draft.

Draft by JICA Study Team	Your revised draft	Executives and date to be discussed
For the sustainable development of area industry, in emergency such as natural disasters that affect the entire area, in order to achieve continuity/rapid recovery of industry function, local government and Infrastructure operators, industrial parks, companies in the area would understand and share important information to promote their own BCM or disaster mitigation measures with cooperation.		Executives: Date:

Templates of homework 1 in the pilot area

2 Business continuity of your organization

2-1 Activities of BCM in your organization

・Did your organization formulate BCP? (☑=Yes: Single Select)

☐Formulated	☐Be formulating	☐Under a schedule to formulate	☐Not be formulating

2-2 Hazards to be considered by your organization

・Which hazards does your organization consider in your contingency plan or BCP? (Not only natural disasters)

Type of hazard (☑=Yes:Multiple Select)	Details of the hazard (ex: Flooding of the XX river)
☐Earthquake	
☐Volcanic eruption	
☐Tsunami	
☐Flood	
☐Storm surge	
☐Fire facilities	
☐Facility accident (ex: explosion, chemical leakage)	
☐Power failure	
☐Water outage	
☐Pandemic (infectious disease epidemic)	
☐Political unrest	
☐Terrorism	
☐Labor dispute	
☐Financial crisis	
☐Others	

2-3 Critical concerns in disasters of each organization

・What critical concerns is your organization anxious about for business continuity in disasters?

category	Critical concerns
Natural Environment (Terrain, River, Lake, Coast)	
Local community	
Employee (safety and work)	
Resources of each organization (Facilities and equipment, Information, funds)	
Market environment and Supply chain	
Lifeline and Transportation (including Telecommunications)	
Others	

3 Expectations for this Workshop

・Please answer that your organization expects to this workshop. (☑=Yes:Multiple Select)

☐I would like to study the method and advanced example of BCM.
☐I would like to know the impact assumed to be a natural disaster hazard of this area.
☐I would like to know the activity of BCM in the other organizations in this area.
☐I would like to activate communication between the organizations in this area about business continuity.
☐Others (the contents:)

Thank you for your cooperation.

Table A4-6 Templates of workshop 1 in the pilot area

Templates of workshop 1 in the pilot area

[Q1] Fundamental policy of Area Business Continuity

Please write the revised policy against the draft of JICA Study Team if necessary.

Draft by JICA Study Team	For the sustainable development of area industry, in emergency such as natural disasters that affect the entire area, in order to achieve continuity/rapid recovery of industry function, local government and Infrastructure operators, industrial parks, companies in the area would understand and share important information to promote their own BCM or disaster mitigation measures with cooperation.
Revised policy (Results of group work)	

[Q2] Critical Hazards to be considered in Area BCP/BCM

Please give either of the following marks in the column of *A to each hazard.

◎:Need to be considered at the top priority in Area BCP/BCM　○:Need to be considered at the second priority　×:No need to be considered

Types of hazards	*A	Comments in the group work (ex. reason)
☐Earthquake		
☐Volcanic eruption		
☐Tsunami		
☐Flood		
☐Storm surge		
☐Facility accident (ex: explosion, chemical leakage)		
☐Facility accident		
☐Power failure		
☐Water outage		
☐Pandemic (infectious disease epidemic)		
☐Political unrest		
☐Terrorism		
☐Labor dispute		
☐Financial crisis		
☐Others		

Templates of workshop 1 in the pilot area

[Q3] Critical problems for Business Continuity

What are the critical problems for business continuity under the disaster scenario shown by JICA Study Team ?

	Critical problems under the disaster situation	The information that participants want to know more.
Lifeline Infrastructure		
Transportation Infrastructure		
Human (Employee)		
Property (Facilities, equipment)		
Local community		
Others		

Table A4-7 Templates of homework 2 in the pilot area

Templates of homework 2 in the pilot area

Area BCP Worksheet (2nd)

○Please fill out, and reply to the Coordinator.
○The answer is preferable to be formal of your organization, but part of answer is well enough thought of the stuff.
○In the 2nd Workshop, total results of answers for each member will be introduced by JICA Study Team.

Name of Organization	
Address	
Name of Department	
Position of Respondent	
Type of Organization (☒=Yes: Single Select)	☐Central or Local government ☐Research institute ☐Industrial association (ex: Chamber of commerce and industry) ☐Lifeline operators（ex: Electricity, Gas, Water, Sewerage, Telecommunications, Waste disposal） ☐Transportation operators（ex: Roads, Railways, Airports, Ports） ☐Industrial park administrator ☐Tenant company ☐Other( )

1 Business Impact by Disaster

1-1 Damage of Business by Disaster and Recovery Time

・In the disaster presented by JICA study team at 1st WS, do you think how your business would be damaged and when your business would be recovered in the pilot area?

・ On the appropriate line in the following table, please fill in outline of the damage and time after the disaster.

Area and Assumed Disaster	Country: Vietnam	Pilot Area: the industrial agglomerated area at Hai Phong	Disaster: Storm surge (assumed by JICA study team)

【Local government】Please answer, only local government

Competent area and facility	Outline of the damage	Time until recovery after the disaster			Remarks
		Start of operation or construction to recover (☒=Yes: Single Select)	20-30% recovery of the function (☒=Yes: Single Select)	Nearly full recovery of the function (☒=Yes: Single Select)	
Rivers	[Breach of embankment] Please fill in additional:	☐Within the disaster day ☐Within 2-3 days ☐Within 1 week ☐Within 2-3 weeks ☐Within 1 month ☐Within 2-3 months ☐Within more 1 year ☐Unknown	☐Within the disaster day ☐Within 2-3 days ☐Within 1 week ☐Within 2-3 weeks ☐Within 1 month ☐Within 2-3 months ☐Within more 1 year ☐Unknown	☐Within the disaster day ☐Within 2-3 days ☐Within 1 week ☐Within 2-3 weeks ☐Within 1 month ☐Within 2-3 months ☐Within more 1 year ☐Unknown	Indonesia
Urban area	[Flood or Storm surge] Please fill in additional:	(Same as above)	(Same as above)	(Same as above)	Indonesia and Vietnam
Urban area	[Building damage by earthquake] Please fill in additional:	(Same as above)	(Same as above)	(Same as above)	Philippines

Templates of homework 2 in the pilot area

【Transportation infrastructure or lifeline operators】Please answer on the appropriate line, only the operator.

Item	Outline of the damage	Time until recovery after the disaster			Remarks
		Start of operation or construction to recover (☒=Yes: Single Select)	20-30% recovery of the function (☒=Yes: Single Select)	Nearly full recovery of the function (☒=Yes: Single Select)	
Road (general or highway)		☐Within the disaster day ☐Within 2-3 days ☐Within 1 week ☐Within 2-3 weeks ☐Within 1 month ☐Within 2-3 months ☐Within more 1 year ☐Unknown	☐Within the disaster day ☐Within 2-3 days ☐Within 1 week ☐Within 2-3 weeks ☐Within 1 month ☐Within 2-3 months ☐Within more 1 year ☐Unknown	☐Within the disaster day ☐Within 2-3 days ☐Within 1 week ☐Within 2-3 weeks ☐Within 1 month ☐Within 2-3 months ☐Within more 1 year ☐Unknown	
Railway (passenger or freight)		(Same as above)	(Same as above)	(Same as above)	
Port		(Same as above)	(Same as above)	(Same as above)	
Airport		(Same as above)	(Same as above)	(Same as above)	
Electric power		(Same as above)	(Same as above)	(Same as above)	
Water supply		(Same as above)	(Same as above)	(Same as above)	
Industrial water		(Same as above)	(Same as above)	(Same as above)	
Sewage		(Same as above)	(Same as above)	(Same as above)	
Gas supply		(Same as above)	(Same as above)	(Same as above)	
Telephone		(Same as above)	(Same as above)	(Same as above)	
Internet		(Same as above)	(Same as above)	(Same as above)	

【Industrial park or Tenant company】Please answer on the appropriate line, only industrial park or tenant company.

Item	Outline of the damage	Time until recovery after the disaster			Remarks
		Start of operation or construction to recover (☒=Yes: Single Select)	20-30% recovery of the function (☒=Yes: Single Select)	Nearly full recovery of the function (☒=Yes: Single Select)	
Industrial park		☐Within the disaster day ☐Within 2-3 days ☐Within 1 week ☐Within 2-3 weeks ☐Within 1 month ☐Within 2-3 months ☐Within more 1 year ☐Unknown	☐Within the disaster day ☐Within 2-3 days ☐Within 1 week ☐Within 2-3 weeks ☐Within 1 month ☐Within 2-3 months ☐Within more 1 year ☐Unknown	☐Within the disaster day ☐Within 2-3 days ☐Within 1 week ☐Within 2-3 weeks ☐Within 1 month ☐Within 2-3 months ☐Within more 1 year ☐Unknown	
Tenant company		(Same as above)	(Same as above)	(Same as above)	
Other (the contents:)		(Same as above)	(Same as above)	(Same as above)	

Templates of homework 2 in the pilot area

1-2 Weak point and Measures on Business Continuity

・Your business consists of many resources both inside and outside your organization.

・In the disaster presented by JICA study team at 1st WS, some resources would be damaged. Do you think which resources would be impediments to your business continuity?

・What measures do you take to the impediments for business continuity?

【Local government】Please answer, only local government.

Competent area and facility	Impediments		Measures to be taken for			
	Damages to be assumed	The Impact on the Area	Strengthening of organization or structure	Preparation of multiplexing or alternatives	Ready of emergency response	Others
Public building (Ex: city office, police station, fire station)						
Transportation infrastructure (Ex: roads, bridges)						
Disaster prevention facility (Ex: embankment, floodgate						
Urban area※						

※: Indonesia=flood, Vietnam=storm surge, Philippines=earthquake

【Transportation infrastructure or lifeline operators】Please answer on the appropriate line, only the operator.

Resources	Impediments		Measures to be taken for			
	Damages to be assumed	The Impact on your business	Strengthening of organization or structure	Preparation of multiplexing or alternatives	Ready of emergency response	Others
Employee (safety and attendance)						
Site ground, Facilities and equipment, Information, Funds(money)						
User, Fuel, Trading company						
Other Lifeline and Traffic (Including Telecommunication)						
Others						

Templates of homework 2 in the pilot area

【Industrial park or Tenant company】Please answer on the appropriate line, only industrial park or tenant company.

Resources	Impediments		Measures to be taken for			
	Damages to be assumed	The Impact on your business	Strengthening of organization or structure	Damages to be assumed	Impact to your business	Others
Employee (safety and attendance)						
Site ground, Facilities and equipment, Information, Funds(money)						
Customer, Supply chain						
Lifeline and Traffic (Including Telecommunication)						
Others						

1-3 The impact on Management or Governance

・In the disaster presented by JICA study team at 1st WS, your business or competent area and facility would be damaged.

・What impact would it be assumed on your company's top management or governance with the damage above?

【Local government】Please answer, only local government.

区分	Impact（☒=Yes: Single Select）						Remarks
Population (Casualties or Outflow)	☐No change almost	☐2-3%, decrease	☐About 10%, decrease	☐20-30%, decrease	☐Unknown	☐Others	
Local economy (Annual GDP)	☐No change almost	☐2-3%, decrease	☐About 10%, decrease	☐20-30%, decrease	☐Unknown	☐Others	
Security of the city	☐No change almost	☐Slightly worsened	☐Worsened	☐Greater worsening	☐Unknown	☐Others	

【Transportation infrastructure or lifeline operators】Please answer on the appropriate line, only the operator.

区分	Impact（☒=Yes: Single Select）						Remarks
Business performance (Only private operators)	☐Small impact	☐2-3%, Profit decrease	☐Zero or minus profit	☐Fear of bankruptcy	☐Unknown	☐Others	
Range and scale of services	☐No change almost	☐About 10%, decrease	☐20-30%, decrease	☐About 50%, decrease	☐Unknown	☐Others	

【Industrial park or Tenant company】Please answer on the appropriate line, only industrial park or tenant company.

区分	Impact（☒=Yes: Single Select）						Remarks
Business performance	☐Small impact	☐2-3%, Profit decrease	☐Zero or minus profit	☐Fear of bankruptcy	☐Unknown	☐Others	
Operation of the business site	☐No change almost	☐About 10%, decrease	☐About 50%, decrease	☐Closure or retreat	☐Unknown	☐Others	
Employment	☐No lay off	☐About 10%, lay off	☐About 50%, lay off	☐All lay off	☐Unknown	☐Others	

Templates of homework 2 in the pilot area

1-4 Other Disasters to consider

・The above questions are about Disaster presented by JICA study team at 1st WS.
・What disasters would make a major impact to your company management? In the disaster, what impact would be assumed?

Please answer, all organizations.

Disaster	Resources or facilities to be impediments	The impact on your business	The impact on your company's top management or governance

2 Request for Information

・For the following items, do you have any information to be provided to JICA study team?
・Please attach the information(English is preferred) with this homework .
・Can you present the information (native language or English) at 2nd WS?

Please answer, all organizations.

Item	Title of document	Remarks	Can you present the information at 2nd WS?
Assumption on disaster and damage [*1]			☐Yes ☐No
Resources or Measures for business continuity [*2]			☐Yes ☐No

[*1]Example: Flood or earthquake simulation, Survey on the damage of disaster prevention facility
[*2] Example: Outline of business continuity plan of your organization, Personnel and equipment for disaster response, Alternative business resources to be prepared for disaster

Table A4-8 Templates of workshop 2 in the pilot area

Templates of workshop 2 in the pilot area

[Q1] Impacts on the local community and industry by Disaster

In the disaster presented by JICA study team, what kind of impacts will be predicted on the local community and industry?

		Predicted Impacts
Local Community	Population (Casualty or Outflow)	
	Peace and Order (Security)	
	Community	
	Others	
Local Industry (Economy)	Production	
	Number of Companies (Ex. Bankruptcy)	
	Investment	
	Employment	
	Others	

[Q2] Critical Problems (Bottlenecks) for Area Business Continuity

What are the critical problems (Bottlenecks) for the local community and industry by Disaster?

	Critical Problems (Bottlenecks)
Natural Environment (Terrain, River, Lake, Coast)	
Lifeline Infrastructure	
Transportation Infrastructure	
Human (Employee)	
Property (Facilities, equipment)	
Local community	
Others	

Templates of workshop 2 in the pilot area

[Q3] Measures for Area Business Continuity

What kinds of measures should be taken in order to improve the capability of an effective business continuity in the area?

	Soft measures	Hard measures
Natural Environment (Terrain, River, Lake, Coast)		
Lifeline Infrastructure		
Transportation Infrastructure		
Human (Employee)		
Property (Facilities, equipment)		
Local community		
Others		

Table A4-9 Templates of homework 3 and workshop 3 in the pilot area

Templates of workshop 3 in the pilot area
[Topic 1] 1) Do you think that this plan is useful for the industry continuity of *** area? [Example of useful points] - We could learn about BCM and Area BCM though the process to make this plan. - We could understand the disaster risk and the bottlenecks for industry bottlenecks. - We had the attitude to improve the industry continuity with cooperation. 2) Do you think which contents of this plan will be improved? [Example of points to be improved] -The risk assessment of this plan will be improved though surveys of historic disasters. -The proposed measures will be update through examinations by each responsible organization. [Topic 2] 1) Which organization is suitable for the owner/maintainer to promote Area BCP in *** area? -Do you think *** is suitable? 2) Which resources and system are needed to continue Area BCM? [Example of resources for Area BCM] - Leadership of an owner organization, Commitment by top managers of member organizations - Specialists for Area BCM, risk assessment, facilitation of WS, review of management system - Arrangement by central/local governments, such as official authorization of Area BCP, official program to promote Area BCM - Budget to operate the WSs for Area BCM [Topic 3] 1) What activities do you expect in the next step of Area BCM? [Example of activities in this/next year] -More stakeholders will participate in WS and discussion between stakeholders. -Each member will confirm or modify contents of this plan though discussion within an organization. -Excise or training for disaster response will be held.

*1: Before workshop 3, the above topics were e-mailed to attendants with the draft plan so that they could read it and consider the topics in advance.

*2: At workshop 3, white papers were provided to summarize the results.

5. Developing Area BCP

In the pilot areas, stakeholders discussed key issues of Area BCP and the draft plan of Area BCP was developed through three workshops. And the draft plan was revised into Area BCP ver.1 by referring the results of workshop 3 and adjusting some issues with some organizations. Especially the identification of the leader of Area BCM was one of major issues in the revision because Area BCM has to be managed by the leader instead of JICA Study Team after then.

In the pilot areas, many parts of Area BCP ver.1 were general and qualitative because of the lack of necessary information and etc. It is expected that it will be more concrete and quantitative through Area BCM cycle.

Table A5-1. Example of Contents of Area BCP

Contents of Area BCP ver.1 *1	Workshop *2
1. Purpose of the Plan	Workshop 1
2. Scope of the Plan	
2.1 Organization	Workshop 3
2.2 Area	Workshop 1
2.3 Hazard	Workshop 1
2.4 Formulation Process and Version Management	Workshop 3
3. Understanding of the Area	
3.1 Stakeholders of the Area	Workshop 3
3.2 Structure of the Local industry	Workshop 2
3.3 Infrastructures in the Area	Workshop 1
3.4 Disaster Risks that threaten the Local Industry	Workshop 1
4. Impact Analysis of the Area	
4.1 Impact to the Area by Disaster	Workshop 1, 2
4.2 Concerns of the Industry Continuity	Workshop 2
5. Strategies for Industry Continuity	
5.1 Policy of Industry Continuity	Workshop 1, 3
5.2 Role of the Stakeholders	Workshop 3
6. Improvement Activities for Capability of Industry Continuity	
6.1 Category of Improvement Measures	Workshop 3
6.2 Progress Management of Improvement Measures	Workshop 2, 3
7 Implementation of the Plan	
7.1 Area BCM	Workshop 3
7.2 System of Implementing Area BCM	Workshop 3

Contents of Area BCP ver.1 *1	Workshop *2
7.3 Exercising and Reviewing	Workshop 3
7.4 Maintaining and Improving	Workshop 3
7.5 Reporting	Workshop 3
7.6 Issues and Items for Improvement	Workshop 3
7.7 Next Steps (Proposal)	Workshop 3
8 Definitions of Terms	

*1: As an example, contents of Area BCP ver.1 are shown in the above table.

*2: Each topic in the contents was discussed mainly in the above workshop.

6. Implementing and Reviewing

During the pilot project, the working group had a chance to review the plan developed through the procedures described in Chapters 4 and 5 of Appendix 2. Instruction for revising the plan and suggested topics for reviewing were as follows:

Instruction for Revision of Area BCP, Version 1

Objectives of Revision:

Area BCP version 1 for the pilot area, ---------- (name of the area, country), was prepared through a series of meetings with stakeholders in the area and three workshops attended by working group members of the area. The plan is requires further improvement to be considered reliable and workable.

The first step of improvement is reviewing and validating the plan by the working group members. The process of this reviewing and validating is also a good opportunity for advocating and disseminating Area Business Continuity Management (Area BCM) and Area BCP to other key staff of your organization.

Recommended Method of Revising:

A discussion based exercise is recommended. Bring key staff of your organization together, inform them the plan (Area BCP) and Area BCM, and discuss selected topics for revising and validating the plan.

Suggested topics for discussion for revision of the Area BCP is provided in Attachment 3.

Records of Revising Results:

You can edit the plan directly by using the file provided in Attachment 1. You are required to highlight locations of your revision by using the functions of your word processor.

A form of Activity Report is provided in Attachment 4 to summarize the meeting and outputs of your discussion.

The activity report also includes a section, Section 2, to summarize information of your organization regarding Area BCM and disaster management. These information will be tabulated in Area BCP, Version 2. Some of the topics in this section can be discussed in the meeting.

Expected Schedule of Revising:

Attachments:

1. Area BCP, Version 1
2. Suggested topics for revising the Area BCP, Version 1
3. Form of activity report

Suggested Topics for Revising Area BCP, Version 1

- Role and Responsibilities of Organization (Tables 3-1 and 5-2)
  - ✓ Revise roles and responsibilities of your organization. Those in Tables 3-1 and 5-2 give general descriptions. Please tailor them for you organization. Output of your discussion should be filled in Section 2 of Activity Report.
  - ✓ Request for other organizations
  - ✓ Additional organizations who should involve in Area BCM
- Important Infrastructure (Table 3-2)
  - ✓ Area BCP, Version 1 may have missed important infrastructure to consider. If so, you can add additional infrastructure to Table 3-2.
  - ✓ Confirm the management organizations in Table 3-2.
- Disaster Scenario (Table 3-3)
  - ✓ Do you need additional categories to describe disaster risks for your usage?
  - ✓ Besides the hazard used in Area BCP Version1, do you think other critical natural hazards exist for considering business continuity of the area?
- Bottlenecks (Table 4-2)
  - ✓ You can add bottlenecks critical for your business and/or organization.
  - ✓ You can also add impacts tailored to your business and/or organization.
- Measures (Table 6-3)
  - ✓ Do the measures presented in Table 6-3 contradict to the plans and measures of your organization?
  - ✓ You can add measures tailored to your business and/or organization.

You can also add measures planned or implemented by your organization.

■ Activities of Disaster Management by Your Organization

- ✓ What kinds of activities does your organization plan or implement for disaster management? Such as:
  - The reinforcement of major roads is planned to complete by 2020.
- ✓ Does your organization have BCP?
- ✓ What are critical problems in the disaster management activities of your organization? Such as:
  - Not sufficient reliable information of hazard and damage/recovery of transportation infrastructures/lifeline utilities
  - Not sufficient information of the method for formulating BCP
- ✓ What kinds of information related to disaster management of your organization can be provided to the working group for formulating Area BCP?

■ Additional Items for the Plan

- ✓ Does the plan miss important items to add or to consider?

■ Correction of Proper Nouns (Overall)

- ✓ Name of organization, locations, persons, and others may have spelled wrongly. Please correct them.

Appendix 3 References

Supplemental Volume

AHA Centre and JICA (2015): Area Business Continuity Plan (Area BCP), Version 2, Karawang and Bekasi, West Java, Indonesia, March 2015.

AHA Centre and JICA (2015): Area Business Continuity Plan (Area BCP), Version 2, Cavite, Laguna and the Sothern Part of Metro Manila, the Philippines, March 2015.

AHA Centre and JICA (2015): Area Business Continuity Plan (Area BCP), Version 2, Hai Phong, Viet Nam, March 2015.

AHA Centre and JICA (2015): Methodologies of Hazard Assessment / Used for the Pilot Study, March 2015.

AHA Centre and JICA (2015): Lessons Learned from the Extreme Natural Disasters, March 2015.

AHA Centre and JICA (2013): Report of Response to the 2013 Typhoon No. 3 in Haiphong, Viet Nam: Tropical Storm JEBI and other Typhoon, December 2013.

AHA Centre and JICA (2014): The Impact of January & February 2014 Jakarta Flood to the Industrial Parks in Jakarta and Bekasi, February 2014.

Country Report

AHA Centre and JICA (2015): Country Reports, Brunei, March 2015.

AHA Centre and JICA (2015): Country Reports, Cambodia, March 2015.

AHA Centre and JICA (2015): Country Reports, Indonesia, March 2015.

AHA Centre and JICA (2015): Country Reports, Laos, March 2015.

AHA Centre and JICA (2015): Country Reports, Malaysia, March 2015.

AHA Centre and JICA (2015): Country Reports, Myanmar, March 2015.

AHA Centre and JICA (2015): Country Reports, the Philippines, March 2015.

AHA Centre and JICA (2015): Country Reports, Thailand, March 2015.

AHA Centre and JICA (2015): Country Reports, Singapore, March 2015.

AHA Centre and JICA (2015): Country Reports, Vietnam, March 2015.

Report for the Pilot Areas

AHA Centre and JICA (2015): Risk Profile Reports ~ Bekasi and Karawang of Indonesia ~, February 2015.

AHA Centre and JICA (2015): Risk Profile Reports ~ Cavite, Laguna and Southern Part of Metro Manila of the Philippines ~, February 2015.

AHA Centre and JICA (2015): Risk Profile Reports ~ Hai Phong of Viet Nam ~, February 2015.

International Standard

ISO22301:2012 (Societal security --- Business continuity management systems --- Requirements)

ISO22320:2011 (Societal security --- Emergency management --- Requirements for incident response)

International Disaster Database

EM-DAT, The OFDA/CRED International Disaster Database, Université catholique de Louvain, Brussels, Belgium: http://www.emdat.be.

Pacific Rim Coordination Center Disaster Data: http://data.pacificrimnetwork.org/.

Global Unique Disaster Identification Number: http://www.glidenumber.net/glide/public/search/search.jsp.

National Oceanic and Atmospheric Administration (NOAA), National Geophysical Data Center (NGDC): http://ngdc.noaa.gov/hazard/hazards.shtml

Asian Disaster Reduction Center (ADRC), Disaster Information: http://www.adrc.asia/latest/index.php

Global Disaster Alert and Coordination System (GDACS): http://www.gdacs.org/resources.aspx.

Global Risk Data Platform: http://preview.grid.unep.ch/index.php?preview=home&lang=eng.