Natural Disaster Risk Assessment and Area Business Continuity Plan Formulation for Industrial Agglomerated Areas in the ASEAN Region

Final Report
Main Volume

June 2015

Japan International Cooperation Agency

OYO International Corporation
Mitsubishi Research Institute, Inc.
CTI Engineering International Co., Ltd.

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Location Map 1

Study Area : The 10 ASEAN Member States
(Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Vietnam)

Pilot Countries : Indonesia, the Philippines, Vietnam

Pilot Areas (Locations are shown by ○)

Indonesia : An industrial agglomerated area distributed over Karawang Regency, Bekasi Regency, Kota Bekasi, and the surrounding area

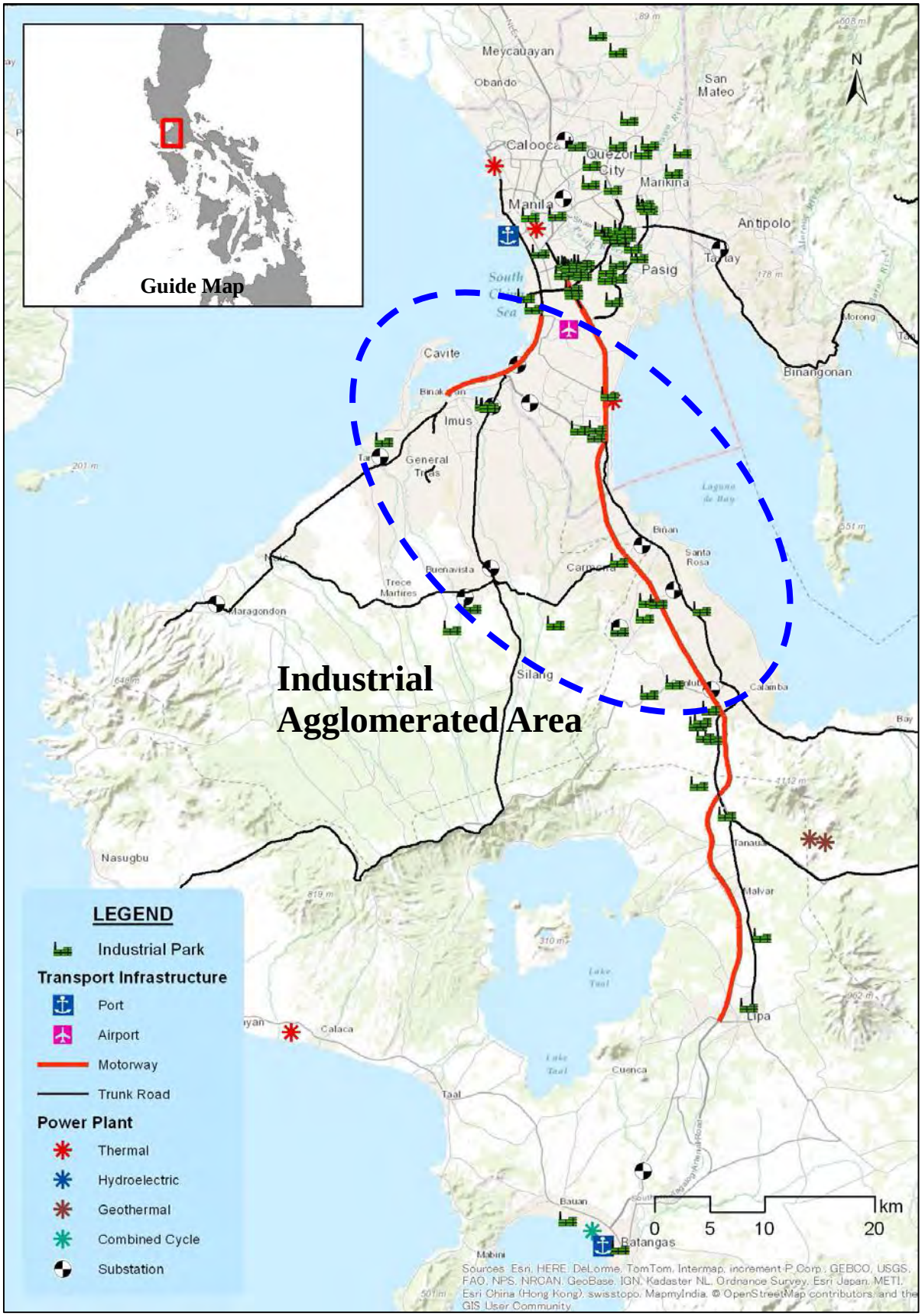
Philippines : An industrial agglomerated area distributed over Cavite State, Laguna State, the southern part of Metro Manila, and the surrounding area

Vietnam : An industrial agglomerated area distributed in Haiphong City and the surrounding area

Location Map 2

Pilot Area in Indonesia : An industrial agglomerated area distributed over Karawang Regency, Bekasi Regency, Kota Bekasi, and the surrounding area

Location Map 3



Pilot Area in the Philippines : An industrial agglomerated area distributed over Cavite State, Laguna State, the southern part of Metro Manila, and the surrounding area

Location Map 4

Pilot Area in Vietnam : An industrial agglomerated area distributed in Haiphong City and the surrounding area

Letter of Transmittal

June 2015

Mr. Kiyoshi KODERA
Vice President
Japan International Cooperation Agency

We are pleased to submit to you the final report on the Study on Natural Disaster Risk Assessment and Area Business Continuity Plan Formulation for Industrial Agglomerated Areas in the ASEAN Region. This report summarizes a study conducted in 10 ASEAN Member States over the period from February 2013 to June 2015 and has been prepared according to the contract between JICA and the Consortium of OYO International Corporation, Mitsubishi Research Institute, Inc., and CTI Engineering Co., Ltd.

This study has three components. Component 1 summarizes necessary information on social infrastructure and industrial agglomerated areas for vulnerability and natural disaster risk assessments in the 10 ASEAN Member States. For Component 2, we collected and analyzed necessary information on three pilot areas selected in Indonesia, the Philippines, and Vietnam, formulated an Area Business Continuity Plans (Area BCPs) for the pilot areas, and developed a basic concept of Area Business Continuity Management (Area BCM) and procedures to implement Area BCM. The “Common Tasks for Components 1 and 2” or Component 3 cover activities for the dissemination and promotion of the newly developed concept of Area BCM / Area BCP. We hope that the outcomes of this final report will become valuable information for the further dissemination and promotion of Area BCM / Area BCP in the 10 ASEAN Member States.

The Area BCM / Area BCP we proposed in this study are new concepts and comprehensive initiatives for reducing the risks of economic loss in areas from the impact of extreme natural disasters. To manage such effectively, public-private partnership, multi-sectoral collaboration, and the participation of enterprises of all sizes, from multinational enterprises to small-to-medium enterprises (SMEs), are expected. Information-sharing between these stakeholders and decision-making with the use of risk information (risk-informed decision-making) shall be basic approaches to conducting Area BCM / Area BCP.

We also prepared tools for conducting Area BCM / Area BCP as separate volumes of this report, including an Area BCM Guidebook, Country Reports on the 10 ASEAN Member States, and Risk Profile Reports on the pilot areas. We hope that these outputs will be of service to you as fundamental information and toolkits for disseminating and promoting Area BCM / Area BCP throughout the 10 ASEAN Member States and elsewhere.

In closing, we would like to express our heartfelt gratitude to the following entities for the tremendous support and cooperation they extended to us during our endeavor: JICA; the Advisory Committee members; the Ministry of Foreign Affairs of Japan; the Ministry of Economy, Trade and Industry of Japan; the Panel of Experts members of ASEAN Member States; the ASEAN Secretariat; AHA Centre; agencies and persons concerned from the 10 ASEAN Member States; and the parties and persons concerned in the pilot areas in Indonesia, the Philippines, and Vietnam.

Very truly yours,

Dr. Masakazu TAKAHASHI
Project Manger
The Study on Natural Disaster Risk Assessment
and Area Business Continuity Plan Formulation
for Industrial Agglomerated Areas in the ASEAN Region
OYO International Corporation

SUMMARY

Chapter 1 Outline of the Study

This Study has been implemented for the purposes of proposing Area Business Continuity Management (Area BCM), which is a new approach of business continuity to minimize economic impacts/losses of an area in times of catastrophic natural disasters and developing Area Business Continuity Plan (Area BCP) of the area.

The Study has three components; "Component 1", "Component 2" and "Common Tasks for Components 1 and 2" or "Component 3". "Component 1" consists of the collection, analysis, and provision of information on natural hazards, industrial agglomerated areas, and the social infrastructure of 10 ASEAN Member States, and assessment of natural disaster risks of those 10 countries. "Component 2", targeting pilot countries, namely Indonesia, the Philippines, and Vietnam, consists of collection, analysis, and provision of basic information of pilot areas in the countries, assessment of natural disaster risks of the pilot areas, formation of Area BCP of the pilot areas, and development of a basic concept and procedures of implementation of Area BCM. Dissemination and promotion activities of Area BCM/Area BCP are the main tasks of "Common Tasks for Components 1 and 2". The period of the Study was from February 2013 to June 2015.

This report is a record of activities during the Study Period. The concept of Area BCM, procedures of implementation of Area BCM, and tools to support implementation are provided in separate volumes of this report. As listed in Table i.1, these are main and supplementary volumes of the guidebook, and country reports of ASEAN Member States and risk profile reports of the pilot areas.

Table i.1 List of Tools for Area BCM

Document	Tools
Guidebook "Planning Guide for Area Business Continuity, ~ Area BCM Tool Kits ~" (Main Volume)	Part I Understanding Area BCM Part II Procedures of Area BCM Appendix 1 Glossary Appendix 2 Procedures of Formulating Area BCPs Applied in Pilot Areas Appendix 3 References
Guidebook "Planning Guide for Area Business Continuity, ~ Area BCM Tool Kits ~" (Supplementary Volume)	● Area BCPs of the Pilot Areas (Documented Plans) ✓ An industrial agglomerated area covering Karawang Regency, Bekasi Regency and Kota Bekasi, and the surrounding area in Indonesia ✓ An industrial agglomerated area covering Cavite State, Laguna State and the southern part of Metro Manila, and the surrounding area in the Philippines ✓ An industrial agglomerated area covering Haiphong City and the surrounding area in Vietnam ● Methodologies of Hazard Assessment / Used for the Pilot Studies ● Lessons Learned from Extreme Natural Disasters ● Examples of Disaster Review Reports ✓ Report of Response to the 2013 Typhoon Category No. 5 in Haiphong, Vietnam: Tropical Storm Jebi and other Typhoons, JICA and AHA Centre, December 2013, AHA Centre and JICA

	✓ The Impact of January & February 2014 Jakarta Flood to the Industrial Park in Jakarta and Bekasi, AHA Centre and JICA, February 2014
Reference	● Risk Profile Report ✓ For above-mentioned three pilot areas ● Country Reports ✓ For Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam

Chapter 2 Advisory Meetings for the Study

Since the Study has a nature of research to develop the new concept of Area BCM / Area BCP and the implementation procedures, the advisory committee of Japan and the panel of experts of ASEAN were established in order to receive knowledge, experiences and advices from experts and professionals of both Japan and ASEAN countries.

Table i.2 Outline of Advisory Meetings

Name	Number of Meetings	Member	Main Points of Discussion
Advisory Committee Japan	6	9 members. Experts and professionals of Japan on disaster risk reduction, hazard and risk assessments and BCP	● Concept and implementation procedures of Area BCM / Area BCP ● Approaches for the pilot study in the pilot areas ● Methodologies of hazard and risk assessments ● Dissemination and promotion methods to ASEAN regions and others
Panel of Experts ASEAN	4	14 members. (from Indonesia, Malaysia, the Philippines, Singapore, Thailand and Vietnam) Experts and professionals of ASEAN countries on disaster risk reduction, hazard and risk assessments and BCP from public and private sectors, and academics	● Current status of implementation of BCM / BCP in ASEAN countries ● Concept and implementation procedures of Area BCM / Area BCP ● Methodologies of hazard and risk assessments ● Introduction of local features into Area BCM / Area BCP and hazard and risk assessments ● Approaches for the pilot study in the pilot areas ● Dissemination and promotion methods to ASEAN region and others

Various professional advices on the discussion points summarized in Table i.2 were provided from the advisory committee. Typical advices on the dissemination and promotion methods of Area BCM / Area BCP include:

- The formation of Area BCP is not the goal. It is one of the processes in the Area BCM cycle to consecutively improve capacity of stakeholders in the area.
- In the current Pilot Study, the study team of JICA supported the most activities of Area BCM. It is crucial to develop the system and capacity of the countries to disseminate and promote widely Area BCM in the ASEAN region.

- The most important point is bringing in a wide range of stakeholders and related organizations/individuals by stressing the importance and necessity of Area BCM in the ASEAN region.
- It is important to clarify who is (are) responsible for what in Area BCM in each country.
- The political will and interest regarding Area BCM mainly from the national government are indispensable for promotion of Area BCM in the country.
- It is important that the AHA Centre acts as an information center for all ASEAN regions.
- Developing the concept and procedures of Area BCM according to the international standard ISO22301 is important when considering the promotion of Area BCM in the ASEAN region. The standardization, such as the guidebook prepared by the Study, is essential for this objective.
- Backup by legalization for implementation is another important approach to promote Area BCM.
- The guidebook is required to be concrete, detailed and easy to understand, and should be easily accessible to the public.
- Maintenance and update of the guidebook, and information and data are necessary so that other industrial agglomerated areas in the countries of ASEAN and other regions can refer to them when they start their Area BCM.

Chapter 3 Survey in 10 ASEAN Countries

Information of 10 ASEAN countries, which is necessary for implementation of Area BCM and formulation of Area BCP, was collected from open sources and compiled. They are on:

1) Natural disaster risks,
2) Industrial agglomerated areas,
3) Transport infrastructure and lifeline utilities,
4) Legal framework regarding disaster risk management and BCP, and
5) Current state of implementation of BCP.

Hazard and risk assessments were also carried out by using the collected information. The information and data with position information are compiled in a GIS database and presented in GIS maps.

Information collected and complied is summarized in country reports. They are separated by country. An example of the contents of a report is shown in Table i.3.

Table i.3 Contents of Country Report (the Philippines)

Chapter 4 Survey in the Pilot Countries

Field survey, hazard and risk assessments, and preparation of disaster scenarios were conducted for pilot areas selected in the pilot countries. The pilot areas are:

- Indonesia: An industrial agglomerated area distributed over Karawang regency, Bekasi regency and Kota Bekasi, and the surrounding area,
- Philippines: An industrial agglomerated area distributed over Cavite state, Laguna state and the southern part of Metro Manila, and the surrounding area, and
- Vietnam: An industrial agglomerated area distributed in Haiphong city and the surrounding area.

The results are summarized in risk profile reports prepared separately for three pilot areas. An example of contents of the report is shown in Table i.4.

Table i.4 Contents of Risk Profile Report (Hai Phong of Vietnam)

1 Disaster Risks of the Pilot Area 1.1 Overview 1.2 Identification of Predominant Hazard 1.3 Disaster Risk by Storm Surge and Flood 1.4 Information Sources of Hazard and Risk **2 Natural Hazards in the Pilot Area** 2.1 Flood 2.2 Typhoon/ Meteorological Hazard 2.3 Storm Surge 2.4 Earthquake 2.5 Tsunami 2.6 Volcano **3 Outline of Natural Hazard Assessments** 3.1 Seismic Hazard Assessment 3.2 Tsunami Hazard Assessment 3.3 Flood Hazard Assessment 3.4 Storm Surge Assessment	**4 Profile of the Pilot Area** 4.1 Outline of the Pilot Area 4.2 Outline of the Local Authority 4.3 Present State of Industrial Agglomerated Area 4.4 Situation of Transport Infrastructures 4.5 Situation of Lifeline Facilities and Public Services 4.6 Economic Relations with Neighboring Regions and Japan 4.7 Situation of Implementation of BCP in Vietnam 4.8 Current State of the Disaster Risk Management **Appendix Details of Natural Hazard Assessments** A.1 Seismic Hazard Assessment A.2 Tsunami Hazard Assessment A.3 Flood Hazard Assessment A.4 Storm Surge Assessment

Chapter 5 GIS Database

The GIS database was created using the information and data collected in the Study. The GIS database consists of the following 2 elements.

- Element 1: Database for ASEAN 10 countries
- Element 2: Database for three pilot areas

Element 1 consists of basic information for the country reports in this Study. One distinctive feature of Element 1 is the collection of past records of natural disasters including earthquakes, tsunamis, volcanos, floods, tropical cyclones and landslides. The records were presented in GIS maps. Overlaying infrastructures such as roads, railways, airports, ports, dams or power stations, and industrial agglomerated areas on these natural disaster layers in GIS can be used as important information for decision making in the process of Area BCM. Further, existing studies on natural disasters were summarized in formatted sheets, which were linked to the features on GIS maps.

Element 2 is a summary of information and data collected for the 3 pilot areas in Indonesia, the Philippines, and Vietnam. In workshops held in these 3 pilot areas, the compiled information and data were used for decision making in Area BCM and for preparation of Area BCP.

One of the important tasks of the Study was the transferring of the GIS database to the ASEAN Coordinating Centre for Humanitarian Assistance (AHA Centre). AHA Centre is an institution of

ASEAN Secretariat, whose main mission is the coordination in response to disasters that occur in the ASEAN region. Installation of equipment and various computer systems provided by the assistances of Japan-ASEAN Integration Fund (JAIF) and United States Agency for International Development (USAID) was completed in the operation room of AHA Centre. Discussions among the concerned countries with the support of this equipment and computers have been conducted through the real-time monitoring of disaster situations.

Various information collected in ASEAN countries and in the pilot areas during the Study was provided to AHA Centre- this is considered to enhance the capacity of AHA Centre- as the concept of Area BCM developed in this study focuses on information sharing among the stakeholders of the ASEAN countries, and risk-informed decision making by using a wide scope of information.

The GIS database provided to AHA Centre by this Study was formulated for Area BCM; that means for mitigation and prevention measures before the disasters. It can also be used as a part of emergency response operations. In fact, during the emergency response operation to counter Typhoon no. 22 (Hagupit) that landed on the Philippines in early December, 2014, information from some parts of this GIS databases were utilized such as to present evacuation statuses.

Chapter 6 Development of the Area BCP in the Pilot Area

Area BCP has been developed for the pilot areas of Indonesia, the Philippines, and Vietnam. The objective of the pilot study was to develop the concept and procedures of implementation of Area BCM. In the pilot areas, besides the development of Area BCPs, a focus was also placed on the stakeholders of the pilot areas to understand the concept and the implementation procedure, and to experience the procedure of establishing Area BCP.

Area BCP, a planning document, has been developed in each pilot area by following these steps:

- Organizing a working group,
- Developing Area BCP
- Revising Are BCP

A series of meetings and workshops were conducted by participating stakeholders of Area BCM. The stakeholders are diverse, such as ministries and agencies of the national government, local governments, operators of transport infrastructure and lifeline utilities, administrators of industrial parks, companies, governmental research institutes, universities, professional societies, and organizations of the private sector, such as the national and local chambers of commerce and industry. Meetings and seminars have been held to establish a working group prior to the Area BCP workshops.

The stakeholders in the working group were divided into a leader, members, and supporters. The leader is an owner of Area BCM / Area BCP, and has a key role in promotion, implementation and maintenance of Area BCM / Area BCP. The members are the stakeholders in the pilot area, who develop Area BCP by taking part in Area BCM. The supporters include the ministries and agencies of

the national government, governmental research institutes, universities, professional societies and the national chambers of commerce and industry, who provide information, experiences and technical advices for the implementation of Area BCM.

Table i.5 Leaders and the Number of Organizations to Participate the Working Group

Pilot Country	Leaders*	Members	Supporters
Indonesia	● Local Planning and Development Agency (BAPPEDA), Province of West Java	39	14
Philippines	● Philippines Economic Zone Authority (PEZA) ● Office of Civil Defence (OCD) ● Department of the Interior and Local Government (DILG) ● Metropolitan Manila Development Authority (MMDA) ● National Economic Development Authority (NEDA)	29	9
Vietnam	● Haiphong People's Committee (HPPC)	25	11

* Institutions selected as leaders were based on discussions in the working groups.

Planning, development, documentation and review of Area BCP were conducted through 4 steps of works, which correspond to the Area BCM phases. Although workshops were held only once in per step due to time constraints of operations, workshops shall in fact be held on a frequent basis.

Table i.6 Steps to develop and improve Area BCP

Steps	Tasks
1. Understanding the area	● Understood natural conditions, natural hazards, disasters risks, transport infrastructures and lifeline utilities in pilot areas by using GIS maps. ● Discussed about potential hazards affecting seriously the industrial agglomerated area, impacts of disasters on business activities and the limitations of BCPs of individual organizations.
2. Determining Area BCM strategy	● Based on the above risk information and discussions, discussed the impacts on industrial agglomerated areas in event(s) of natural disasters, challenges of business continuity in the area and the reduction measures to take.
3. Developing Area BCP	● Prepared a draft version of Area BCP based on discussions at the previous workshops. ● Received approval in the working group.
4. Reviewing Area BCP	● The members brought the draft Area BCP back to respective organizations for review and revision. ● Revised version of Area BCP was approved in the workshop.

A sample of contents of Area BCP is shown in Table i.7.

Table i.7 Example of Contents of Area BCP (Version 1)

1. Purpose of the Plan	**6. Improvement Activities for Capability of Industry Continuity**
2. Scope of the Plan	6.1 Category of Improvement Measures
2.1 Organization	6.2 Progress Management of Improvement Measures
2.2 Area	**7. Implementation of the Plan**

In the pilot study, Area BCPs were developed through workshops with the cooperation of stakeholders. The following points may be mentioned as issues for improvement.

- The ministries and agencies of the national government and/or local government are required to act as leader. Prior to entering Area BCM, coordination among the potential candidates for the position of leader is required, and roles of the leader, members and supporters should be clearly defined.
- In the pilot study in three countries, participation from the private sector to the working groups was not sufficient. Incentives for the private sector may be required to encourage participation to Area BCM.
- Most of the participants attended the workshops as individuals. More discussions and consensus building within their organizations was required. Approach to management of the organizations is required to have strong support to Area BCM.
- In this pilot study, the study team of JICA played active roles in implementing Area BCM. Training of local coordinators is required to replace the roles of the study team of JICA.
- For smooth implementation of the workshops, the role of the facilitators is important. In the pilot study, local consultants and university students played as facilitators. For promotion of Area BCM, facilitators are expected to be trained.
- Area BCPs formulated by the pilot study were the plans recognized only within the working group members, not by other organizations in the areas. Area BCP is expected to be authorized by the local government or relevant organization who administers the industrial agglomerated area concerned in order to extend more involvement to Area BCM by the organizations of the area.
- Area BCPs formulated by the pilot study were the first trials in the area. It is expected that the stakeholders of the areas will continue the approach of Area BCM and revise Area BCPs repeatedly.
- Points of improvement of Area BCPs include revision of bottlenecks and measures that reflect more realistic conditions, consideration of newly emerging risks, such as dam break for the pilot area in Indonesia, and the selection of Area BCM strategy and measures based on the cost-benefit analysis, quantitative analysis of social and industrial impacts, and analysis of supply chain.

Chapter 7 Propose of Area BCM and Preparation of the Guidebook

Based on the experiences and lessons obtained during the forming of Area BCPs in the pilot areas in Indonesia, the Philippines, and Vietnam, a concept and the procedures of implementation of Area BCM have been established and proposed. A guidebook has been prepared, which describes the concept, benefits, utilization and procedures of Area BCM, with the purpose of applying Area BCM to other industrial agglomerated areas in the ASEAN region and elsewhere.

Area BCM is defined as "a management process that helps to manage the risk of continuity/early recovery of businesses of an area in an emergency, such as natural disasters that affect the entire area". The proposed process of Area BCM is composed of 5 phases. The stakeholders of the area repeat the process and improve Area BCM by following the cycle shown in Figure i.1.

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

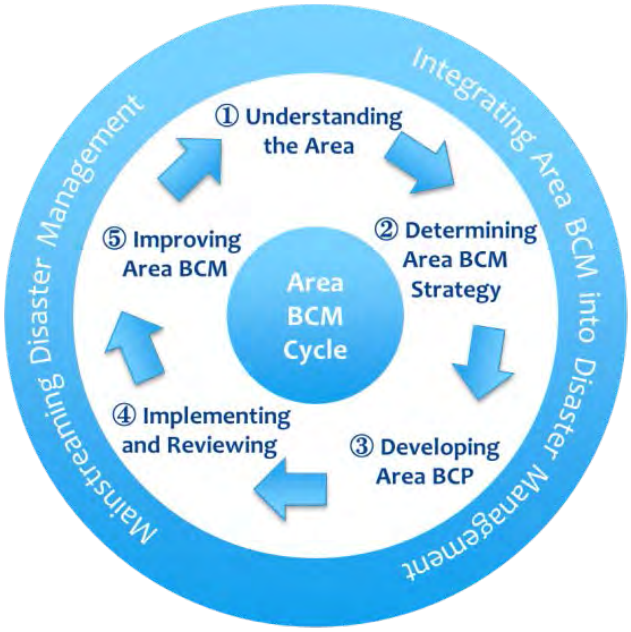


Figure i.1 Cycle of Area BCM

Approaches of Area BCM is applicable not only to the ASEAN countries, but also to countries in other parts of the world. An industrial agglomerated area can be anything from a single industrial park to an industrial area that crossborder several administrative areas. Not only limiting to natural disasters, it could also be applied to other types of disasters caused by biological hazard and/or technological hazard.

Other benefits of Area BCM to be emphasized are as listed below:

- Collaborative and cooperative approach by stakeholders of an area. This includes public-private partnership, multi-sectoral involvement and participation from multinational enterprises to small and medium enterprices (SMEs);
- Information sharing among stakeholders;
- Risk-informed decision making; and
- Highlighting importance of critical infrastructure.

Area BCM is an approach to connect efforts of individual organizations and the development of an area. For individual organizations, a participant to Area BCM will contribute to promote and improve their BCM and measures for disaster risk reduction. Advancement of Area BCM and integration with a local disaster risk reduction plan would lead to the sustainable development of the area.

The guidebook was prepared for stakeholders in the ASEAN region and others to start and implement Area BCM for their areas. The guidebook describes step-by-step procedures to implement Area BCM along the five phases of the Area BCM cycle (Figure i.1). Besides the guidebook, tools were developed to support implementation of Area BCM. Contents of the guidebook are shown in Table i.8.

Table i.8 Contents of Guidebook

Main Volume **I Understanding Area BCM** 1 Introduction 1.1 Why is Area BCM Necessary? 1.2 Purpose and Scope of the Guidebook 1.3 Using This Guidebook 2 Area Business Continuity Management 2.1 What is Area BCM? 2.2 Integrating Area BCM into Your Approaches 2.3 Who are Stakeholders of Area BCM? 2.4 How to Implement Area BCM 2.5 Benefits of Area BCM **II Procedures for Area BCM** [Phase 1] 3 Understanding the Area 3.1 What is an Area 3.2 Knowing Stakeholders 3.3 Knowing the Area 3.4 Assessment of Hazards and Risks [Phase 2] 4 Determining Area BCM Strategy 4.1 Disaster Scenario Creation 4.2 Individual Business Impact Analysis (Individual BIA) 4.3 Area Business Impact Analysis (Area BIA) 4.4 Identifying Bottlenecks of the Area 4.5 Determining Objectives of Area Business Continuity 4.6 Planning Activities of Improvement	[Phase 3] 5 Developing Area BCP 5.1 Developing Area BCP 5.2 Contents of Area BCP [Phase 4] 6 Implementing and Reviewing 6.1 Implementing 6.2 Reviewing [Phase 5] 7 Improving Area BCM 7.1 Improving Area BCM. 7.2 Documentation of Improving Process **Appendices** Appendix 1 Glossary of Terms Appendix 2 Procedures for Developing Area BCP in the Pilot Areas Appendix 3 References **Supplementary Volume: Tools for Area BCM** Tool 1 Area BCPs Prepared for the Pilot Areas Tool 2 Methodologies of Hazard Assessment / Used for the Pilot Study Tool 3 Lessons Learned from the Extreme Natural Disasters Tool 4 Samples of Lesson Learned Report

The following points are mentioned as future challenges of the Guidebook:

- This guidebook is expected to be continually revised. In the pilot study, the phases of the Area BCM cycle, “Understanding the Area”, “Determining Area BCM Strategy” and "Development of Area BCP" have been exercised and the experiences and lessons learned in these phases were incorporated into the guidebook. The guidebook should be revised after completion of the phases “Implementing and Reviewing” and “Improving Area BCM” by the stakeholders in the pilot areas in Indonesia, the Philippines, and Vietnam.
- Revision of the guidebook should be continued when experiences and lessons are obtained from other areas of the ASEAN region and elsewhere.
- Awareness of Area BCM in the ASEAN region, even in the pilot countries, is not high. Continuous efforts are necessary for dissemination and promotion of Area BCM by using the guidebook, tools and other materials produced by the pilot study.

Chapter 8 Dissemination and Promotion of the Outcomes (Seminars and Workshops)

A series of seminars and workshops listed in Table i.9 were planned and conducted in the pilot areas and/or the capital of the pilot countries, namely Indonesia, the Philippines, and Vietnam, to disseminate and promote Area BCM and to introduce outcomes of the Study. The 4th Practitioner’s Seminar was conducted in Bangkok, Thailand.

Table i.9 List of Seminars and Workshops Performed

Name of Seminar and Workshop	Number of Events	Participants	Subjects
Practitioner’s Seminar	4	Practitioners of national planning agency, national disaster management agency and ministry of industry or investment of ASEAN 10 countries	● Introduction and dissemination of Area BCM/ Area BCP, ● Introduction of the outcomes of the study
ASEAN Workshop	1	Executive members of national disaster management agency of ASEAN 10 countries	● Introduction and dissemination of Area BCM/ Area BCP, ● Introduction of the outcomes of the study
Progress Seminar	3	National government, local government, operators of infrastructure, private companies, researchers of Indonesia, the Philippines, Vietnam	● Intermediate reporting of outcomes of the study
Final Seminar	5	National government, local government, operators of infrastructure, private companies, researchers of Indonesia, the Philippines, Vietnam Two seminars were conducted at each country. One was targeted the national level and the other for the pilot area. (In the Philippines, one seminar was held for both targets.	● Presentation of outcomes of the study
AHA Centre Hazard Workshop	1	Young staff of national disaster management agency of ASEAN 10 countries	● Training of hazard and risk assessments

It was found through the Q/A sessions, discussions and questionnaires at the seminars that the participants deepened their understanding of the concepts and benefits of Area BCM / Area BCP. On the other hand, many participants requested more detailed information to understand formulation, maintenance and implementation of Area BCM. Since the study is completed and more experiences and lessons have been gained, it is possible to use more concrete and detailed information in the future dissemination and promotion events of Area BCM / Area BCP.

Chapter 9 Dissemination and Promotion of the Outcomes (Preparation of Dissemination Materials)

The dissemination and promotion materials, listed in Table i.10, were developed and utilized in the study to disseminate and promote Area BCM / Area BCP.

As a part of Area BCM awareness activities, the promotional movie, which is 4 minutes and 44 seconds long, was produced, and has been screened during the seminars, workshops and individual meetings. In addition, this movie has been uploaded to the URL (http://youtu.be/ubjh8JIUWwk) in response to requests from the attendants for their promotion activities.

The newsletter has been published 8 times from edition 0 to 7 during the study period in four languages: Japanese, English, Indonesian, and Vietnamese. Approximately 100 copies have been distributed within ASEAN countries as well as at the seminars, workshops and meetings.

Table i.10 List of Dissemination and Promotion Materials

Name	Number	Target	Contents
Promotional movie	1	High level officials of ministries and agencies of national governments and local government, policy makers, management of private enterprises, academic society, professional society, chamber of commerce and industry, international organizations, working group members and others	● Necessity and benefits of Area BCM / Area BCP ● Concept of Area BCM
Newsletter	8	Ministries and agencies of national governments and local government, private enterprises, academic society, professional society, chamber of commerce and industry, international organizations, working group members and others	● Activities of the study ● Educational articles on natural hazards and disasters, and Area BCM / Area BCP ● Future activities of the study

Chapter 10 Dissemination and Promotion of the Outputs (Attendance at Meetings)

The information of Area BCM/BCP proposed in this project and the results of this project was transmitted to ASEAN countries at the following 3 types of meetings.

Table i.11 List of meetings for dissemination and promotion

Name	Attendants	Date	Venue
ACDM Workshop	ASEAN Secretariat, AHA Centre and two participants each from national disaster management agency of Cambodia, Indonesia, the Philippines, and Vietnam	24 April, 2013	Jakarta, Indonesia
ASEAN Forum	Staff of disaster management agencies of ASEAN countries	19 March, 2013	Bangkok, Thailand
JSPP21 International Disaster Management Course	Staff of disaster management agencies of ASEAN countries (20-30 persons)	17 January, 2014 5 February, 2015	Singapore

Chapter 11 Training of Junior Researchers

Three junior researchers from the pilot countries (one each from Indonesia, the Philippines, and Vietnam) were selected. The training of the junior researchers on formulation of Area BCM / Area BCP were conducted through various activities, such as seminars and workshops of this study.

The junior researchers conducted the following activities mainly in their respective home countries.

- Attended and supported various meetings and seminars which were held in their home country as part of the study.
- Assisted preparations of the workshops (including coordination with related organizations); provided administrative support at the functions; and acted as a facilitator at workshops of Area BCM.
- Attended the 3rd panel meeting held in Hanoi, Vietnam, and the 1st Junior Researchers' Meeting held at the same time of the panel meeting; presented their activities; and participated the discussion regarding usage of experiences in their research activities.
- Prepared the activity report.

Through the training, junior researchers have gained a better understanding of Area BCM / Area BCP, and hazard and risk analyses. In particular, they have learned the basic concept of Area BCM / Area BCP, various methodologies of hazard analysis and disaster risk analysis, disaster risks in the ASEAN region and especially in the pilot countries, and the current situation of BCP implementation in the ASEAN region. They have proposed how to utilize such information in their work and research. In addition, they were encouraged to communicate and collaborate with other junior researchers and experts from various countries, met at the junior researchers' meetings, and the meetings of panel of experts. They have also been actively involved in the discussions at those meetings, and proposed suggestions and comments to improve Area BCM / Area BCP.

It is expected that the junior researchers would utilize experience and knowledge gained through this training, for activities such as to disseminate the concept of Area BCM / Area BCP, and to support the continuation of the approach in their country in the future.

Chapter 12 Conclusions and Recommendations

The pilot study has been implemented in the representative industrial agglomerated areas in Indonesia, the Philippines, and Vietnam among ASEAN Member States for the purposes of establishing the concept and the procedures of implementation of Area Business Continuity Management (Area BCM). Area Business Continuity Plans (Area BCP) for the pilot areas were formulated in the process of Area BCM. As Area BCM / Area BCP were new concepts an emphases was placed on dissemination and promotion in the pilot areas, the pilot countries, and ASEAN Member States.

In this chapter, the outcomes of the study are summarized as conclusions. These include the proposed concept and procedures of implementation of Area BCM, the guidebook and the tools to support implementation of Area BCM, the country reports and risk profile reports for risk-informed decision making, the trials of Area BCM for the pilot areas and the dissemination and promotion activities during the study period.

Recommendations are given for (1) Area BCM / Area BCP, (2) implementation of Area BCM, (3) risk-informed decision making, and (4) challenges and recommendations for promoting Area BCM. In this summary, recommendations for (4) challenges and recommendations for promoting Area BCM are selected as the last words.

Area BCM is a new concept proposed in the study, and the procedure of implementation is still under development. Therefore, it can be said unfortunately that the recognition of its importance and necessity is low in the pilot countries and even in the pilot areas. The activities of dissemination and promotion of Area BCM shall continue even after the completion of the study.

- In the pilot areas, the members of the working groups established during the pilot study should play the key role to continue the approaches, such as the improvement of their Area BCMs and the revision of their Area BCPs. It is expected that the continuous approach would deepen the support for Area BCM from a wide range of private enterprises, industrial parks, local governments, operators of transport infrastructure and lifeline utilities, and others.
- For dissemination and promotion in the pilot countries, strong interest and collaboration are the key factors from:
    - Ministries and agencies of the national governments in charge of planning; disaster management; industry; small and medium enterprises (SMEs); local governments and others,

- Local governments; technical organizations such as governmental research institutions, universities and professional societies; and organization of private sector including the national chamber of commerce and industry, and other industry groups.

- It is advisable that the dissemination and promotion of Area BCM should go hand in hand with that of the BCMs of individual companies and organizations.

- For the dissemination and promotion among ASEAN Member States, it is important to increase the number of approaches of Area BCM within the region. The strong interest expressed by the government of Thailand is encouraging. It is important to share the outcomes, experiences, and lessons from the pilot countries, namely Indonesia, the Philippines, and Vietnam, as well as from Thailand with other member states through the system of ASEAN Secretariat. AHA Centre can play an important role to accumulate, share and disseminate information on hazards and risks. It can be considered to use other frameworks of Asia, such as APEC and ESCAP, for dissemination and promotion.

- The dissemination and promotion of Area BCM worldwide will require the involvement and collaboration of numerous institutions. As experienced with community based disaster risk reduction and school disaster risk reduction, which have been widely spread, involvement of UN institutions, international organizations, donor countries, NGOs and others are required for the promotion of Area BCM. In addition to these institutions and organizations, support from the private sector is crucial for Area BCM.

List of Reports and Materials Prepared by the Study

Final Report

JICA (2015): Final Report, "The Study on Natural Disaster Risk Assessment and Area Business Continuity Plan Formulation for Industrial Agglomerated Areas in the ASEAN Region", Main Volume, June 2015. (in English and Japanese)

JICA (2015): Final Report, "The Study on Natural Disaster Risk Assessment and Area Business Continuity Plan Formulation for Industrial Agglomerated Areas in the ASEAN Region", Appendices, June 2015. (in English)

Guidebook

AHA Centre and JICA (2015): "Planning Guide for Area Business Continuity, ~ Area BCM Toolkits ~", Version 2, Main Volume, March 2015. (in English, Bahasa Indonesia and Vietnamese)

AHA Centre and JICA (2015): "Planning Guide for Area Business Continuity, ~ Area BCM Toolkits ~", Version 2, Supplemental Volume, Tools for Area BCM, March 2015. (in English)

Tool 1 in Supplemental Volume of Guidebook

Local Planning and Development Agency, Province of West Java (2014): Area Business Continuity Plan (Area BCP), Version 2, Karawang and Bekasi, West Java, Indonesia, November 2014. (in English and Bahasa Indonesia)

PEZA, OCD, DILG, MMDA and NEDA (2014): Area Business Continuity Plan (Area BCP), Version 2, Cavite, Laguna and Metro Manila, the Philippines, November 2014.

Hai Phong People's Committee (2014): Area Business Continuity Plan (Area BCP), Version 2, Hai Phong, Viet Nam, December 2014. (in English and Vietnamese)

Tool 2 in Supplemental Volume of Guidebook

Methodologies of Hazard Assessment / Used for the Pilot Study.

Tool 3 in Supplemental Volume of Guidebook

Lessons Learned from the Extreme Natural Disasters.

Tool 4 in Supplemental Volume of Guidebook

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, Summary of Information on ASEAN Member States, March 2015.

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

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

AHA Centre and JICA (2015): Country Report, Indonesia, March 2015. (in English and Bahasa Indonesia)

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

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

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

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

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

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

AHA Centre and JICA (2015): Country Report, Vietnam, March 2015. (in English and Vietnamese)

Risk Profile Report (Report for the Pilot Areas)

AHA Centre and JICA (2015): Risk Profile Report ~ Bekasi and Karawang of Indonesia ~, February 2015. (in English, Bahasa Indonesia and Japanese)

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

AHA Centre and JICA (2015): Risk Profile Report ~ Hai Phong of Viet Nam ~, February 2015. (in English, Vietnamese and Japanese)

GIS Database

GIS Database of Risk Assessment Results for ASEAN and its Countries.

Promotion Movie

Area BCM in ASEAN. (http://youtu.be/ubjh8JIUWwk)

Newsletters

A-BCP News, No. 0, July 2013. (in English, Bahasa Indonesia, Vietnamese and Japanese)

A-BCP News, No. 1, February 2014. (in English, Bahasa Indonesia, Vietnamese and Japanese)

A-BCP News, No. 2, January 2014. (in English, Bahasa Indonesia, Vietnamese and Japanese)

A-BCP News, No. 3, February 2014. (in English, Bahasa Indonesia, Vietnamese and Japanese)

A-BCP News, No. 4, June 2014. (in English, Bahasa Indonesia, Vietnamese and Japanese)

A-BCP News, No. 5, July 2014. (in English, Bahasa Indonesia, Vietnamese and Japanese)

A-BCP News, No. 6, August 2014. (in English, Bahasa Indonesia, Vietnamese and Japanese)

A-BCP News, No. 7, April 2015. (in English, Bahasa Indonesia, Vietnamese and Japanese)

Other Reports

AHA Centre and JICA (2013): Inception Report, “The Study on Natural Disaster Risk Assessment and Area Business Continuity Plan Formulation for Industrial Agglomerated Areas in the ASEAN Region”, February 2013. (in English, Bahasa Indonesia, Vietnamese and Japanese)

AHA Centre and JICA (2013): Study Report 1, “The Study on Natural Disaster Risk Assessment and Area Business Continuity Plan Formulation for Industrial Agglomerated Areas in the ASEAN Region”, April

2013. (in English and Japanese)

AHA Centre and JICA (2013): Study Report 2, “The Study on Natural Disaster Risk Assessment and Area Business Continuity Plan Formulation for Industrial Agglomerated Areas in the ASEAN Region”, August 2013. (in English and Japanese)

AHA Centre and JICA (2013): Study Report 3, “The Study on Natural Disaster Risk Assessment and Area Business Continuity Plan Formulation for Industrial Agglomerated Areas in the ASEAN Region”, December 2013. (in English and Japanese)

AHA Centre and JICA (2014): Study Report 4, “The Study on Natural Disaster Risk Assessment and Area Business Continuity Plan Formulation for Industrial Agglomerated Areas in the ASEAN Region”, March 2013. (in English and Japanese, and partly in Bahasa Indonesia and Vietnamese)

AHA Centre and JICA (2014): Risk Assessment Reports for ASEAN and its Countries, “The Study on Natural Disaster Risk Assessment and Area Business Continuity Plan Formulation for Industrial Agglomerated Areas in the ASEAN Region”, March 2014. (in English and Japanese, and partly in Bahasa Indonesia and Vietnamese)

AHA Centre and JICA (2015): Draft Final Report, “The Study on Natural Disaster Risk Assessment and Area Business Continuity Plan Formulation for Industrial Agglomerated Areas in the ASEAN Region”, February 2015 (in English and Japanese)

Note: Reports and materials those are not specified language are prepared in English.

Contents

Appendices

List of Tables

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List of Abbreviations and Acronyms

A

AADMER	:	ASEAN Agreement on Disaster Management and Emergency Response
ACDM	:	ASEAN Committee on Disaster Management
AFP	:	Armed Force of the Philippines
AIFDR		Australia-Indonesia Facility for Disaster Reduction
AHA Centre	:	ASEAN Coordination Centre for Humanitarian Assistance on disaster management
ASEAN	:	Association of South East Asian Nations
ATC	:	Applied Technology Council (U.S.A.)

B

BAPPEDA	:	Badan Perencanaan Pembangunan Daerah (Local Planning and Development Agency, Indonesia)
BAPPENAS	:	Badan Perencanaan Pembangunan Nasional) (Ministry of National Development Planning, Indonesia)
BASARNAS	:	Badan Sar Nasional (National Search and Rescue Agency, Indonesia)
BBWS	:	Balai Besar Wilayah Sungai (River Basin Development Agency, Indonesia)
BCM	:	Business Continuity Management
BCP	:	Business Continuity Plan
BFP	:	Bureau of Fire Protection (Philippines)
BIG	:	Badan Informasi Geospasial (Geospatial Information Agency, Indonesia)
BKPM	:	Badan Koordinasi Penanaman Modal (Indonesia Investment Coordinating Board)
BMKG	:	Badan Meteorologi, Klimatologi, dan Geofisika (Meteorological, Climatological and Geophysical Agency)
BNPB	:	Badan Nasional Penanggulangan Bencana (National Agency for Disaster Management, Indonesia)
BPBD	:	Badan Penanggulangan Bencana Daerah (Regional Disaster Management Agency, Indonesia)
BPLHD	:	Badan Pengelola Lingkungan Hidup Daerah (Regional Environmental Agency, Indonesia)

C

CAVITEX	:	Cavite Expressway (Philippines)
CEZ	:	Cavite Economic Zone (Philippines)
CHED	:	Commission on Higher Education (Philippines)

D

DDPM	:	Department of Disaster Prevention and Mitigation (Thailand)
DENR	:	Department of Environment and Natural Resources (Philippines)
DILG	:	Department of the Interior and Local Government (Philippines)
DISHUB	:	Dinas Perhubungan (Department of Transportation, Indonesia)
DKI	:	Daerah Khusus Ibukota (Special Capital Territory, Indonesia)
DMC	:	Disaster Management Center (Vietnam)
DOE	:	Department of Energy (Philippines)

DOST	:	Department of Science and Technology (Philippines)
DOT	:	Department of Tourism (Philippines)
DOTC	:	Department of Transportation and Communications
DPWH	:	Department of Public Works and Highways
DSWD	:	Department of Social Welfare and Development (Philippines)
DTI	:	Department of Trade and Industry (Philippines)

E

EMB	:	Environmental Management Bureau (Philippines)
ESCAP	:	Economic and Social Commission for Asia and the Pacific

F

FEMA	:	Federal Emergency Management Agency

G

GDP	:	Gross Domestic Product
GIS	:	Geographic Information System
GSIS	:	Government Service Insurance System (Philippines)

H

HPPC	:	Haiphong People's Committee

I

ICRM	:	Institute of Catastrophe Risk Management (Singapore)
ISO	:	International Organization for Standardization
ITB	:	Institute Teknologi Bandung (Bandung Institute of Technology)

J

JAIF	:	Japan-ASEAN Integration Fund
JMA	:	Japan Meteorological Agency
JSPP21	:	Japan-Singapore Partnership Programme for the 21st Century

K

KEMENSOS	:	Kementerian Sosial Republik Indonesia (Ministry of Social Affairs, Indonesia)
KIIC	:	Karawang International Industrial City (Indonesia)

L

LIPI	:	Lembaga Ilmu Pengetahuan Indonesia (Indonesian Institute of Sciences)
LLDA	:	Laguna Lake Development Authority

M

MARD	:	Ministry of Agriculture and Rural Development (Vietnam)
MARINA	:	Maritime Industry Authority (Philippines)

MERALCO	:	Manila Electric Company
MIAA	:	Manila International Airport Authority
MMDA	:	Metropolitan Manila Development Authority
MMI	:	Modified Mercalli Intensity

N

NCHMF	:	National Centre for Hydro-Meteorological Forecasting (Vietnam)
NCIP	:	National Commission on Indigenous Peoples (Philippines)
NCPRO	:	National Capital Regional Police Office (Philippines)
NDRRMC	:	National Disaster Risk Reduction and Management Council (Philippines)
NEDA	:	National Economic and Development Authority (Philippines)
NESDB	:	National Economic and Social Development Board (Thailand)
NGO	:	Non-Governmental Organization
NIA	:	National Irrigation Authority (Philippines)

O

OCD	:	Office of Civil Defence (Philippines)

P

PAGASA	:	Philippine Atmospheric, Geophysical & Astronomical Services
PCCI	:	Philippine Chamber of Commerce
PCG	:	Philippine Coast Guard
PDAM	:	Perusahaan Daerah Air Minum (Local Water Company, Indonesia)
PDC	:	Pacific Disaster Center
PEZA	:	Philippine Economic Zone Authority
PHIVOLCS	:	Philippine Institute of Volcanology and Seismology
PIA	:	Philippine Information Agency
PIRBA	:	Information Center for Research on Natural Disaster (Indonesia)
PLDT	:	Philippine Long Distance Telephone Company
PNP	:	Philippine National Police
PRC	:	Philippine Red Cross

S

SCDF	:	Singapore Civil Defence Force
SCWRM	:	Strategic Committee for Water Resource Management (Thailand)
SME	:	Small and Medium sized Enterprise

T

TRANSCO	:	National Transmission Corporation (Philippines)

U

USAID	:	United States Agency for International Development
UUM	:	Universiti Utara Malaysia (Northern University Malaysia)

V

VCCI : Vietnam Chamber of Commerce and Industry

CHAPTER 1 OUTLINE OF THE STUDY

1.1 Background of the Study

On 11th March 2011, the Great East Japan Earthquake caused unprecedented disasters. Many private enterprises have been significantly affected by interruptions of their businesses or restrictions of their operations due to limited supply chains. This experience reminds us of the high risks of business slowdowns caused by natural disasters. The 2011 Flood of the Chao Phraya in Thailand caused physical damage to industrial agglomerated areas and industrial parks as well as economic losses for Thailand as a whole. The 2010 eruptions of Eyjafjallajökull in Iceland resulted in enormous disruption to air traffic throughout Europe. In recent years, potential risks of natural disasters that may affect economic activities have become more and more tangible, and people now have fully realized that these disasters can cause not only human causalities but also adverse impacts on the world economy beyond national and regional boundaries.

Notably, the counties in the ASEAN region have frequently suffer from disasters including earthquakes, floods, tsunamis, typhoons/cyclones and other types of natural disasters. According to a report from the United Nations Office for Disaster Risk Reduction (UNISDR), in terms of the number of natural disasters that occurred in 2011, the Philippines is first, Indonesia is fifth, and Thailand and Vietnam are place tenth in the world.

To cope with natural disasters and/or emergency situations, some private enterprises have started to promote corporate-level Business Continuity Management (BCM) and to prepare their Business Continuity Plan (BCP). However, they have limited capacities in terms of provisions against large-scale disaster situations where functions of basic infrastructures are paralyzed, including power outages, water cutoff and supply chain disruptions throughout the industrial agglomerated areas or industrial parks. To prepare for those situations, the national and local governments are required to identify and manage potential risks in their industrial hubs in order to mitigate negative impacts on the local, national, and global economies.

Given these backgrounds, it is urgent to propose the Area Business Continuity Management (Area BCM) as a collective effort for business continuity to minimize economic impacts/losses, and formulate an Area Business Continuity Plan (Area BCP), respectively targeting an industrial agglomerated area as a unit of concern. To avoid confusion, the “Area BCM” and “Area BCP” are distinguished from “BCM” and “BCP”, which refer to the corporate-level management and/or plan.

In principle, scientific risk assessment is an essential pillar for the implementation of an Area BCM and the formulation of an Area BCP.

1.2 Objectives of the Study

This Study is intended to collect, and provide general information required for natural disaster risk assessment in the 10 ASEAN Member States (Component 1). Furthermore, as a pilot study, it

formulates Area BCPs based on necessary information collected and analyzed for industrial agglomerated areas. Also, the Study proposes concepts and procedures of Area BCM through the pilot study (Component 2).

1.3 Study Area

Component 1: 10 ASEAN Member States

Component 2: An industrial agglomerated area covering Karawang Regency, Bekasi Regency and Kota Bekasi, and its surrounding area in Indonesia;
An industrial agglomerated area covering Cavite State, Laguna State and the southern part of Metropolitan Manila, and its surrounding area in the Philippines; and
An industrial agglomerated area covering Haiphong City, and its surrounding area in Vietnam.

1.4 Natural hazards to Study

Natural hazards to study are geological hazards (including earthquakes, volcanic activities and eruptions, and landslides), tsunamis, and hydrometeorological hazards (including floods, cyclones [also known as typhoons and hurricanes], coastal storm surges). Biological hazards such as epidemic outbreaks of diseases and plant or animal contagions are not included.

1.5 Components of Work

[Component 1]

1) Mapping of industrial agglomerated areas in the 10 ASEAN Member States
2) Assessment of vulnerability of transport infrastructure such as road networks, airports and sea ports, and study of the current situations of supply chains
3) Assessment of regional impacts by superimposing hazard and vulnerability layers

[Component 2]

4) Assessment of risks in pilot areas (identification of potential natural hazards that may affect these areas, assessment of vulnerability of transport infrastructure and lifeline utilities, such as electricity, energy and water, and risk assessment by the superimposing of hazard and vulnerability layers)
5) Formulation of the Area BCPs, which is based on the risk assessment, for the pilot areas
6) Filing of processes of risk assessment and the Area BCP formulation adopted in the Study, and preparation of guidelines for implementing Area BCM, which can be applied to other areas in the ASEAN region

[Common Tasks for Components 1 and 2]

7) Holding meetings of Advisory Committees of Japan and Panels of Experts of ASEAN

Member States

8) Preparation of materials for dissemination and promotion of the Study outputs

1.6 Time Schedule of the Study

The period of the Study is from February 2013 to June 2015. Initially scheduled from February 2013 through August 2014, the contract of the Study was extended until June 2015.

The schedule set out for the Study is as follows.

Component 1:	February 2013 ~ March 2014
Component 2:	May 2013 ~ March 2015
Common Tasks for Components 1 and 2:	February 2013 ~ June 2015

1.7 Outputs of the Study

Table 1.1 is a list and description of the Study reports as well as outputs specified in the TOR, prepared and submitted during the Study period.

Table 1.1 List of the Study Outputs and the Description

Output	Description
Inception Report	-
Study Report 1	Collects and analyzes information available relevant to natural disasters and BCM in the 10 ASEAN Member States. ● The information collected and analyzed include: industrial agglomerated areas, the infrastructure, legal systems, existing studies related to natural disasters, economic and trade conditions, lessons learned from previous natural disasters, situations of natural disasters, and measures for natural disasters. ● Designs GIS database. ● Provides outlines of field surveys, sub-contracted field surveys and surveys on industrial agglomerated areas.
Study Report 2	● Analyze and compile information related to natural disaster risks, backgrounds of disasters, and measures for disasters as well as sources of hazard and risks in the 10 ASEAN Member States. Incorporates additional information obtained from field surveys to existing information. ● The natural disasters targeted include floods, earthquakes, tsunamis, volcano disasters, typhoons and meteorological hazards, and landslides. ● Collect and compile information and their sources relevant to BCM in the 10 ASEAN Member States. Incorporate additional information obtained from field surveys to existing information. ● The information includes: the economies, industries and trade, industrial agglomerated areas (industrial parks), the infrastructure, logistics, laws and regulations.
Study Report 3	● Provides outcomes of collecting and analyzing information available related to natural disasters and BCM in the three pilot areas in Indonesia, the Philippines, and Vietnam. ● The information collected and analyzed includes local governments, natural disasters, industrial agglomerated areas, the transportation infrastructure, lifeline utilities, economic relations with the neighboring region and Japan, activities in BCPs, and measures for disaster risk reduction.

	● Provides records of activities to organize working groups for formulating Area BCPs in the pilot areas.
Study Report 4	● Provides findings from hazard simulation in the three pilot areas in Indonesia, the Philippines, and Vietnam.
Draft Final Report	● Records of activities pursued in the Study.
Final Report	● A report that includes the draft final report and records of activities pursued from February 2015 and onward.
Reports for Risk Assessment including industrial agglomerated areas and related social infrastructure in ASEAN and its Countries	● Provides country-specific reports for the 10 ASEAN Member States which compile information on natural disaster risks, industrial agglomerated areas, the transport infrastructure and lifeline utilities, legal systems related to Area BCM, and current activities of BCM. ● Separate volume of each country prepared. ● Intended to provide information sources (a portal site) that serve as a tool for risk-informed decision making by companies, organizations, and individuals.
GIS Database of Risk Assessment Results for ASEAN and its Countries	● Prepare a GIS database of the 10 ASEAN Member States and a GIS database of the three pilot areas. ● Chapter 5 of this Final Report refers to GIS database.
Risk Assessment Reports and Area BCPs for Industrial Agglomerated Area in Pilot Area	● Prepared a risk profile report of the pilot areas by incorporating Study Reports 3 and 4. ● Separate volume of each pilot area prepared. ● Intended to provide information sources (a portal site) that serve as a tool for risk-informed decision making by companies, organizations, and individuals.
Handbooks for Risk Assessment and Area BCP for Industrial Agglomerated Areas	● A guidebook titled “Planning Guide for Area Business Continuity ~Area BCM Toolkits~” is intended for beginning and practicing Area BCM. ● Describes step-by-step procedures of an Area BCM cycle, following the sequential five phases. ● Initially developed from activities in the pilot areas, the guidebook is applicable to any country in the world, not only to ASEAN countries ● Referred in Chapter 7 of this Final Report. ● Provides Area Business Continuity Plans (Area BCPs) developed respectively for the three pilots in the supplementary volumes of guidebook. ● Chapter 6 of this Final Report refers to Area BCPs.
Promotion Movie (audio-visualization)	● A Promotion Movie titled as “Area BCM in ASEAN” was produced for the purpose of promoting Area BCM and Area BCPs. ● Referred in Chapter 9 of this Final Report.
Materials for Dissemination and Promotion	● Introduces activities of the Study. Eight editions of newsletters have been issued to introduce activities of the Study and to promote Area BCM and Area BCP. ● Referred in Chapter 9 of this Final Report.

The outputs have been rearranged to provide tools as below to help implementation of Area BCM.

Table 1.2 List of Tools for Area BCM

Type	Tool
Guidebook “Planning Guide for Area	Part I Understanding Area BCM Part II Procedures of Area BCM

Business Continuity, ~ Area BCM Toolkits ~" (Main Volume)	Appendix 1 Glossary Appendix 2 Procedures of Formulating Area BCPs Applied in Pilot Areas Appendix 3 References
Guidebook "Planning Guide for Area Business Continuity, ~ Area BCM Toolkits ~" (Supplemental Volume)	・ Area BCPs in the Pilot Areas (Documented Plans) ✓ An industrial agglomerated area covering Karawang Regency, Bekasi Regency and Kota Bekasi, and its surrounding area in Indonesia ✓ An industrial agglomerated area covering Cavite State, Laguna State and the southern part of Metro Manila, and its surrounding area in the Philippines ✓ An industrial agglomerated area covering Haiphong City and its surrounding area in Vietnam ・ Methodologies of Hazard Assessment / Used for the Pilot Studies ・ Lessons Learned from Extreme Natural Disasters ・ Examples of Disaster Review Reports ✓ Report of Response to the 2013 Typhoon No. 5 in Haiphong, Vietnam: Tropical Storm JEBI and other Typhoon, JICA and AHA Centre, December 2013, AHA Centre and JICA ✓ The Impact of January & February 2014 Jakarta Flood to the Industrial Park in Jakarta and Bekashi, AHA Centre and JICA, February 2014
Reference	・ Risk Profile Reports ✓ For above-mentioned three pilot areas ・ Country Reports ✓ For Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam

1.8 Structure of the Final Report

Table 1.3 shows a structure of the report along with a brief description.

Table 1.3 Structure of the Final Report and Description of its Contents

Chapter	Chapter Title	Description	Target Component
1	Outline of the Study	● Brief description of the study	-
2	Advisory meetings for the project	● Records of activities pursued by and important advices provided from the Advisory Committee of Japan and Panels of Experts of ASEAN	Common to 1 and 2
3	Survey in 10 ASEAN Countries	● A collection of activities carried for ten ASEAN countries ● The activities include collection and analysis of existing studies, assessment of hazards and risks, and preparation of country reports ● Issues and recommendations	1
4	Survey in Pilot Countries	● A collection of activities recorded for the three pilot countries ● The activities include field surveys, hazard and risk assessments, preparation of hazard scenarios, and preparation of risk profile reports. ● Issues and recommendations	2
5	GIS Database	● Description of GIS databases and report of a data transfer to AHA Centre	1 and 2

		● Issues and recommendations	
6	Development of the Area BCP in the Pilot Area	● A collection of activities to formulate Area BCPs ● The activities include organizing working groups, and formulating and revising Area BCPs ● Issues and recommendations	2
7	Proposal of Area BCM and Preparation of the Guidebook	● Development and proposal of the concept, and procedures of Area BCM ● A description of a preparation process of a Guidebook ● Issues and recommendations	2
8	Dissemination and Promotion of the Outputs (Seminars and Workshops)	● Outlines and achievements of seminars and workshops to disseminate the Study outputs, and issues and suggestions highlighted in these events which include: ● Seminars for Practitioners and ASEAN Workshops targeting 10 ASEAN Member States ● Progress Seminars for participants from the pilot countries ● Final Seminar targeting participants from the pilot countries and the pilot areas	Common to 1 and 2
9	Dissemination and Promotion of the Outputs (Preparation of Dissemination Materials)	● Production and utilization of a Promotion Movie to disseminate the Study outputs ● Highlights and use of newsletters	Common to 1 and 2
10	Dissemination and Promotion of the Outputs (Attendance at Meetings)	● Reports of attendance and activities at meetings to disseminate the Study outputs ● The meetings attended include an ACDM Workshop, an ASEAN Forum and JSPP.	Common to 1 and 2
11	Training of Junior Researchers	● Report of activities carried out and outputs achieved by young experts and researchers who participated in the study	Common to 1 and 2
12	Conclusion and Recommendations	● Wrap-up of outputs and issues provided in Chapters 2 through 11, and recommendations	-

CHAPTER 2 ADVISORY MEETINGS FOR THE STUDY

2.1 Summary of Advisory Meetings

Experts and professionals from Japan and the ASEAN region were invited to two types of advisory meeting, namely, an Advisory Committee in Japan and a Panel of Experts in ASEAN. The purpose of these meetings was to receive advice from experts and professionals in Japan and the ASEAN region for Area BCM/Area BCP and natural disaster risk assessment, as well as to adapt those approaches and methods to the regional characteristics of the ASEAN region.

Table 2.1 Outline of Advisory Meetings

Name	Number of Meetings	Member	Main Points of Discussion
Advisory Committee Japan	6	9 members. Experts and professionals from Japan specialized in disaster risk reduction, hazard and risk assessment, and BCP	● Concept of Area BCM/Area BCP and procedures for implementing them ● Approaches for the pilot study in the pilot areas ● Methodologies for hazard and risk assessment ● Dissemination and promotion methods to be practiced in the ASEAN region and elsewhere
Panel of Experts ASEAN	4	14 members. (from Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam) Experts, professionals, and academics from the public and private sectors in ASEAN specialized in disaster risk reduction, hazard and risk assessment, and BCP	● Current status of BCM/BCP implementation in ASEAN countries ● Concept of Area BCM/Area BCP and procedures for implementing them ● Methodologies for hazard and risk assessments ● Introduction of local features into Area BCM/Area BCP and hazard and risk assessment ● Approaches for the pilot study in the pilot areas ● Dissemination and promotion methods to be practiced in the ASEAN region and elsewhere

2.2 Advisory Committee

Meetings of the Advisory Committee have been held on six occasions for the purpose of receiving advice from experts and professionals in Japan on Area BCM/Area BCP, efforts for natural disaster risk assessment, and ways to adapt the plans to the regional features of ASEAN.

2.2.1 Outline

In the meetings, the study team introduced the details of Area BCM/Area BCP, plans and results of activities in the pilot areas, and how to disseminate the efforts in the ASEAN region. Table 2.2 and 2.3 give outlines the discussions in the respective committees and the committee members, respectively. The agenda, minutes, and attendant list are presented in Appendix A1.

Table 2.2 List of Meetings of the Advisory Committee (held in JICA HQ)

	Date and time	Main agendas
1st	April 30, 2013 9:00 - 11:00	(1) Confirmation of the project details and results (2) Hazard risk assessment of ASEAN region (component 1) (3) Efforts of Area BCP in Industrial Agglomerated Areas (component 2) (4) Future plans
2nd	September 5, 2013 10:00 - 12:00	(1) Report on the results of the first ASEAN Panel of Experts (2) Interim survey report in 10 ASEAN Member States (3) Interim report on activities in pilot areas (3)-1 Outline of pilot areas (3)-2 Organization of working group members (4) Interim report on hazard risk assessment in pilot areas (5) Summary of the framework for Area BCP (BCM) and terminology (6) Future plans
3rd	January 9, 2014 09:00 - 12:00	(1) Results of the project survey (component 2) (2) Reports on the first workshop (2)-1 Outline of the workshop (2)-2 Workshop in Indonesia (2)-3 Workshop in the Philippines (2)-4 Workshop in Vietnam (3) Main perspectives to be reflected into the development of the Area BCM guidebook based on the workshop (4) Future plans
4th	April 10, 2014 09:45 - 11:15	(1) Video to explain Area BCM (2) Progress status report (3) Important points to note for external communications on Area BCM at international conferences, etc.
5th	July 31, 2014 09:45 - 12:00	(1) Progress of the project and future plans (1)-1 Progress status report on the project and summary of outstanding challenges currently faced (1)-2 Future plans and handover of Area BCM to local institutions (1)-3 Introduction and discussions on the guidebook (draft) (2) Efforts to standardize Area BCM (2)-1 Report on external communications at international conferences, etc. (2)-2 Toward the standardization of Area BCM
6th	February 3, 2015 10:00 - 12:00	(1) Progress of the project and future plans (1)-1 Progress of the project (1)-2 Future plans (2) Introduction and discussions on guidebook Version 2

Table 2.3 List of Members of the Advisory Committee

	Name	Organization, position
Chairman	Haruo Hayashi	Professor, Catastrophe Research Center of Disaster Prevention Research Institute, Kyoto University
Members (Component 1)	Toshio Okazumi	Senior Researcher, Global Centre of Excellence for Water Hazard and Risk Management, Public Works Research Institute (title changed midway through the period to International Construction Management Officer, Policy Bureau of MLIT)
	Tatsuo Narafu	JICA Senior Advisor
	Koji Fujima	Professor, National Defense Academy of Japan
	Hitoshi Baba	JICA Senior Advisor
	Nobuaki Hamaguchi	Director, Research Institute for Economics & Business Administration, Kobe University (title changed midway through the period to Professor, Research Institute for Economics & Business Administration of Kobe University)
Members (Component 2)	Hirotaka Ikeda	Dean/Department Chairperson/Professor, Faculty of Social and Environmental Studies, Tokoha University
	Takahiro Ono	Assistant to President / Senior Manager of BCP, Mitsubishi Corporation Insurance Co., Ltd.
	Kenji Watanabe	Professor, Nagoya Institute of Technology

2.2.2 Advice from the Advisory Committee

Expertise was shared in various forms as advice at the Advisory Committees. The main feedback points are enumerated below:

- The establishment of Area BCP should not be considered a target, but positioned as a means to continuously improve responsiveness through Area BCM.
- There are three keys to implementing the workshops successfully. The first key is to have all of the main stakeholders participate without fail. The second key is to receive appropriate expertise as inputs. The third key is to set an appropriate time constraint.
- The study team has recently continued to provide support in most of the parts to promote Area BCM. It is important, however, to establish a system to hand over to the entities who will eventually take the leadership in undertaking the efforts, such as the local governments
- We recommend that templates, etc., be appended to the guidebook to make the guidebook informative.
- The Promotional Video of Area BCM should be actively presented at international conferences, etc. Dissemination should not be limited to ASEAN Member States.
- Explanatory materials such guidebook outlines should be developed as a means to promote Area BCM.

2.3 Implementation of Meetings of the Panel of Experts

The purpose of this meeting was to receive advice from experts and professionals in the ASEAN region regarding Area BCM/BCP, natural disaster risk assessment and methods to reflect the regional

characteristics of the ASEAN region into the plans. The panel members were expected to play a vital role in promoting the efforts for Area BCM/Area BCP as well as BCM/BCP in the ASEAN region.

2.3.1 Summary of the Meetings of the Panel of Experts

In the meetings, the JICA study team apprised the members on the plans and results of the activities of Area BCM in the pilot areas. This was followed by discussion on the content of Area BCM/BCP, the promotion of Area BCM in the pilot areas, and the dissemination of Area BCM/Area BCP to the ASEAN region. The agenda, minutes, and attendant list are presented in Appendix A2.

Table 2.4 List of Meetings of Panel of Experts

	Date	Venue	Main agendas
1st	July 8, 2013	Sari Pan Pacific Jakarta, Jakarta, Indonesia	(1) Introduction of the Project (2) Introduction of Natural Disaster Risk Assessment for Area BCP (3) Introduction of Area BCP (4) Introduction of the Pilot Study (5) Plan for Future Meetings
2nd	January 23-24, 2014	Dusit Thani Hotel, Makati City, Metro Manila, the Philippines	January 23 (Meeting) (1) Report on the Progress of the Project (2) Pilot Projects (3) Plan for the Guideline on Area BCP Formulation January 24 (Field Trip) (1) Visit to the Cavite Economic Zone (2) Visit Laguna Techno Park
3rd	June 19-20, 2014	Melia Hotel, Hanoi city, Vietnam	June 19 (Field Trip) (1) Visit to Nomura Hai Phong Industrial Zone (2) Visit to Binh Port for a Boat Tour on Cam River (3) Visit to the Dinh Vu Industrial Zone June 20 (Meeting) (1) Report on the Progress of the Project (2) Development of Area BCP (3) Strategies for Promoting Area BCM in the ASEAN
4th	January 30, 2015	Westin Hotel, Bangkok, Thailand	(1) Project and Area BCM (2) Tools for Area BCM (3) Approaches for Area BCM and BCM in Thailand (4) Next Cycle of Area BCM in the Pilot Countries (5) Tools for Risk-Informed Decision-making (6) Beyond Area BCM

Table 2.5 List of Panel Members (Natural Disaster Risk Assessment)

Country	Specialty	Name	Organization, position	Remarks
Indonesia	Earthquake, Structural Engineering	Dr. Haji Pariatmono Sukamdo	Director, Empowering Science and Technology for Government Institutions, Head of Information Center for Research on Natural Disasters (PIRBA), Ministry of Research and Technology	-
Philippines	Earthquake, Tsunami, Volcano	Dr. Renato U. Solidum, Jr.	Director, Philippine Institute of Volcanology and Seismology (PHIVOLCS), Department of Science and Technology (DOST)	http://www.phivolcs.dost.gov.ph
Philippines	Flood, Typhoon	Dr. Susan R. Espinueva	Chief of Hydrometeorology Division, Philippine Atmospheric, Geophysical & Astronomical Services Administration (PAGASA), Department of Science and Technology (DOST)	http://www.pagasa.dost.gov.ph
		Dr. Esperanza Cayanan	Head, NCR, Philippine Atmospheric, Geophysical & Astronomical Services Administration (PAGASA), Department of Science and Technology (DOST)	
Vietnam	Flood, Metrological Hazards (Early Warning)	Ms. Dang Thi Thanh Mai	Deputy Director, National Centre for Hydro-Meteorological Forecasting (NCHMF)	http://www.nchmf.gov.vn/web/en-S/43/Default.aspx
Vietnam	Flood	Dr. Tran Ngoc Anh	Associate Prof., Faculty of Hydrology, Meteorology and Oceanography, Hanoi University of Science, Vietnam National University	http://www.university-directory.eu/Vietnam/Hanoi-University-of-Science.html#.UWqInL_c3wQ
Singapore	Earthquake, Risk Management	Prof. Pan Tso-Chien	Executive Director, Institute of Catastrophe Risk Management (ICRM), NTU	http://www.cee.ntu.edu.sg/Pages/Home.aspx http://icrm.ntu.edu.sg/Pages/default.aspx
Malaysia	Landslide, Local Urban Planning	Dato' Haji Zakaria Bin Hohamad	Director, Minerals and Geoscience Department Selangor, Ministry of Natural Resources and Environment	http://www.jmg.gov.my

Table 2.6 List of Panel Members (Area BCP)

Country	Specialty	Name	Organization, position	Remarks
Indonesia	Local Development, Local Autonomy	Dr. Max H. Pohan	Deputy Minister for Regional Development and Local Autonomy Affairs, BAPPENAS, Ministry of National Development Planning	BAPPENAS: The National Development Planning Agency http://www.bappenas.go.id
Philippines	Policy	Undersecretary Corazon T. Jimenez	General Manager, Metropolitan Manila Development Agency (MMDA)	Former head of the Policy Center of the Asian Institute of Management http://www.mmda.gov.ph http://www.aim.edu
Vietnam	Chamber of Commerce and Industry (Private Sector)	Mr. Dau Anh Tuan	General Director of the Legal Department, Vietnam Chamber of Commerce and Industry (VCCI)	http://vccinews.com
Singapore	Emergency Services	AC. Anwar Abdullah	Director of Operations Department, Singapore Civil Defence Force (SCDF)	http://www.scdf.gov.sg/content/scdf_internet/en.html
Singapore	BCM, Disaster Recovery Plan (Private Sector)	Dr. Goh Moh Heng	President, BCM Institute	http://www.bcm-institute.org/bcmi10/
Malaysia	Risk Assessment, Risk Management of Corporates	Prof. Dr. Mohd Rasid bin Hussin	Prof. , Risk Management Department, School of Economics, Finance and Banking, College of Business, Universiti Utara Malaysia (UUM)	UUM: University Utara Malaysia (The Eminent Management University) http://cob.uum.edu.my
Thailand	Flood, Integrated Water Resource Management (Private Sector)	Dr. Chukiat Sapphaisal	Managing Director of Technical Sections, Water Development Consultants Group Co., Ltd Former Associate Prof., Department of Water Resources Engineering, Faculty of Engineering, Kasetsart University	Involved in the Strategic Committee for Water Resources Management (SCWRM) for the development of a master plan

2.3.2 Advice from the Panel Members

The following technical advice was received from the panel members.

- The most important point is bringing in a wide range of stakeholders and related organizations / individuals by stressing the importance of and need for Area BCM in the ASEAN region.
- It is important to clarify who is responsible for what in Area BCM in each country.
- Interest in Area BCM and political will to implement it mainly on the part of the national government are indispensable for promoting Area BCM in each country.
- The definitions for Area BCM/Area BCP and BCM/BCP need to be defined precisely in future discussion. In Singapore, for example, they actually use the term “cluster BCP” to describe Area BCP and think of it accordingly.
- In the natural disaster risk assessment, there are constraints in the time and prospects for collecting data than collecting past disaster history. This is why efforts should be taken to collect as much information as possible on past disaster history.

- The proposed disaster scenario in this project is an example, and data disclosure is requested to assure that a correct understanding is reached. We also propose that recommendations based on existing local information be included in the plans, namely AreaBCPs.
- The importance of local government participation in Area BCM is confirmed. Engagement is requested both at the provincial level and city level in future.
- It is important that the AHA Centre acts as an information center for the whole ASEAN region.
- It will be important, in the plans to promote Area BCM in the ASEAN region, to develop the concepts and procedures according to the international standard ISO22301. The tools for standardization such as the guidebook prepared by the Study are essential for this objective.
- Backup by legal approvals for implementation will be another important approach for promoting Area BCM.
- The guidebook is required to be concrete, detailed, easy to understand, and readily accessible by the public.
- The organizational system to promote Area BCM, including the system to select leaders, is very important for the dissemination of Area BCM. The involvement of SMEs and other private enterprises is another important issue.
- The guidebook and the information will have to be maintained and updated to ensure that other industrial agglomerated areas in the ASEAN and other regions can refer them when they start their own Area BCM projects.

CHAPTER 3 SURVEY IN 10 ASEAN COUNTRIES

3.1 Summary

Information useful for Area BCM implementation and Area BCP formulation in the 10 ASEAN countries was collected and compiled. The information collected was used for hazard and risk assessments, and implementation of Area BCM in the pilot countries. The existing data, documents, and public information were mainly collected from online sources. The types of information collected are listed below. The data with location information for items (1), (2), and (3) were used to construct a GIS database.

(1) Natural disaster risk
(2) Industrial agglomerated areas
(3) Transport infrastructure and lifeline utilities
(4) Legal framework for disaster risk management and BCP
(5) Current state of BCP implementation

3.2 Collection and Compilation of Existing Data

(1) Data on "Natural Disaster Risk"

Catalogue data on natural disasters in the 10 ASEAN countries, reports on natural disasters, research papers and thesis were collected. The following types of natural hazard were covered: floods, typhoons and other meteorological hazards, earthquakes, tsunamis, volcanic eruptions, and landslides. The disaster catalogues are databases of information on the dates, places, and scales of disasters mainly compiled and maintained by international research institutes and universities. The disaster catalogues were used as a basis for the hazard and risk assessments written in the next section.

The reports on natural disasters, research papers, and thesis are classified by the type of hazard, and natural disaster risk in each country, background details on the disasters and countermeasures are compiled. Each document is summarized in the data sheets.

(2) Data on "Industrial Agglomerated Areas"

The data on industrial agglomerated areas was collected by an international consultant. The locations and basic information of 1,316 industrial parks in ASEAN were collected (1st Step). Two hundred and ten comparatively large industrial parks were selected, and additional information on developers, developing situations, and currently operating Japanese companies were studied (2nd Step). Fifty-one industrial parks were selected in the pilot areas in Indonesia, the Philippines, and Vietnam, and more detailed information such as lists of operating companies, transport infrastructures, and lifeline utilities were collected for each park (3rd Step).

Table 3.1 Number of Industrial Parks Studied

Country	1st Step Basic Survey	2nd Step Intermediate Survey	3rd Step Detailed Survey
Brunei	21	5	2
Cambodia	22	5	2
Indonesia	66	27	12
Lao PDR	10	5	2
Malaysia	364	35	4
Myanmar	49	10	1
Philippines	280	35	17
Singapore	74	20	1
Thailand	84	25	3
Vietnam	346	43	7
Total	1,316	210	51

(3) Data on "Transport Infrastructure and Lifeline Utilities"

Information on roads, railways, ports, and airports was collected as data on transport infrastructures. The main facilities, network systems, and capacities were compiled. The targets for lifeline utilities were electricity, water supplies, sewer systems, gas, and telecommunication. The main facilities, supply capacities, diffusion rates, etc. were compiled.

(4) Data on the "Legal Framework regarding Disaster Risk Management and BCP"

Information on laws, regulations, and plans regarding disaster management were collected and compiled. Laws, regulations and guidelines for BCP and the status of BCP implementation were also collected and compiled.

Information on the legal framework of environmental, land use, and building regulations related to BCM/BCP were also collected.

3.3 Hazard and Risk Assessment

Natural disasters that affect ASEAN countries are classified by the impacts and frequency of occurrence based on the collected disaster catalogue, and the predominant type of hazard in each country is studied. The records for the last 30 years are basically used, but older records of large earthquakes, tsunamis, and volcanic eruptions are also used because these types of hazards are significantly less frequent than the other hazards.

The "Damage Amount / GDP" and 'Number of Deaths" are used as indexes to show the impacts of disasters, for the comparison of multi hazards. The study proceeds in the following steps:

(1) Each disaster is classified according to the rank in Table 3.2 based on the Damage Amount / GDP or Number of Deaths;

(2) The numbers of disaster events are totaled by country, type of hazard, and disaster rank, and totaled number is classified according to the ranks shown in Table 3.3;
(3) The above information is plotted on the impact - frequency matrix by country;
(4) As for earthquake, tsunami, and volcanic hazards, if any events occurring before 1983 had an equal or larger disaster rank compared to the maximum disaster rank between 1983 and 2012, a point corresponding to the disaster rank and frequency rank (=1) is plotted on the matrix.

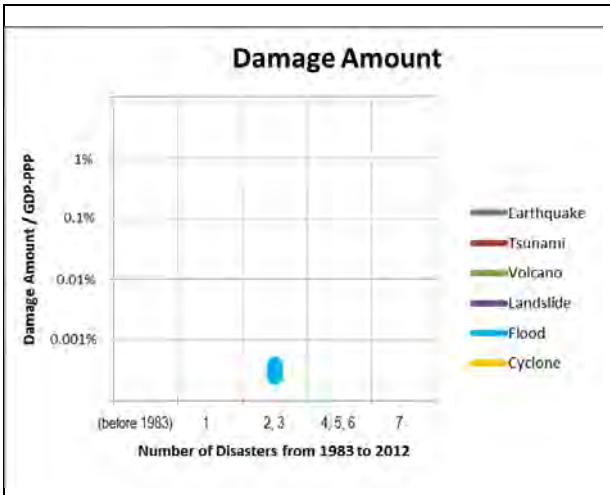
The summary of assessment is shown in Table 3.4. This assessment is based on the available existing information; not all information related to the disaster impacts was collected. The purpose of this study is not to evaluate precise damage amounts or numbers of deaths, but to show the order of the impacts of the multiple hazards covered.

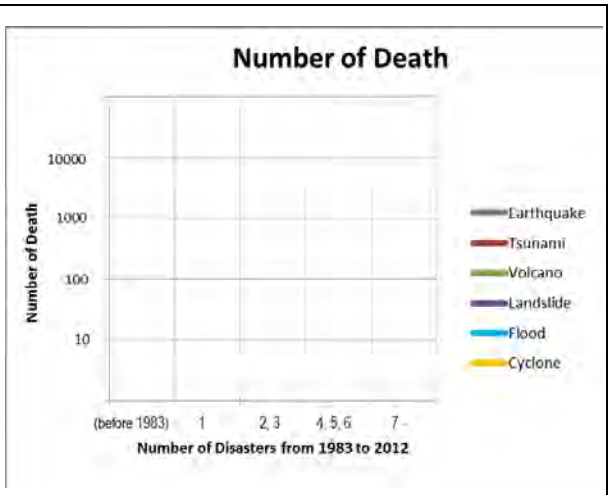
Table 3.2 Disaster Rank and Damage

Disaster Rank	Damage Amount / GDP	Number of Deaths
5	1.0% -	10,001 -
4	0.1% - 1.0%	1,001 - 10,000
3	0.01% - 0.1%	101 - 1,000
2	0.001% - 0.01%	11 - 100
1	- 0.001%	- 10

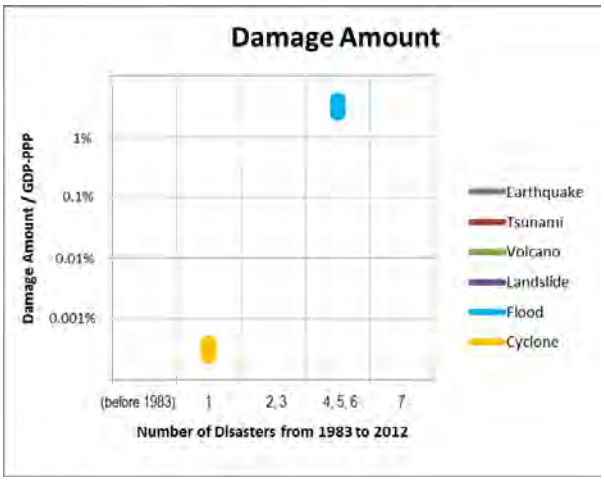
Table 3.3 Frequency Rank and Number of Events

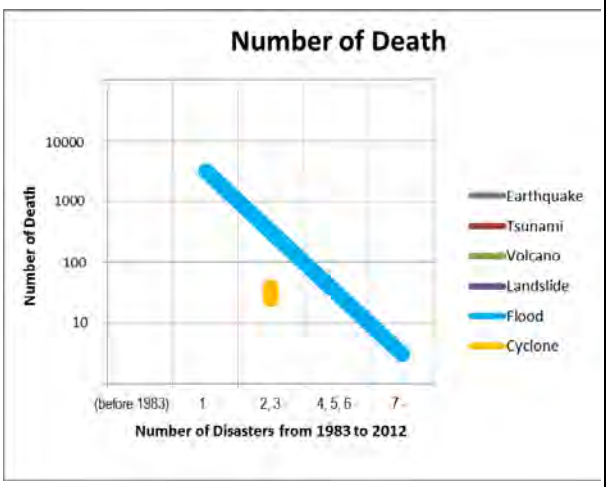
Frequency Rank	Number of Events	Average Frequency (Events / Year)
5	7 or more	1/5 -
4	4 to 6	1/10 - 1/5
3	2 to 3	1/15 - 1/10
2	1	1/30
1	Large Events occurring before 1983	-



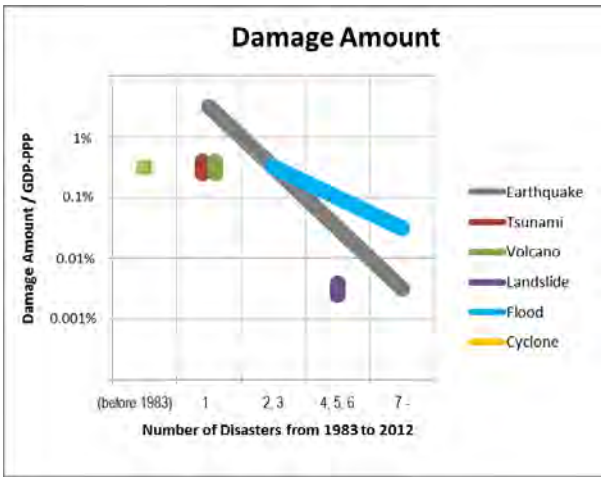


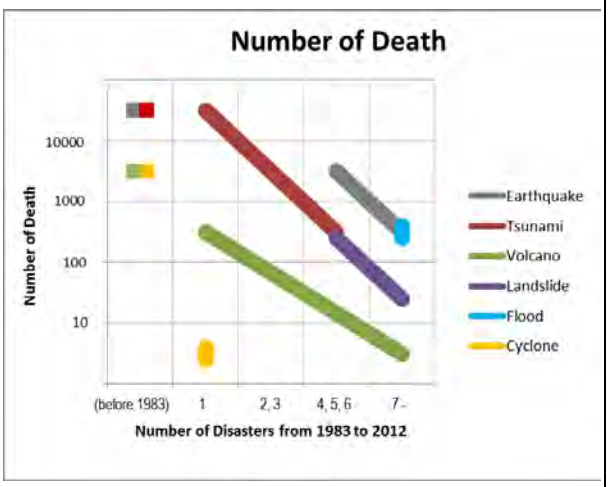
Brunei



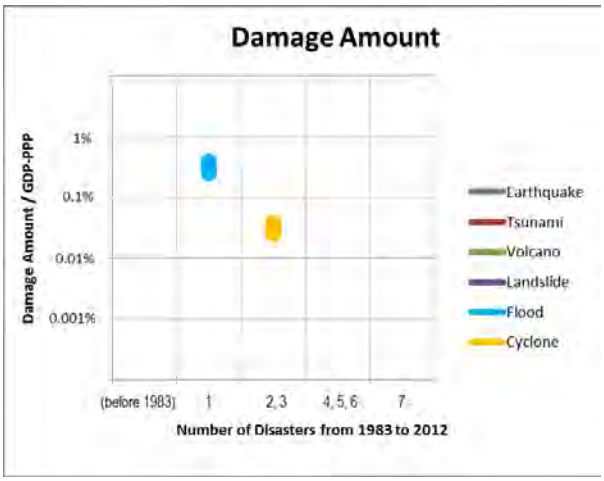


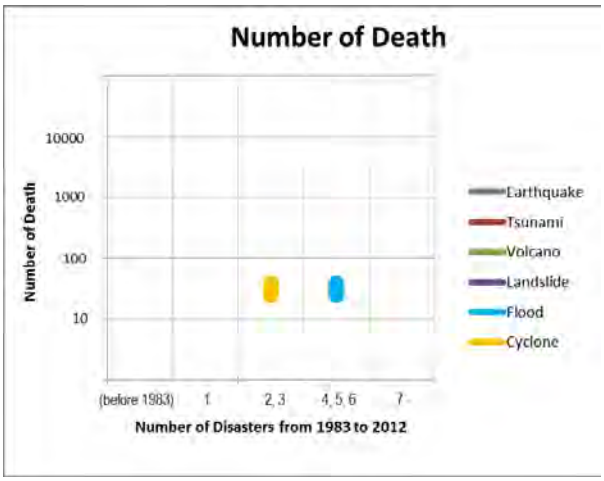
Cambodia



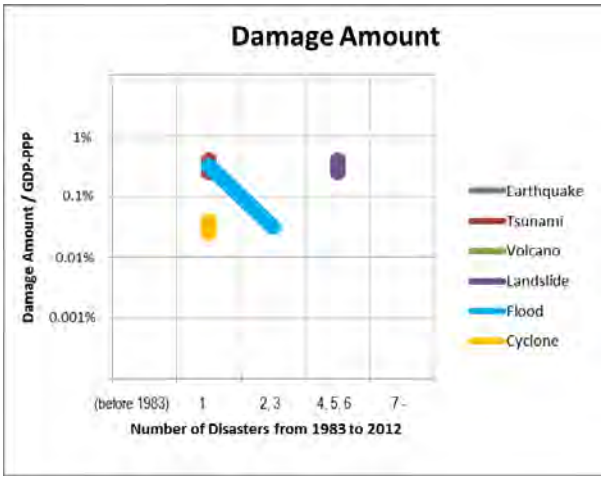


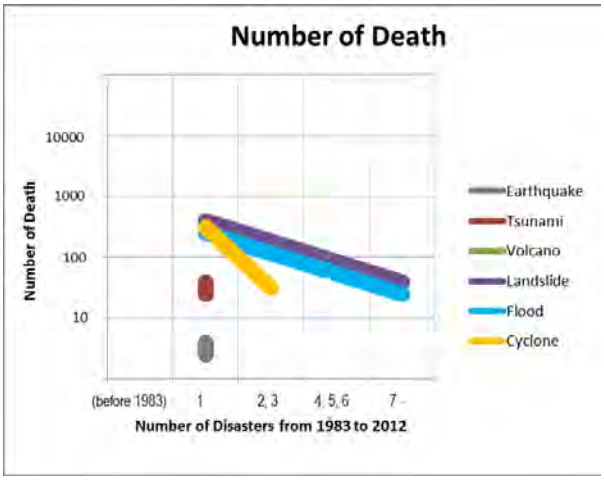
Indonesia



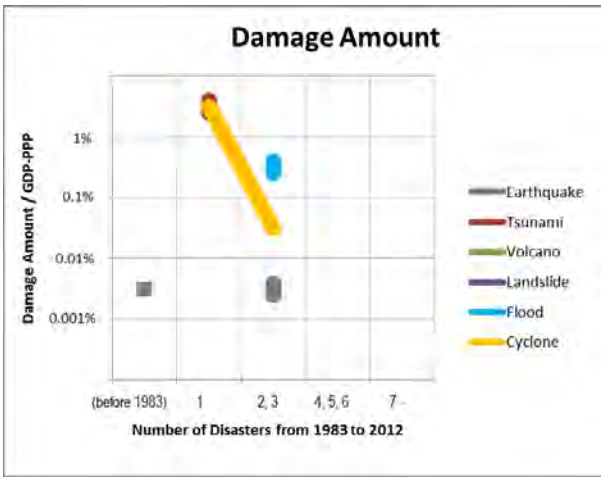


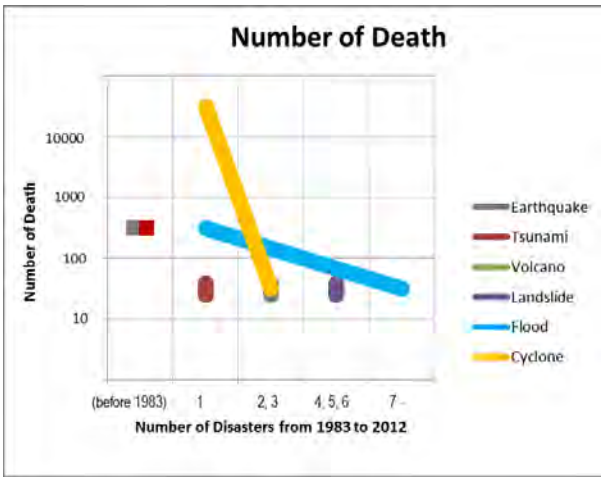
Lao PDR



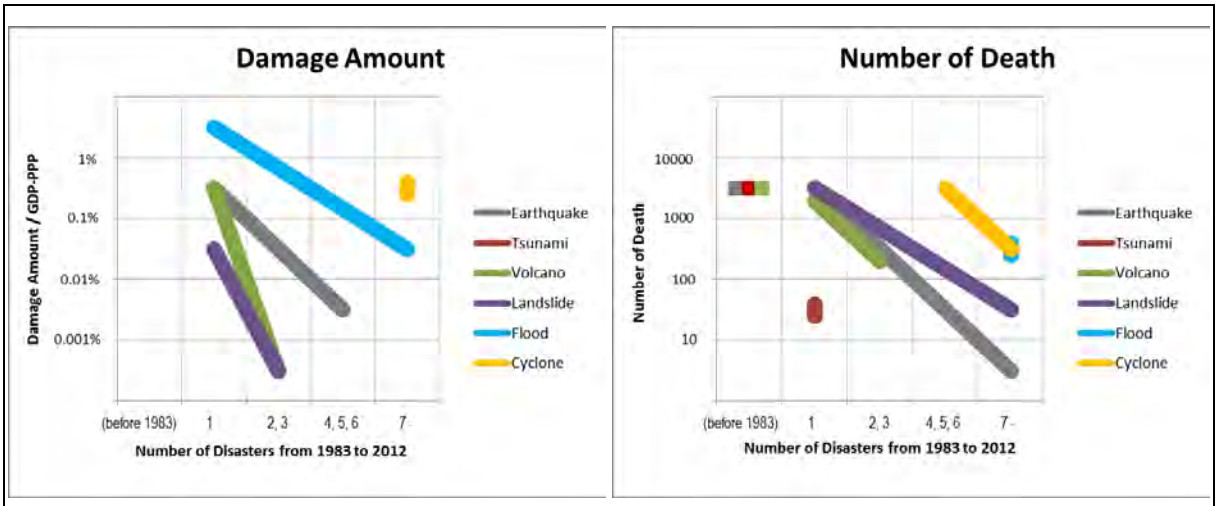


Malaysia

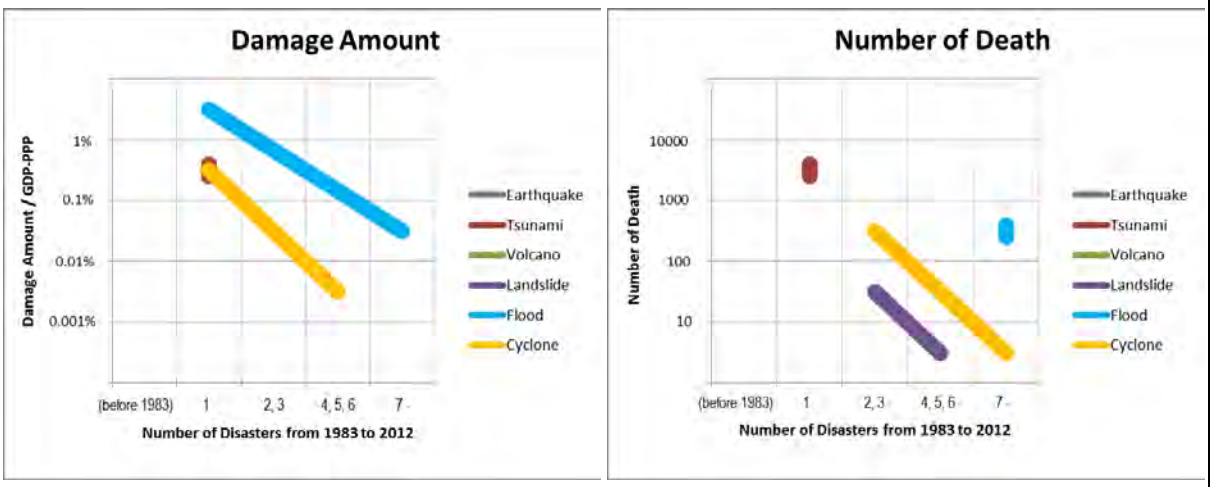




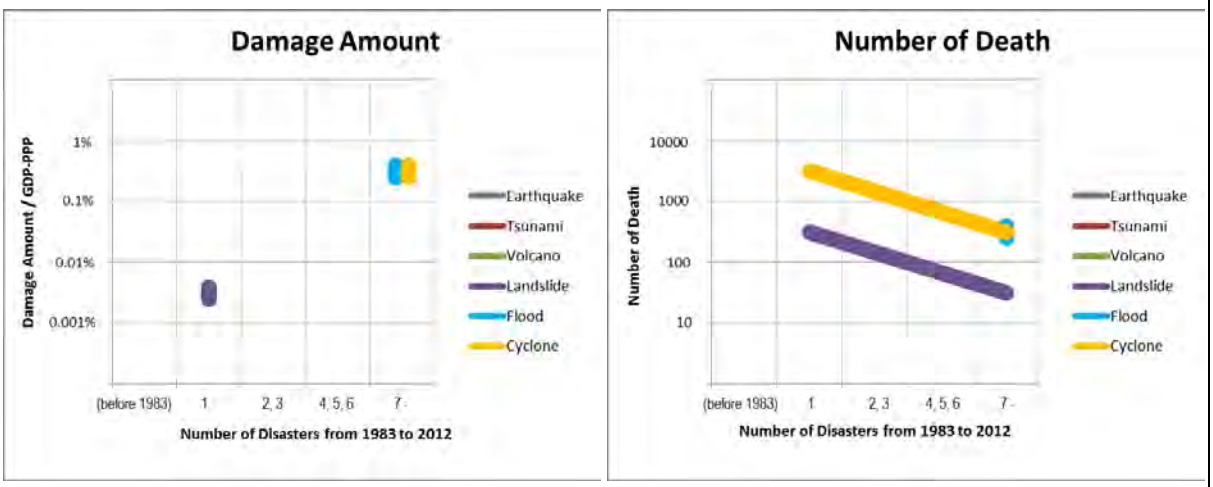
Myanmar



Philippines



Thailand



Vietnam

Figure 3.1 Result of Hazard and Risk Assessment

Table 3.4 Summary of Hazard and Risk Assessment

Country	Impact of Hazards
Brunei	Only three mild flood disasters have been recorded in the last 30 years, and no one was killed. No other disasters are on record.
Cambodia	Several flood disasters, each with more than 100 fatalities or more than 1% damage relative to GDP, have been recorded. If smaller disasters are included, flood disasters with loss of life occurred every 2 years on average. Cyclone disasters are recorded but have had smaller impacts than floods.
Indonesia	Disasters by all 6 hazards have been recorded in Indonesia (along with the Philippines). A tsunami had the largest impact in terms of the number of deaths. The largest damage was caused by the 2004 Indian Ocean Tsunami. Aside from that disaster, 7 tsunamis have caused more than 1000 deaths in Indonesia since the end of the 17th century. Earthquakes are frequent in Indonesia but have caused fewer deaths than tsunamis. Seven earthquakes have caused more than 1000 deaths since the end of the 19th century. Floods are more frequent than tsunamis and earthquakes but have caused fewer deaths. Floods cause more damage than earthquakes, assuming that events occur every several years. The impacts by volcano and cyclone have been small in the last 30 years but events with more than 1000 deaths were recorded before 1983.
Lao PDR	Disasters by flood and cyclone are on record. The impacts of floods and cyclones are the same in terms of deaths, but floods are more frequent.
Malaysia	The impacts by landslide and flood are the same in terms of deaths. The maximum number of deaths by cyclone is on the same order as those by landslides and floods, but cyclones are infrequent. The 2004 Indian Ocean Tsunami caused damage but no older tsunami events are on record.
Myanmar	The impact of the 2008 Cyclone Nargis is far above the rest in terms of deaths (about 140,000). Besides that, three cyclones caused more than 1000 deaths in the 20th century. Floods are more frequent than cyclones but cause fewer deaths. The damage caused by the 2004 Indian Ocean Tsunami was large, but no other tsunamis or earthquakes causing more than 1000 deaths have been recorded in the country's history.
Philippines	Disasters by all 6 hazards have been recorded in the Philippines (along with Indonesia). The most influential hazard is cyclones. Five to 6 cyclone disasters with fatalities occurred every year on average. In terms of the damage amount, cyclones have also had the largest impact. Earthquakes, volcanoes, and landslides each caused at least one disaster with more than 1000 fatalities in the last 30 years. Floods are more frequent but cause fewer deaths per event. The impact of floods in terms of damage amount is next to that of cyclones. The impacts of tsunamis have not been large in the last 30 years, but more than 4000 were killed by the 1976 Mindanao Tsunami.
Singapore	No disasters with damage amounts or deaths are on record.
Thailand	The largest human loss in the last 30 years was caused by the 2004 Indian Ocean Tsunami, but no events corresponding to the 2004 event have been recorded even in the historical period. Floods are frequent and have the largest impact in terms of damage. Cyclones come next in terms of impact.
Vietnam	The impact of cyclones is largest in terms of deaths, and floods come next. The impacts of cyclones and floods are same in terms of damage amounts.

3.4 Compilation of Country Report

The results of the survey of the 10 ASEAN countries are compiled and a separate Country Report is prepared for each country. An example of the contents of a country report is shown in Table 3.5.

Table 3.5 Contents of Country Report

1. Introduction

2. Natural Disaster Risks

- 2.1 Predominant Hazards
- 2.2 Flood
- 2.3 Earthquake
- 2.4 Tsunami
- 2.5 Volcanoes
- 2.6 Cyclone and Meteorological Hazards
- 2.7 Landslides

3. Industrial Parks

- 3.1 Distribution of Industrial Parks
- 3.2 Historical Evolution of Industrial Parks
- 3.3 Recent Trends and Japanese Investment
- 3.4 Risks of Natural Hazards

4. Transport Infrastructure and Lifeline Utilities

- 4.1 Overview of Transport Infrastructure
- 4.2 Overview of Lifeline Utilites
- 4.3 Natural Disasters and Infrastructure

5. Legislative Systems

- 5.1 Legislative Systems for Disaster Management
- 5.2 Regulations and Standards for Business Continuity Management
- 5.3 Legislative Systems for the Environment and Pollution Control
- 5.4 Legislative Systems for Development including Land Use, Rivers, and Buiding Codes

6. Implementaion of BCP

- 6.1 Major Natural Disasters and Awareness of Disaster Management
- 6.2 Current State of BCP Implementation
- 6.3 Efforts to Promote BCP Implementation
- 6.4 Problems Facing Implementation of BCP

Appendix 1: Method for Evaluating Predominant Hazards

Appendix 2: Data Sheets Outline of Existing Investigations and Studies

Appendix 3: List of Industrial Parks

Appendix 4: General Investment Risk

3.5 Issues and Recommendations

This study focused on natural disasters such as floods, typhoons, storm surges, earthquakes, tsunamis, volcanic eruptions and landslides. Disasters caused by biological hazards and technical hazards were not investigated. As our subject is disaster impact on business, we must understand the situations of the many transport infrastructures and lifeline utilities that are vital for business activities. To cope with such a broad range of data collection, existing information in the public domain was collected mainly from online sources.

The status of information disclosure in the ASEAN countries varies greatly and sufficient information was not collected in several countries. In many cases the information online was written only in native languages and not in English. It was especially difficult to find adequate information in open sources for lifeline facilities because many lifeline services are operated by private companies and also locally.

Hazard and risk were assessed based on disaster databases operated by international research institutes and universities. Several databases were used in the analysis, and discrepancies were found between them. Data that seemed to be clear misprints were rejected. Note that the data may contain errors, as the aforesaid existing databases were used for the hazard and risk assessment in this study.

CHAPTER 4 SURVEY IN THE PILOT COUNTRIES

4.1 Summary

The risk assessment study and Area BCP formulation were carried out in three pilot areas selected among the industrial agglomerated areas in ASEAN. The selected pilot areas are as follows:

- Indonesia: An industrial agglomerated area distributed over Karawang regency, Bekasi regency, Kota Bekasi, and the surrounding area,
- The Philippines: An industrial agglomerated area distributed over Cavite state, Laguna state, the southern part of Metro Manila, and the surrounding area, and
- Vietnam: An industrial agglomerated area distributed in Haiphong city and the surrounding area.

The concept and implementation procedures for Area BCM were studied in the pilot areas, and plans, Area BCPs, were formulated for the pilot areas. This chapter presents data collection for the hazard and risk assessments, a summary of the assessments, and the contents of the risk profile reports.

4.2 Field Survey

The necessary information for the study was collected through two field surveys carried out by the study team and local consultants.

(1) 1st Survey in June, 2013

In this period the study team visited industrial parks, the local authority, the local chamber of commerce, and related operators of transport infrastructures and lifeline utilities in the pilot areas to request for data. The actual data collection was carried out by local consultants. The collected items were as follows.

Survey for Social Basic Infrastructure

- Outline of the local authority
- Present state of the industrial agglomerated area
- Status of transport infrastructures (roads, ports, railways, airports, etc.)
- Status of lifeline utilities (electricity, water, sewage, communication, gas, etc.)

Survey for Natural Disaster Risk Management

- Questionnaire survey on the current state of disaster risk management (local authorities, industrial parks, business enterprises in the industrial parks, operators of transport infrastructures, operators of lifeline utilities, etc.)

Survey for Natural-Disaster-Related Data

- Data related to earthquakes, tsunamis, and volcanic eruptions (disaster records, hazard maps, earthquake catalogues, topographic maps, bathymetry maps, geological maps, active fault maps, etc.)

・Data related to flood- and meteorology-related disasters (disaster records, hazard maps, tide levels, wind speeds, precipitation, river flows, etc.)

(2) 2nd Survey in August, 2013

・Supplementary survey for hazard and risk assessment (river banks, coastal structures, lifeline facilities, etc.)

4.3 Hazard and Risk Assessment

The hazard and risk assessments were carried out as part of the Area BCP formulation. A disaster scenario describing the situations of enterprises, local administrations, transport infrastructures, and lifeline utilities is key for Area BCP formulation. The purpose of hazard and risk assessment is to set the premise for creating a disaster scenario.

4.3.1 Hazard Assessment

The hazards of interest are related to local business activities and not necessarily limited to a single hazard. The hazard assessments in this project were carried out for several hazards in the three pilot areas, as shown in Table 4.1.

Table 4.1 Hazard Assessments in the Pilot Areas

Pilot Area	Earthquake	Tsunami	Flood	Storm Surge
Bekasi, Karawang (Indonesia)	4	1	4	-
Cavite, Laguna and Southern Part of Metro Manila (the Philippines)	4	7	4	-
Hai Phong (Vietnam)	4	8	4	12

Note: The figures in the table are the numbers of simulated cases.

The scale of a hazard needs to be determined before the hazard assessment is performed. The hazard assessment for disaster management planning usually considers the recurrence of the largest historical hazard in the area or the maximum hazard likely to occur, because the purpose of disaster management is to save lives. The probability of hazard occurrence is not necessarily important in this case. On the other hand, the probability of occurrence is important in hazard assessment for Area BCP because the object of Area BCP is business continuity in the event of disaster. Extremely rare hazards such as hazards occurring once every 1000 years are not considered because businesses endure over far shorter time frames.

This study adopts disaster probabilities of once per 50, 100, and 200 years for earthquake hazard assessment. For tsunamis, the probability of earthquakes large enough to generate tsunamis was used

because probabilistic tsunami simulation was impractical. Probabilities of once per 50, 100 and 200 years are adopted for flood and storm surge simulation, as well as for the reproduction of recent disasters.

All of the hazard assessment results are included in the risk profile reports. The results of hazard assessment for a once-per-200-year probability (excepting tsunami) are shown in Table 4.2.

Table 4.2 Results of Hazard Assessment for Hazards with a Once-per-200-Year Probability

Bekasi, Karawang (Indonesia)	
Earthquake	7 - 8 in MMI scale
Tsunami	Wave height is less than 0.3 meter in Jakarta, assuming a probability of once per 1,000 years or less
Flood	The inundation depth is 4 meters at maximum and the duration is more than 2 weeks.
Cavite, Laguna and Southern Part of Metro Manila (the Philippines)	
Earthquake	8 - 9 in MMI scale. Liquefaction probability is high along Manila bay.
Tsunami	The wave height at the nearest seashore from CEZ is 1 meter, assuming a probability on once per 100 to 600 years or less.
Flood	The inundation depth along Manila bay is 2 meters at maximum and the duration is several days. The inundation area along Laguna lake is limited.
Hai Phong (Vietnam)	
Earthquake	5 - 6 in MMI scale
Tsunami	The wave height is 1 - 2 meters, assuming a probability of once per 1,000 years or less.
Flood	The inundation depth is less than 1 meter and the duration is several days.
Storm Surge	The inundation depth is 5 meters at maximum.

4.3.2 Risk Assessment

The risk assessment was carried out by superposing the distribution of collected transport infrastructures and lifeline utilities over a seismic intensity map or inundation map from the hazard assessment results.

For tsunami, flood and storm surge, the facilities in the inundated area and facilities assumed to be underwater are thought to be basically damaged. The extent of damage is affected by the types, structures, and conditions of the facilities, so the data on past disasters in the area were the most important information for assessment. No such data were available for the pilot area, however, so the risk was assessed based on disaster information from other areas.

For earthquake, the extent of damage can be estimated based on the intensity of seismic motion at the point where facilities are located and the seismic capacity of the facilities. A damage function describing the relation between the damage of typical facilities and intensity of seismic motion is proposed based on past disaster records. The popularly used ATC-13[1], ATC-25,[2] and Hazus[3] are

[1] ATC, 1985, ATC-13: Earthquake Damage Evaluation Data for California, Federal Emergency Management Agency, Applied Technology Council, California, U.S.A.

made based on disasters in the U.S.A. The extent of damage and the necessary time to recover were estimated based on the existing damage function.

Figure 4.1 summarizes the risk assessments in the pilot areas. The highest disaster risk by natural hazard in terms of business continuity in the Bakasi and Karawang area is flood. Earthquake is highest in Cavite, Laguna, and southern part of Metro Manila. Storm surge and flood due to typhoon are most serious in Haiphong. Figure 4.2 to Figure 4.5 are overlay maps of facilities by the hazards, which have the highest disaster risk in the pilot areas.

[2] ATC, 1991, ATC-25: Seismic Vulnerability and Impact of Disruption on Lifelines in the Conterminous United States, Federal Emergency Management Agency, Applied Technology Council, California, U.S.A.
[3] FEMA, 2011, Hazus -MH 2.1, Multi-hazard Loss Estimation Methodology, Earthquake Model.

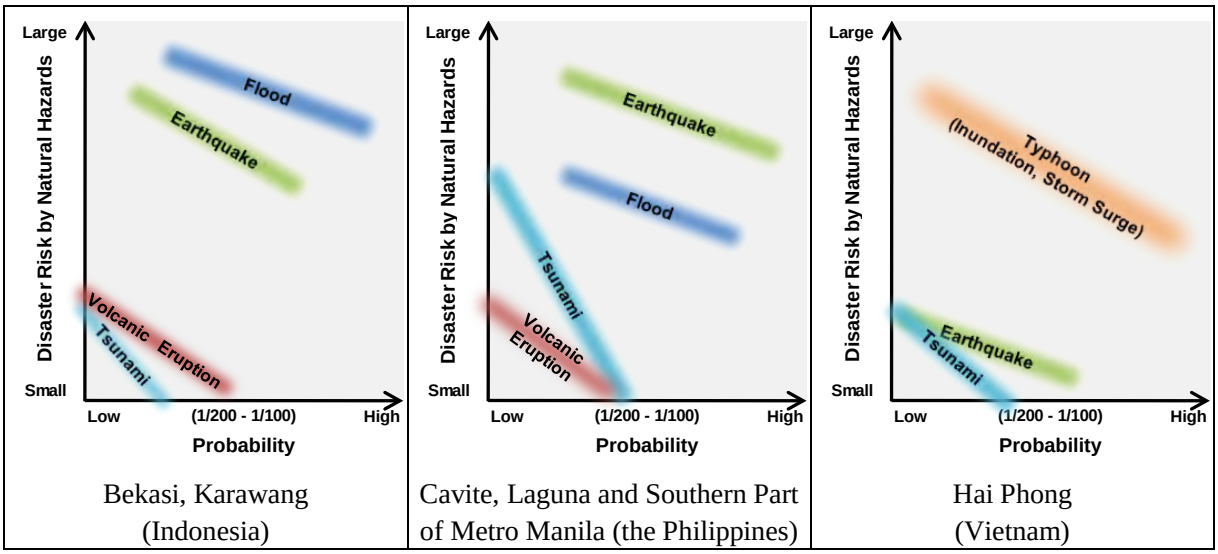


Figure 4.1 Summary of Risk Assessment

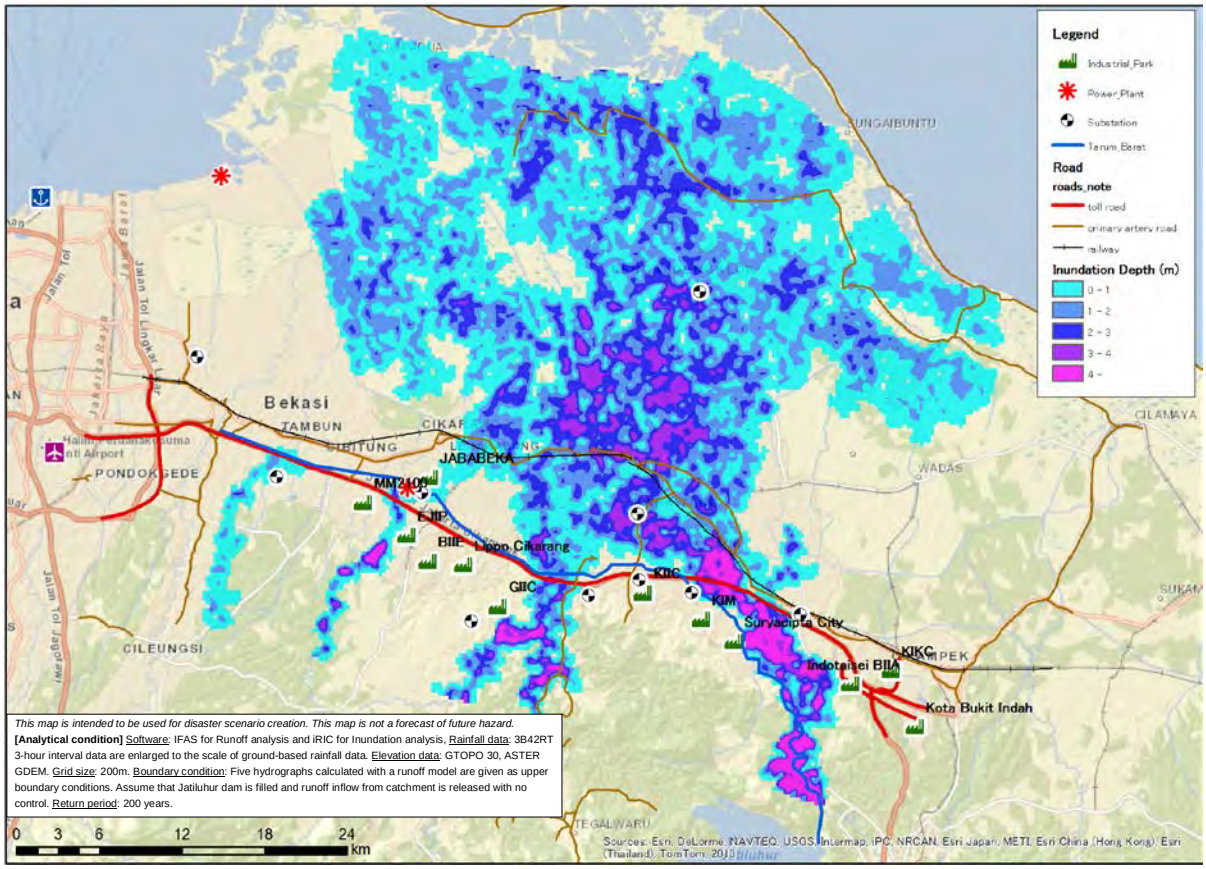


Figure 4.2 Risk Assessment for Flood in Bekasi and Karawang with a Once-per-200-Year Probability

Figure 4.3 Risk Assessment for Earthquake in Cavite, Laguna and Southern Part of Metro Manila with a Once-per-200-Year Probability

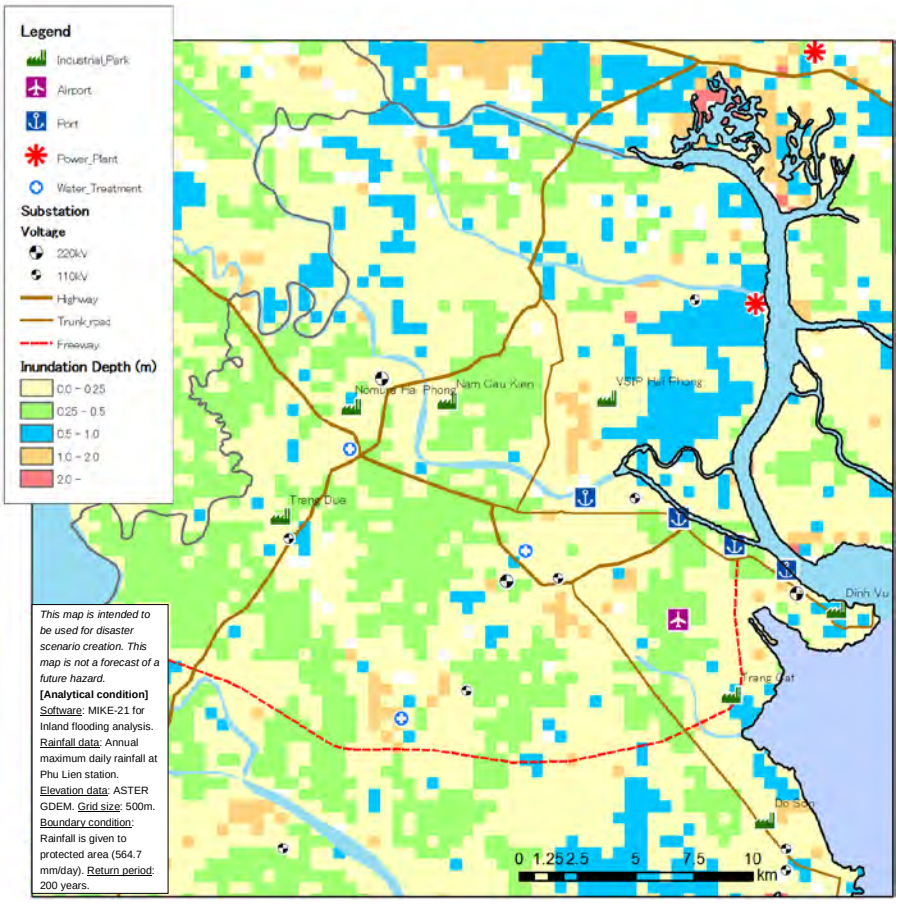


Figure 4.4 Risk Assessment for Flood in Haiphong with a Once-per-200-Year Probability

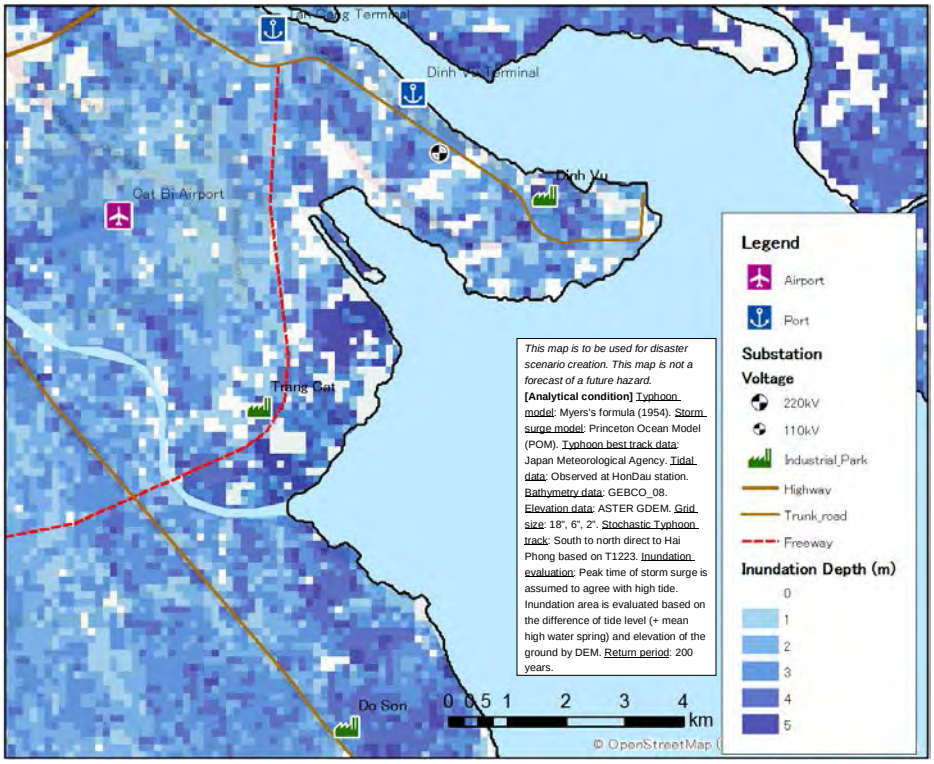


Figure 4.5 Risk Assessment for Storm Surge in Haiphong with a Once-per-200-Year Probability

4.4 Disaster Scenario Creation

The disaster scenarios corresponding to the highest disaster risk with a once-per-200-year probability in the pilot areas are summarized in Table 4.3.

Table 4.3 Disaster Scenario in Pilot Area

Disaster Scenario for Flood in Bekasi and Karawang, Indonesia	
Buildings in Industrial Park	・No direct damage by inundation.
Lifeline Facilities	・The electric substation and water treatment plant in and next to industrial parks are not damaged. ・The electric substation in Karawang city is inundated (over 2m). ・Calls by landline and mobile phone are limited due to the power shortage.
Traffic Infrastructures	・The Jakarta-Cikampek Toll Road is closed for more than 2 weeks. ・Highway 1 is closed in Karawang City for more than 2 weeks.
Workers in Industrial Parks	・Karawang City and the surrounding area are inundated for more than 2 weeks. ・Many employees are absent because their houses are inundated. ・The traffic conditions worsen and employees arrive at the factories late.
Disaster Scenario for Earthquake in Cavite, Laguna, and Southern Part of Metro Manila, the Philippines	
Buildings in Industrial Park	・Ten percent of the buildings suffer moderate damage. Repairs are necessary. ・Some ceiling panels and illuminators fall down, and parts racks may topple. ・Non anchored machines may move. ・Transformers may topple.
Lifeline Facilities	・The electric substation stops operating for 1 week. The capacity recovers to 50% 1 month later and takes 3 months for full recovery. ・Landlines and mobile phone lines become congested because of the shortage of electric power. ・Wells and water tanks for industry stop operating for several days. The capacity recovers to 50% in 1 week and takes 1 month for full recovery.
Traffic Infrastructures	・The expressway between Manila and Cavite is closed for 2 weeks due to the liquefaction. After temporal restoration work, limited traffic will become possible. ・The traffic capacity of the Expressway between Manila and Laguna is limited in some sections. It takes 1 week to 50% recover and 2 weeks for full recovery. ・Most piers of Manila Port are unusable for several months because of the liquefaction. Several piers will become usable after temporal restoration work. ・Gantry cranes in the container terminal are severely damaged. It will take half year to recover 50% of the cargo handling capacity.
Workers in Industrial Parks	・Some employees will be absent because 10% of their houses are heavily damaged and 20% have incurred moderate structure damage. ・Traffic conditions worsen, so employees arrive at their factories late.
Disaster Scenario for Flood and Storm Surge due to the Typhoon in Hai Phong, Vietnam	
Buildings in Industrial Park	・Buildings in factories in industrial parks along the coast suffer inundation by storm surge.
Lifeline Utilities	・Hai Phong Power Plant is inundated to a depth of 0.5 - 1m. Electric power to Hai Phong is limited. ・The 220kV substation in Dinh Vu is severely damaged by seawater.

	・The 110kV substations near the coast is damaged by seawater. ・The electric power supply to Hai Phong area is limited. ・Calls by landlines and mobile phones are limited due to the power shortage.
Traffic Infrastructures	・Highway 5 to the ports is closed for several days. ・Some of the roads in the city are closed for several days. ・Dinh Vu Port is affected by the storm surge. Cargo-handling equipment is damaged by seawater. ・The container yard in the Dinh Vu area stops operating. ・Other ports are crowded and the loading times get longer.
Workers in Industrial Parks	・Some in employees are absent because their houses are inundated. ・Traffic conditions worsen, so employees arrive at their factories late.

4.5 Compilation of Risk Profile Report

The results of hazard and risk assessments and the conditions of the pilot areas based on the collected data have been compiled and three "Risk Profile Reports" (one for each pilot area) have been prepared. Table 4.4 shows an example of the contents of a risk profile report.

Table 4.4 Contents of Risk Profile Report (ex. Hai Phong, Vietnam)

Chapter 1 Disaster Risks of the Pilot Area

1.1 Overview
1.2 Identification of Predominant Hazards
1.3 Disaster Risk for Storm Surges and Floods
1.4 Hazard and Risk Information Sources

Chapter 2 Natural Hazards in the Pilot Area

2.1 Floods
2.2 Typhoons/Meteorological Hazards
2.3 Storm Surges
2.4 Earthquakes
2.5 Tsunamis
2.6 Volcanoes

Chapter 3 Outline of Natural Hazard Assessments

3.1 Seismic Hazard Assessment
3.2 Tsunami Hazard Assessment
3.3 Flood Hazard Assessment
3.4 Storm Surge Assessment

Chapter 4 Profile of the Pilot Area

4.1 Outline of the Pilot Area
4.2 Outline of Local Authorities
4.3 Present State of Industrial Agglomerated Area
4.4 Transport Infrastructure Conditions
4.5 Lifeline Facilities and Public Services
4.6 Economic Relations with Neighboring Regions and Japan
4.7 BCP Implementation Conditions

4.6 Issues and Recommendations

In Area BCP, all of the hazards that may affect the local business activities must be considered. Our focus in the current study was natural hazards. Different types of hazards, namely, earthquakes, tsunamis, typhoons, storm surges, and volcanic eruptions, were considered. Therefore, diverse data were collected for the hazard and risk assessments. A broad range of data of other types was also collected to understand the pilot areas. Yet more detailed information on traffic infrastructures and lifeline utilities is necessary for Area BCM implementation, especially for considering the strategy of Area BCM and measures to reduce risks to businesses.

Three or four types of hazard were assessed in each pilot area in this project. The hazards were assessed based on existing data and public information. No field survey was conducted, but it still took several months for the experts to conduct their analysis. In formulating Area BCM/Area BCP in new areas, even the subject hazard is limited to one type, the resources required for hazard and risk assessments similar to those in this project are not small. The use of existing hazard maps, risk assessment studies, and disaster experience should be considered at first. The data collection of existing hazard maps and disaster records should be emphasized in this context.

CHAPTER 5 GIS DATABASE

5.1 Overview

5.1.1 Purpose for development of GIS Database

A GIS database was developed using the information and data collected in the Study. The GIS database consists of two Components. The target areas are the ten countries in ASEAN for Component 1 and three pilot areas for Component 2. Component 1 of the database consists of data on natural conditions and social conditions. In Component 1, natural disaster hotspots are extracted by overlaying the natural disaster layers over the GIS base map. The details of hotspot extraction are described in the Country Reports.

Component 2 of the GIS database has been prepared for three pilot areas where major industrial parks and many Japanese firms are located: Bekasi and Karawang in Indonesia; Cavite, Laguna, and the southern part of Metro Manila in the Philippines; and Hai Phong in Vietnam. The implementation of Area BCM requires the involvement of not only private enterprises, but also local governments, operators of transport infrastructure and lifeline utilities, and local communities. The GIS database and its mapping technology will support decision-making in various aspects of Area BCM.

5.1.2 Provision of Database to AHA Centre

The main task of the ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management (AHA Centre) is coordination of ASEAN countries for emergency response to natural disasters. In the operation room in AHA Centre, the latest hardware and computer systems were introduced with funding from JAIF and USAID. The equipment was used for country-based communications on disaster responses by monitoring disasters in real time.

As decision-making in the process of Area BCM requires various information； the study started from collecting information for GIS data layers in the 10 ASEAN countries. The formulated GIS database was provided to AHA Centre to support their activities. The usage of data is not limited to mitigation and prevention measures such as Area BCM. The database can be used by AHA Centre for real-time response to natural disasters. A good example of another use for the data was the mapping of regional evacuation in the Philippines during the tropical cyclone “Hagupit” in December 2014.

This chapter begins with a brief introduction of AHA Centre’s monitoring system and goes on to present an overview of the constructed GIS database.

5.1.3 AHA Centre’s Monitoring System

The following three systems have been installed in the operation room of AHA Centre for the purpose of assisting the various disaster-monitoring and disaster-response tasks in ASEAN countries.

(1) Disaster Monitoring Response System (DMRS)

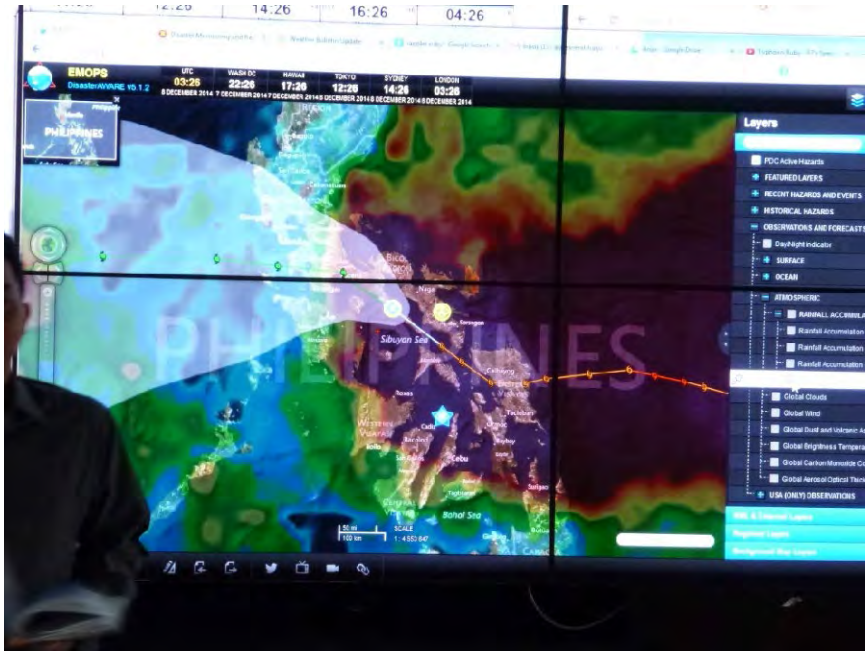
This is a US-made disaster monitoring system using an internet-based service website that promptly updates natural disaster data and locations in and around ASEAN countries on a screen for the pacific region. In the ASEAN area, the Pacific Disaster Center (PDC) provides real-time information on disasters. The PDC streams this disaster information over the internet without actually storing the data in its servers. The DMRS is a packaged system that doesn't allow us to download or upload any kinds of information.

(2) Web EOC

This is the web-based information sharing system introduced by NTT Learning System, Japan. It is equivalent to the web operational package system of the Incident Command System (ICS) of the US. It is installed in branch offices in ASEAN to allow AHA Centre staff share messages among ASEAN countries. It also enables the directors to send commands to staff at disaster sites by mobile phone.

(Left, Web EOC; Center, Twitter and Google Map, etc.; Right, DMRS)

Figure 5.1 Monitoring Systems in the Operation Room of AHA Centre (Dec 8, 2014)



(The screen displays data provided from PDC on the movement of tropical cyclone "Hagupit" and the distribution of precipitation.)

Figure 5.2 A DMRS Screen (Dec 8, 2014)

(3) Geographic Information System (GIS)

ESRI's ArcGIS, a worldwide standard GIS, has been introduced. The version of the system is still 10.0 rather than the updated version 10.2. Four licenses are installed in computers.

- ArcGIS Desktop Basic：3 licenses (laptop computers)
- ArcGIS Desktop Editor：1 license (server)

The Editor has been installed in the server and is expected to serve as a key system for information transmission. As a future use for the Editor in the server, AHA Centre intends to build a geodatabase of natural disasters in ASEAN countries. As of this writing, however, no GIS information has been built.

5.1.4 Overview of the GIS Database

We have constructed two major Components in the GIS database, as follows.

- Component 1: Database for ASEAN 10 countries
- Component 2: Database for three Pilot districts

Component 1 is composed of basic information for the country reports in this project. One distinctive feature of Component 1 is a collection of past records of natural disasters including earthquakes, tsunamis, volcanoes, floods, tropical cyclones, and landslides. The records are presented in GIS maps. Infrastructures such as roads, railways, airports, ports, dam, and power stations overlaid with these natural disaster layers on a base map in the GIS database can provide very important information for impact analysis in the process of Area BCM.

Further, existing studies on natural disasters are summarized in formatted sheets linked to the features on the GIS map. Figure 5.3 shows the distribution of existing studies on natural disasters in the 10 ASEAN countries in Component 1.

In Component 2, data from the three pilot areas in Indonesia, the Philippines, and Vietnam are collected and summarized in the GIS database. Several workshops were held in this project to share the results of impact analysis and discuss detailed plans for business continuity in the pilot districts based on these collected data layers in the GIS maps.

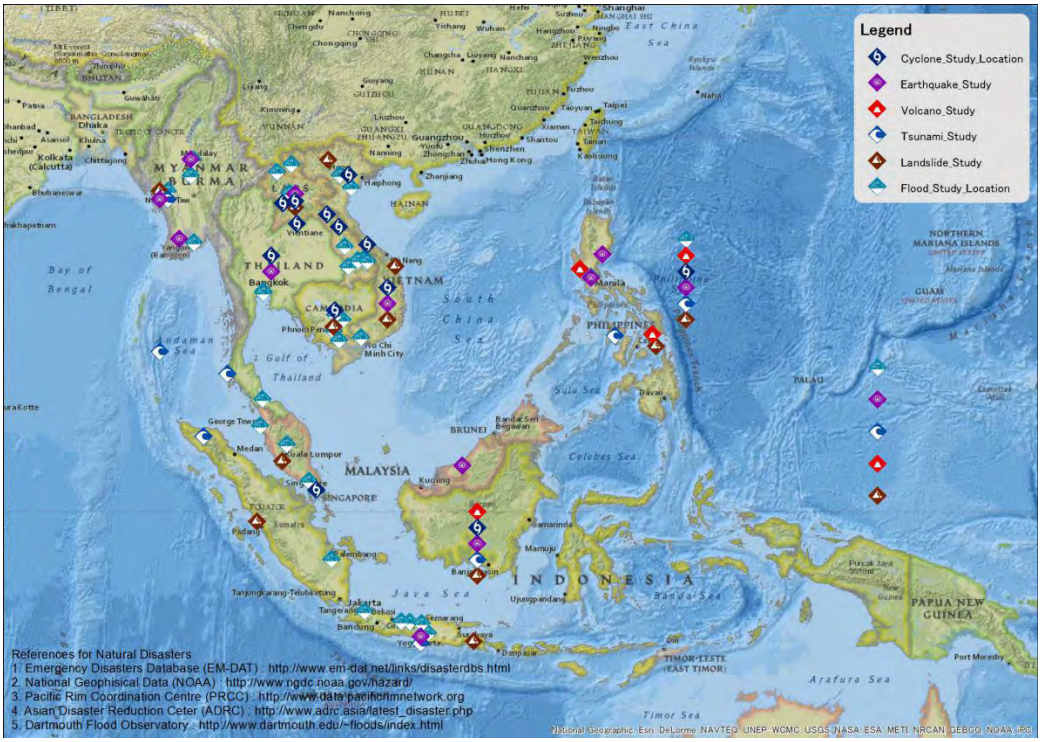


Figure 5.3 Distribution of Existing Studies on Natural Disasters in the ASEAN Region

5.2 GIS Database Construction

Figure 5.4 summarizes the GIS database structure for Components 1 and 2 in this project. The GIS database is formatted as a “Personal Geodatabase.” This is one of the main data formats for ArcGIS and is identical to the Microsoft Access database format (*.mdb). The format enables us to start data input in an MS Excel spreadsheet, import the results into an MS Access database, and present results in GIS maps.

Component 1 consists of three main folders named “Natural Hazards,” “Built Environment,” and “Base Map.” Existing study sheets in PDF format can be browsed by clicking the location features in the GIS map (Figure 5.3) with the Hyper Link tool.

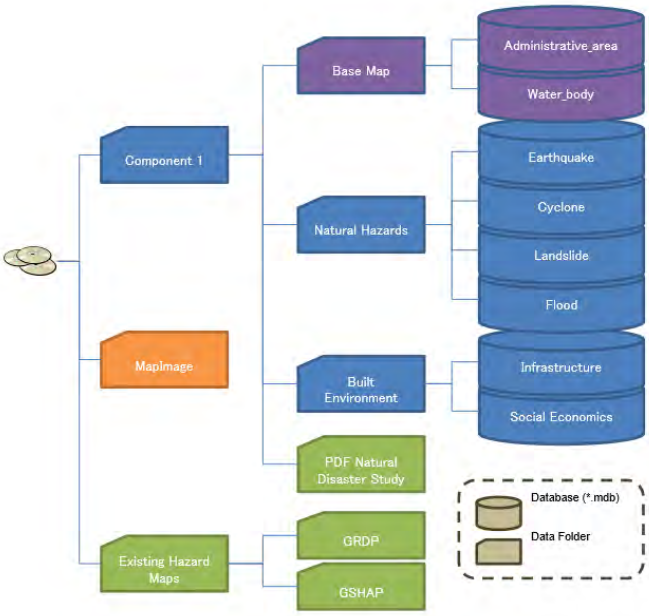
Component 2 consists of two main folders named “Built Environment” and “Hazard Simulation.” Hazard Simulation data mainly acquired through the work of the many experts in this project are stored in two sub folders named “Outputs” and “Data.” Details will be described in section 4.4. Some

parts of the data for the Hazard Simulation folder were created in collaboration with experts. Figure 5.5 presents one result of this editing work on a geological map in Indonesia and Vietnam.

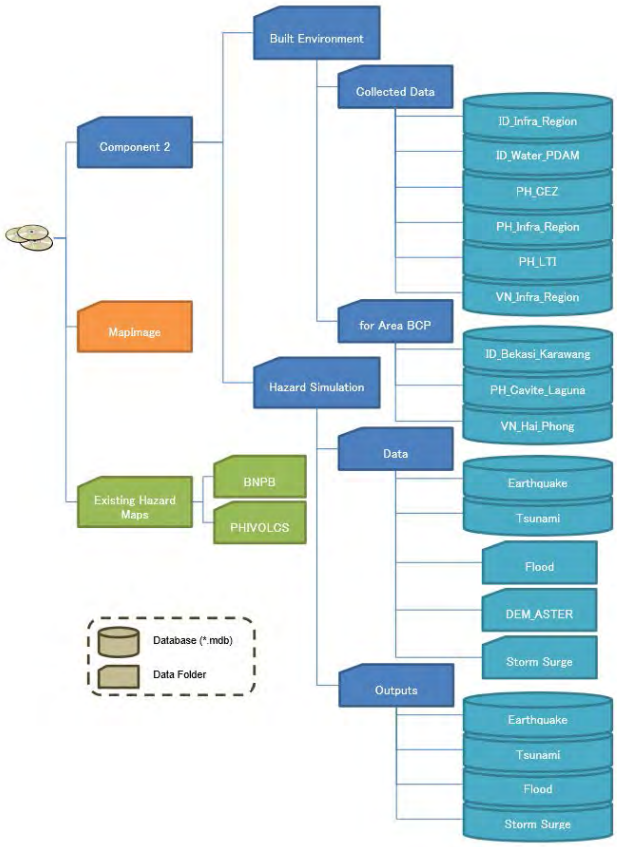
The Basic information on the contents of the Collected Data in the Built Environment folder cover infrastructures, namely, roads; airports and ports; lifelines including electricity, gas, water supply, and sewage; power stations; garbage stations; schools; hospitals; and land use maps. These items differ from one another due to differences in the data-collecting process in the respective pilot districts. Some of the above data were picked up for Area BCP workshops. (Folder: For Area BCP)

Further, some of the existing natural hazard map layers were collected from BNPB in Indonesia and PHIVOLCS in the Philippines in Component 2. Unfortunately, there was no chance to visit Vietnam. These natural hazard layers could be useful for impact analysis based on hazard maps in the event that no detailed hazard simulations are available. (Folder: Existing Hazard Maps, BNPB, PHIVOLCS) BNPB's hazard maps are layer files (*.lyr) for ArcGIS and are available through internet connection. PHIVOLCS's hazard maps are stored in the Geodatabase but are limited to within the provinces of Laguna and Cavite.

The two documents in Appendix A10 provide detailed information on the GIS database.

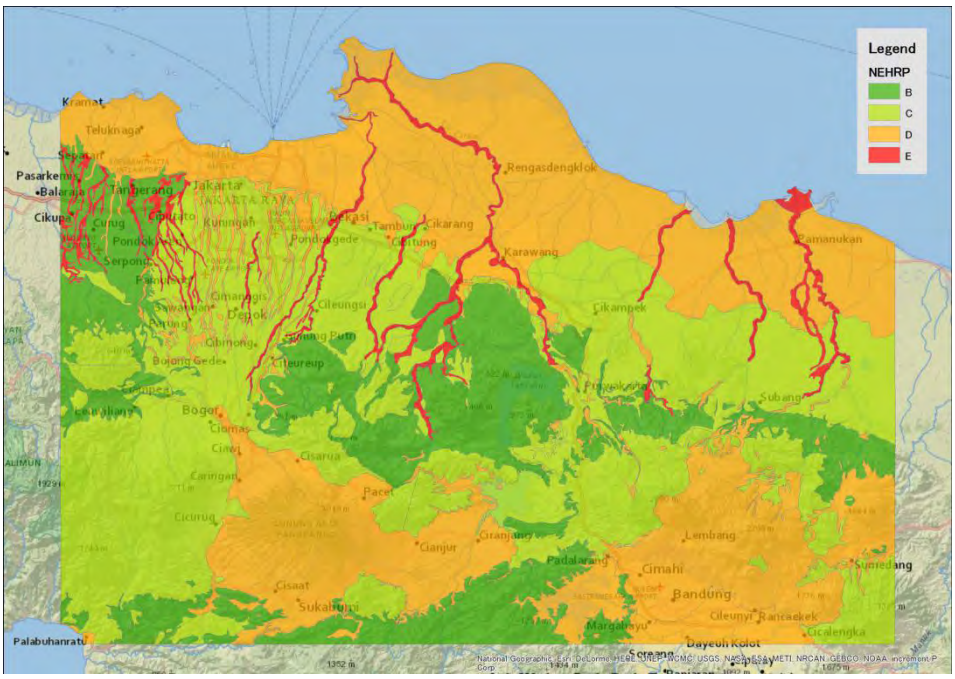


(a) Structure of Component 1

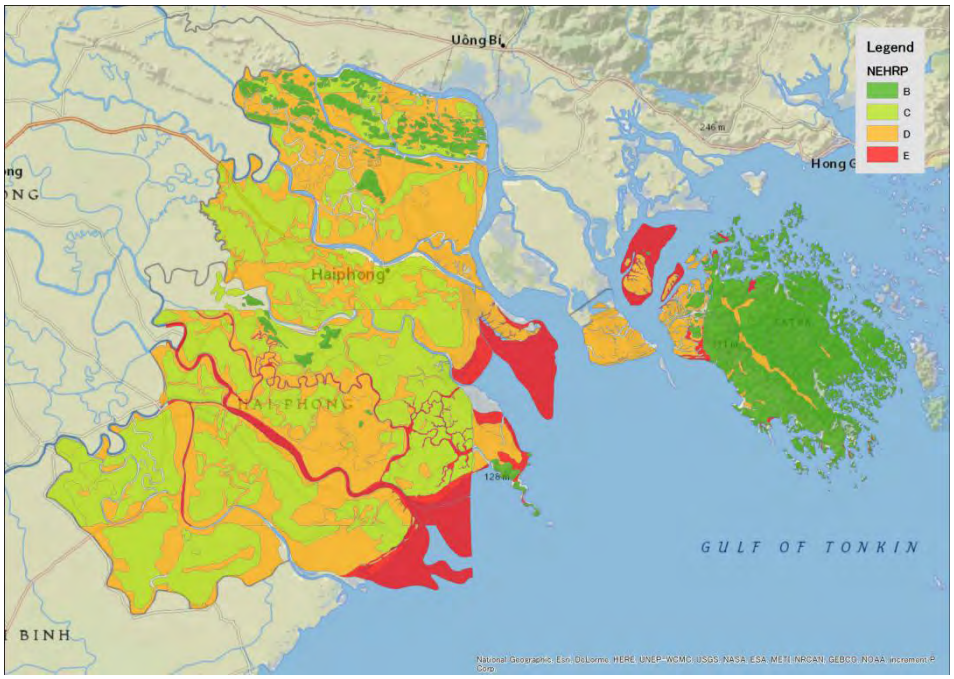


(b) Structure of Component 2

Figure 5.4 GIS Database Structure Collected in this Project



(a) Digitized Geological Map in Jakarta and Bandon, Indonesia



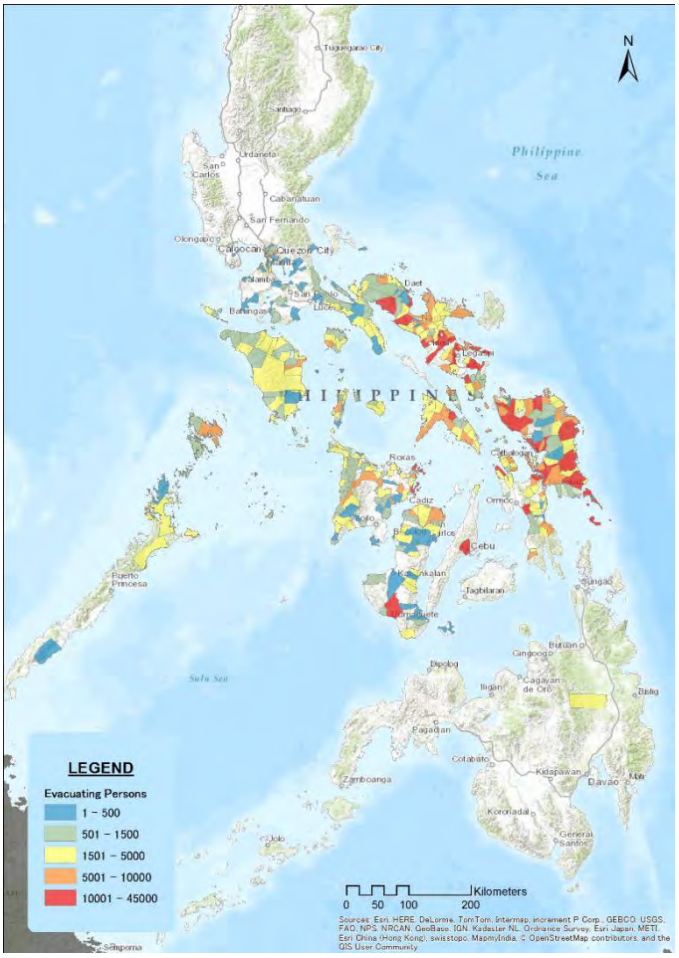
(b) Digitized Geological Map in Haiphong, Vietnam

Figure 5.5 Example of Data Used for Hazard Simulations in Pilot Districts (Geological Map)

5.3 Application Example of the GIS Database in AHA Centre

The main work of AHA Centre is coordination on planning of disaster response and ready service among ASEAN countries during disasters. In December 2014, AHA Centre was responding to the intense tropical cyclone Hagupit. Hagupit developed into the twenty-second tropical storm in the east of the Philippines. The storm had an atmospheric pressure of 905 hPa and peak wind speeds of 115 kt (60 m/s) and caused a landfall near Tacloban, Leyte on December 8. It resembled 2013's thirtieth tropical storm, which left more than 7,000 dead or missing.

Many people evacuated early in order to prevent disaster from this tropical storm. AHA Centre used some GIS layers collected in the study to prepare a map presenting evacuee distribution. Figure 5.6 shows the result. The procedure for creating this map is as follows. 1. Prepare a GIS layer with the administrative boundary at the municipality level; 2. Input the number of evacuees in an Excel spreadsheet; 3. Add the data sheet and merge it with the administrative boundary in ArcGIS; 4. Create a thematic map in ArcGIS.



Note: An example of utilization of the GIS database (input to Excel separately)

Figure 5.6 Distribution of Evacuees on December 10, 2014, 6AM

5.4 Issues and Suggestions for the Future

5.4.1 Issues on the Computer System in AHA Centre

- The map window in DMRS cannot be zoomed in far enough to show detailed areas. The scale is too large to discuss and consider disaster response or ready service. Yet the tools in DMRS seem fairly difficult to revise, given that DMRS is a packaged web system.
- It would certainly be preferable to present detailed maps using ArcGIS on the operation room screen, as the map screen for DMRS lacks both sufficient accuracy and base layers. For this reason, Google Map was alternatively displayed on the screen.
- Web EOC was introduced as a channel for communicating among the persons in charge in countries in ASEAN not only at times of disaster, but also at ordinary times. Yet the persons in charge are not using Web EOC at ordinary times. Training for the persons in charge from all of the ASEAN countries is necessary.

5.4.2 Suggestion on the Use of GIS

- In order to solve the issues with the detailed map in the operation room, we recommend the use of a series of ArcGIS applications for detailed mapping and data sharing by the following steps: 1) input information on disaster status such as evacuation on the ArcGIS Desktop, 2) upload the disaster status information to ArcGIS Online (a web-based GIS), 3) share the disaster status information on the detailed online base map among ASEAN countries.
- For an example of ready service to the damaged area, it is an urgent matter to plan out the landing place for transport planes and an appropriate route for transporting goods by vehicle. The route-finding tool in GIS will surely be much effective for these purposes.
- AHA Centre can take the initiative to ASEAN countries by using the detailed disaster status map to discuss matters such as the distribution of evacuees, open spaces, and the status of elimination of road obstacles.
- As described in Section 5.3, mapping data on the number of evacuees must be included as basic information for planning the transportation of goods. Data sheets in Excel or TXT format are recommended for this purpose, not PDF.
- One advantage of using GIS is its flexibility in editing map features by revising real-time information. For this purpose, GIS experts should be permanently stationed. However, AHA Centre doesn’t have enough staff to operate GIS. The number of GIS staff must be increased or a GIS training courses must be organized to improve their skills.

5.4.3 Issues on Area BCP by AHA Centre

- The main work of AHA Centre is coordinating work for emergency response among ASEAN countries. For this purpose, they place high priority on having flexible organization charts and communication networks. Figure 5.7 presents a team organization that has been revised to respond

to a specific disaster. Figure 5.8 shows the operation wall for staff communication during the tropical typhoon Hagupit.

- Area BCP is assumed as one specific scenario based on damage assessment. As such, it does not necessarily correspond to the main work of AHA Centre. AHA Centre can share the respective BCPs in ASEAN countries and coordinate them as necessary. Some BCPs might be enhanced to Area BCPs in ASEAN. Each country, however, should consider and discuss the basic necessary issues.
- The GIS database collected in this project is effective for emergency response, as confirmed in Section 5.3. If some projects for an Area BCP were to be launched in the Philippines, PHIVOLCS would provide GIS based hazard maps and infrastructures. Such detailed GIS data would be used in the case of emergency response.
- Natural disaster records could be stored in AHA Centre for the future. The products of this project can be thought of as the components of a basic format. The GIS database, including its hazard maps and natural disaster records, is expected to be used for countermeasures in advance, including BCPs.

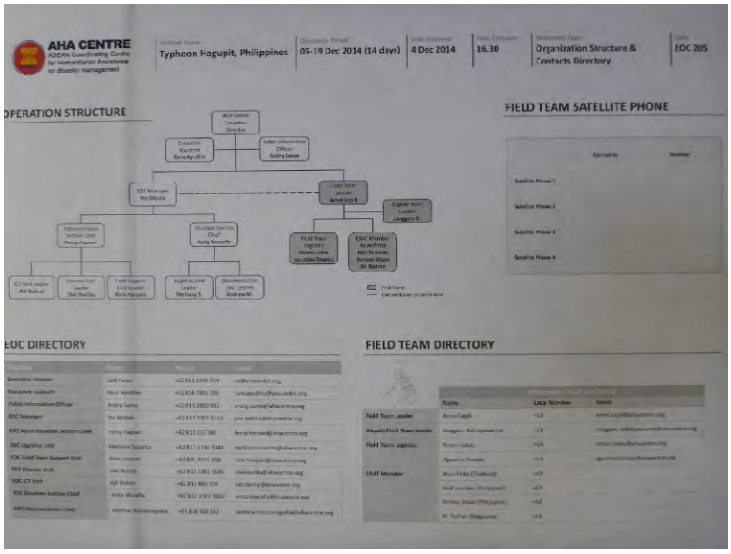


Figure 5.7 AHA Centre's Organization Chart and Communication Network

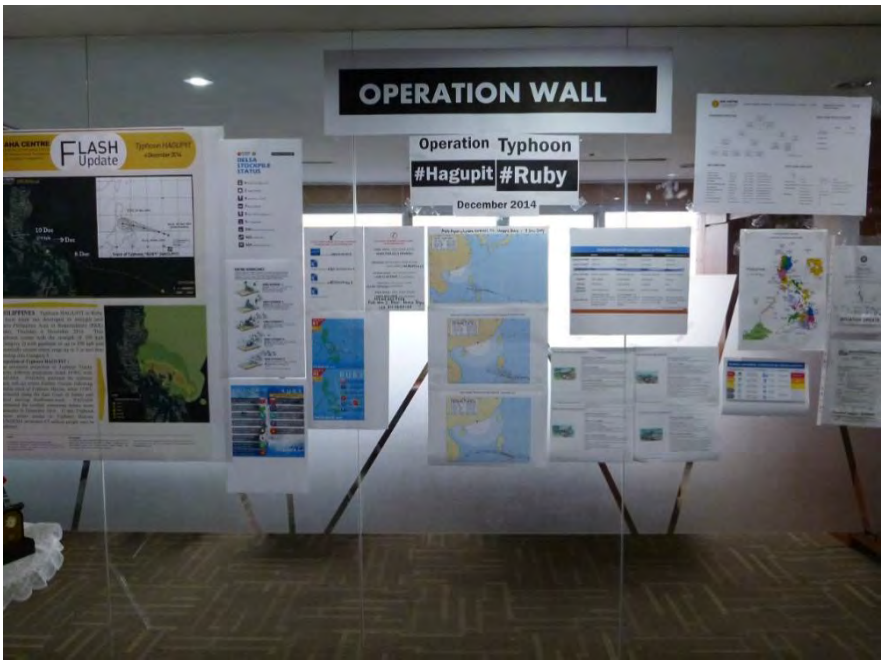


Figure 5.8 Operation Wall in AHA Centre

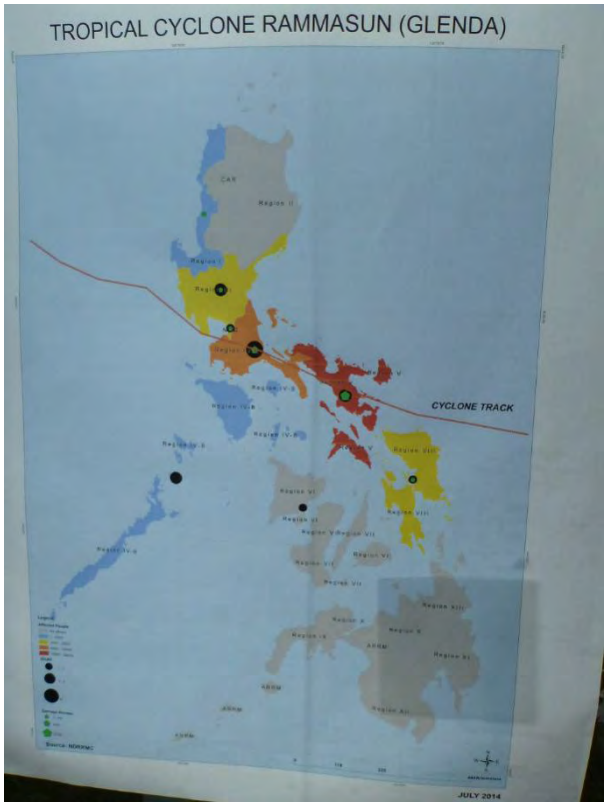


Figure 5.9 Typhoon Tracking and Damage Status Created by GIS

CHAPTER 6 DEVELOPMENT OF AREA BCPS IN THE PILOT AREAS

6.1 Summary

AHA Center and JICA developed Area BCPs as a pilot study from February 2013 to March 2015. The pilot areas are three industrial agglomerated areas: Bekasi and Karawang in Indonesia; Cavite and Laguna and the southern part of Metro Manila in the Philippines; and, Hai Phong in Vietnam as shown in Figure 6.1.

This pilot study was aimed at developing the concept and implementation procedures of Area BCM, and to formulate the plans (Area BCPs) in the process of Area BCM. In the pilot areas, besides the development of Area BCPs, a focus was also placed on the stakeholders of the pilot areas to understand the concept and the implementation procedure, and to experience the process of forming Area BCPs.

In the pilot Area BCPs, the outcomes were compiled from a series of workshops carried out by stakeholders of the area.

Indonesia The Philippines Vietnam

Figure 6.1 The Pilot Area to Develop Area BCP

The Area BCP, a planning document, has been developed in each pilot area via the following steps:

- Organizing a working group
- Developing Area BCP
- Revising Area BCP

6.2 Organizing a Working Group

The stakeholders are diverse, such as the national government, local governments, operators of transport infrastructure and lifeline utilities, industrial park administrators, companies, governmental research institutes, universities, and others.

In each pilot area, a working group was organized with members of these stakeholders to develop Area BCP. The local government or agencies of the national government acted as the leader and recruited the members to participate from among the stakeholders. Local coordinators such as local consulting firms or university staff acted as the secretariats of the pilot study. Meetings and seminars were held in pilot areas to make the stakeholders understand Area BCM prior to forming the working groups.

In forming the working group, as it was difficult for private sectors to understand the benefit of Area BCM, there were few participants from private sectors and this was a remaining issue to be solved.

A list of working group members is noted in Appendix A3, and Table 6.1 summarizes their numbers.

Table 6.1 Number of Organizations to Participate the Working Group

Country	Leaders	Members	Supporters
Indonesia	1	39	14
Philippines	4	30	9
Vietnam	1	25	11

6.3 Developing Area BCP

In the pilot study, the development of Area BCP was carried out in three steps, as shown in Table 6.2. The steps consist of knowing the area, determination of the strategy for Area BCP and development of Area BCP. Workshops were held three times in each pilot area to discuss the development of Area BCP (Figure 6.2). Homework was given to members prior to the workshops. In the workshops, understanding and discussions were carried out based the result of the homework.

In the workshops, the members were divided to 4-6 groups, and group works (mainly discussion and table-top exercise) were carried out. Group work was attempted for active and smooth discussions. A Chairman, a presenter, and a time keeper were selected from among the members of each group. Additionally, a facilitator (university student, local consultant, or junior researcher) was assigned to each group. Figure 6.2 shows photographs of the workshops.

The JICA study team made a draft document of Area BCP based on the discussions during the workshops. Contents of the plan are presented in Table 6.3. The document was approved at the workshop and Area BCP ver.1 was completed. The Area BCPs ver.1 was prepared by English, Bahasa Indonesia and Vietnamese.

Table 6.2 Steps to Develop Area BCP

Step	Area BCM Cycle	Workshop	Objectives of Workshop
1	Understanding the Area	Workshop 1	* Hazards affecting the industrial agglomerated area * Business environment during disaster situation * Limitations of Individual BCP
2	Determining Are BCM Strategy	Workshop 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
3	Developing Area BCP	Workshop 3	* Draft plan of Area BCP * Improvements of Draft plan and previous workshops * Future activities

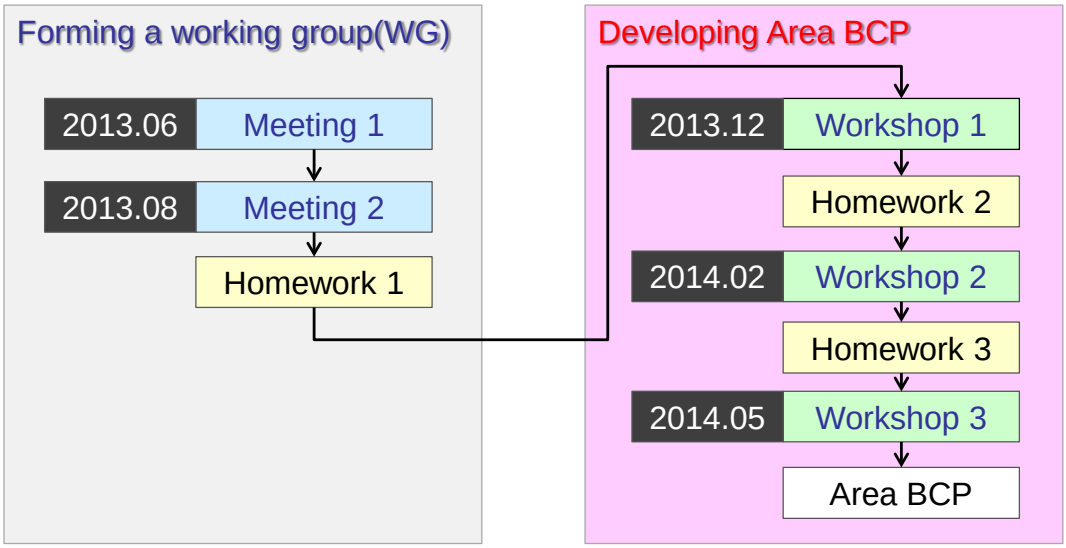


Figure 6.2 Process to Develop Area BCP

Figure 6.3 Photographs at Workshops

Table 6.3 Example of Contents of Area BCP ver.1

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

6.4 Reviewing Area BCP

After the development of Area BCP ver.1, the plan was brought back to the organizations of the working group members and reviewed by their respective staff. The JICA study team presented an instruction to review the plan (Table 6.4). At the 4th workshop, the plan was revised as Area BCP ver.2. The developed Area BCPs are attached to the guidebook, "Planning Guide for Area Business Continuity, ~ Area BCM Toolkits ~, AHA Centre and JICA, 2015".

Table 6.4 Instruction for Revision of Area BCP ver.1

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.

6.5 Issues and Future Activities

In the pilot study, Area BCPs were developed through workshops with the cooperation of local stakeholders. The following points may be mentioned as issues for improvement.

- The national and/or local government must participate actively as the leader. Therefore, JICA and JICA study team are required to select the appropriate departments of national or local governments, explain the benefits of Area BCM to key persons, and make their roles clear.
- As for the members of the working groups, there were only a few participants from the private sector in this pilot study. It may be necessary to create some incentive to encourage the private sector to participate in Area BCM.
- Most of the members participated in the workshops as individual basis, and the discussions within their organizations were not active. Active participation to Area BCM as organization is important.
- In this pilot study, the JICA study team planned and implemented the workshops. In the future, local coordinators are expected to be trained and play the role that the JICA study team did for Area BCM.
- For the workshops to progress smoothly, the role of the facilitator is important. In the pilot study, local consultants, and university staff and students acted as facilitators. For the promotion of Area BCM, the facilitators are expected to be trained.
- The Area BCPs formulated in the pilot study were recognized only by the working group members. The Area BCP is expected to be authorized by the local government or relevant organization who administer the industrial agglomerated area concerned in order to encourage more involvement to Area BCM from organizations of the area.
- Area BCPs formulated by the pilot study were the first trials in the area. It is expected that the stakeholders of the areas will continue the approach of Area BCM and revise Area BCPs repeatedly
- In the pilot areas, the Area BCP is expected to be revised to ver.3. Some points to revise from Area BCP ver.2 are the following: A review of bottlenecks and measures, consideration of new risks (such as the dam breaks in Bekasi and Karawang in Indonesia), estimation regarding the cost-benefit of measures, quantitative analysis of social and industrial impact, impact analysis for supply chains, and others.

CHAPTER 7 PROPOSAL OF AREA BCM AND PREPARATION OF THE GUIDEBOOK

7.1 Summary

Based on the experiences and lessons learned from the pilot study on Area BCP development, the JICA study team proposed the concept and procedures for the implementation of Area BCM. The team then prepared a guidebook that can be used by other industrial agglomerated areas in the ASEAN region and elsewhere when they start and implement their own Area BCM.

7.2 Proposal of Area BCM

When an emergency such as a natural disaster imposes severe impacts throughout an area in the ASEAN region or elsewhere, all stakeholders (i.e., national government, local governments, transportation infrastructure operators, lifeline operators, industrial park administrator, companies, governmental research institutions, universities, and others) must work in close cooperation in order to realize the continuation or early restoration of industry functions.

Though many individual organizations such as companies now implement BCM, it is important that all stakeholders act and implement Area BCM in cooperation. Local stakeholders must circumvent serious bottlenecks in transport/lifeline infrastructure by cooperating for the continuity or early restoration of industry functions in their area.

The JICA study team named this initiative Area Business Continuity Management (Area BCM) and proposed that Area BCM be applied to industrial agglomerated areas in the ASEAN region.

7.2.1 Outline of Area BCM

Area BCM is a risk management process for the continuation/early restoration of industry functions in regions affected by emergencies such as natural disasters on an area-wide basis (Table 7.1).

Table 7.1 Definitions of 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.[1)] A cyclic process of understanding risks and impacts, determining common strategy of risk management, developing the Area BCP, implementing the 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 local economy to disasters.[2)]

1) JICA Study Team

2) 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

The Area BCM process is composed of the five activities shown in Figure 7.1. The stakeholders repeat and improve all five activities. The cycle of activities is called the Area BCM cycle.

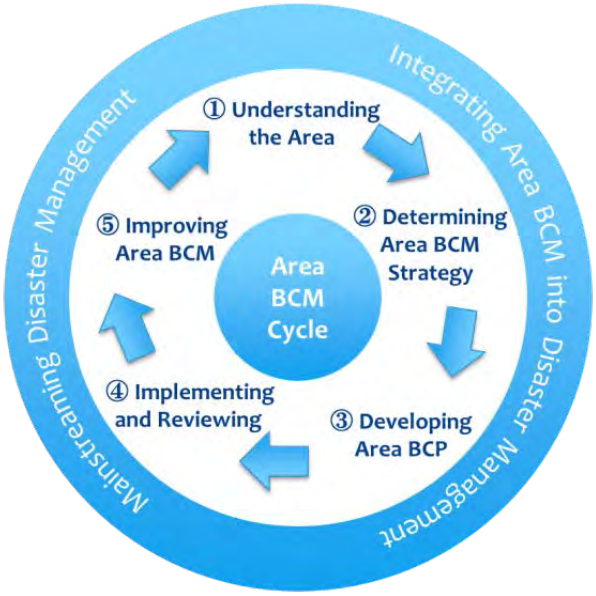


Figure 7.1 Cycle of Area BCM

7.2.2 Benefits of Area BCM

Area BCM is a shared effort by all stakeholders to realize the continuation or early restoration of local industry functions in emergency situations such as natural disasters.

Area BCM is an effort to connect individual organizations and regional development (Figure 7.2). In each organization, participation in Area BCM will contribute to its own BCM and

disaster-risk-reduction activities. The advance of Area BCM and cooperative activity in conjunction with disaster prevention planning in an area will help promote sustainable development in the area.

Area BCM and the individual BCM of an organization are related to each other (Figure 7.3). An individual organization can obtain the information necessary for its own BCM and form a network with other stakeholders to encourage other stakeholders to take effective measures through Area BCM activities. On the other hand, Area BCM can include the BCM efforts of individual organizations such as their information, strategies, and BCM measures.

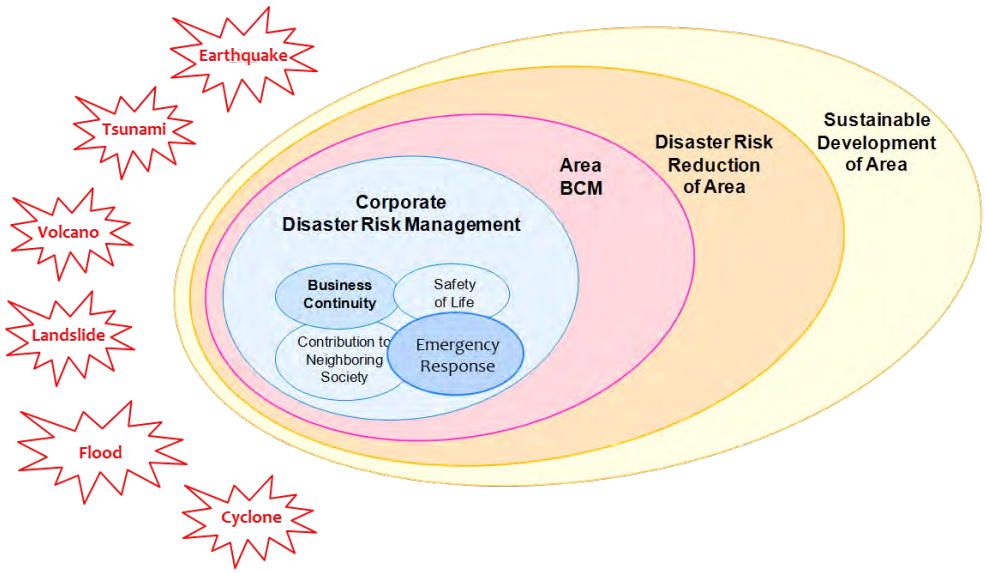


Figure 7.2 Position of Area BCM in Area Development

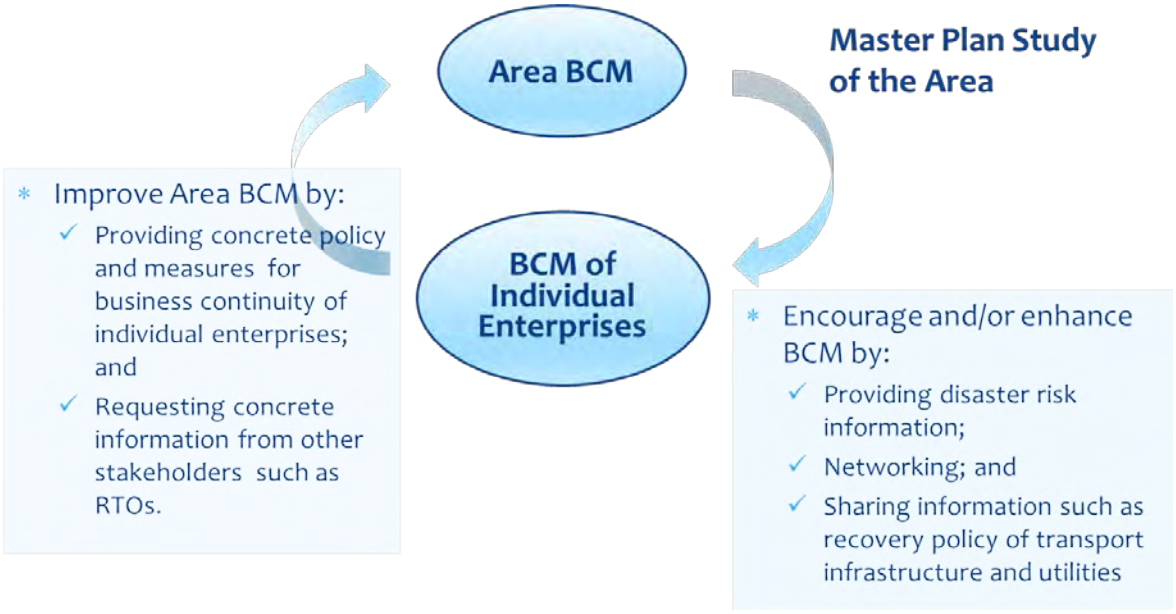


Figure 7.3 Relation between Area BCM and Individual BCM

The Area BCM approach has been a cooperative and consistent approach for local stakeholders (Figure 7.4). The cooperative efforts of multi public and private sectors such as central and local governments, transport infrastructure operators, lifeline operators, large companies, small and medium-sized enterprises (SMEs), industry associations, research institutions, and civil society organizations will be realized through Area BCM.

Area BCM will be more active than earlier BCM models, as all stakeholders share useful information, recognize risk, and reach consensus on the strategies to be taken (Figure 7.5). Area BCM will start out with industry agglomerations and then expand to cover whole areas, countries, and ultimately the entire ASEAN region (Scalable approach).

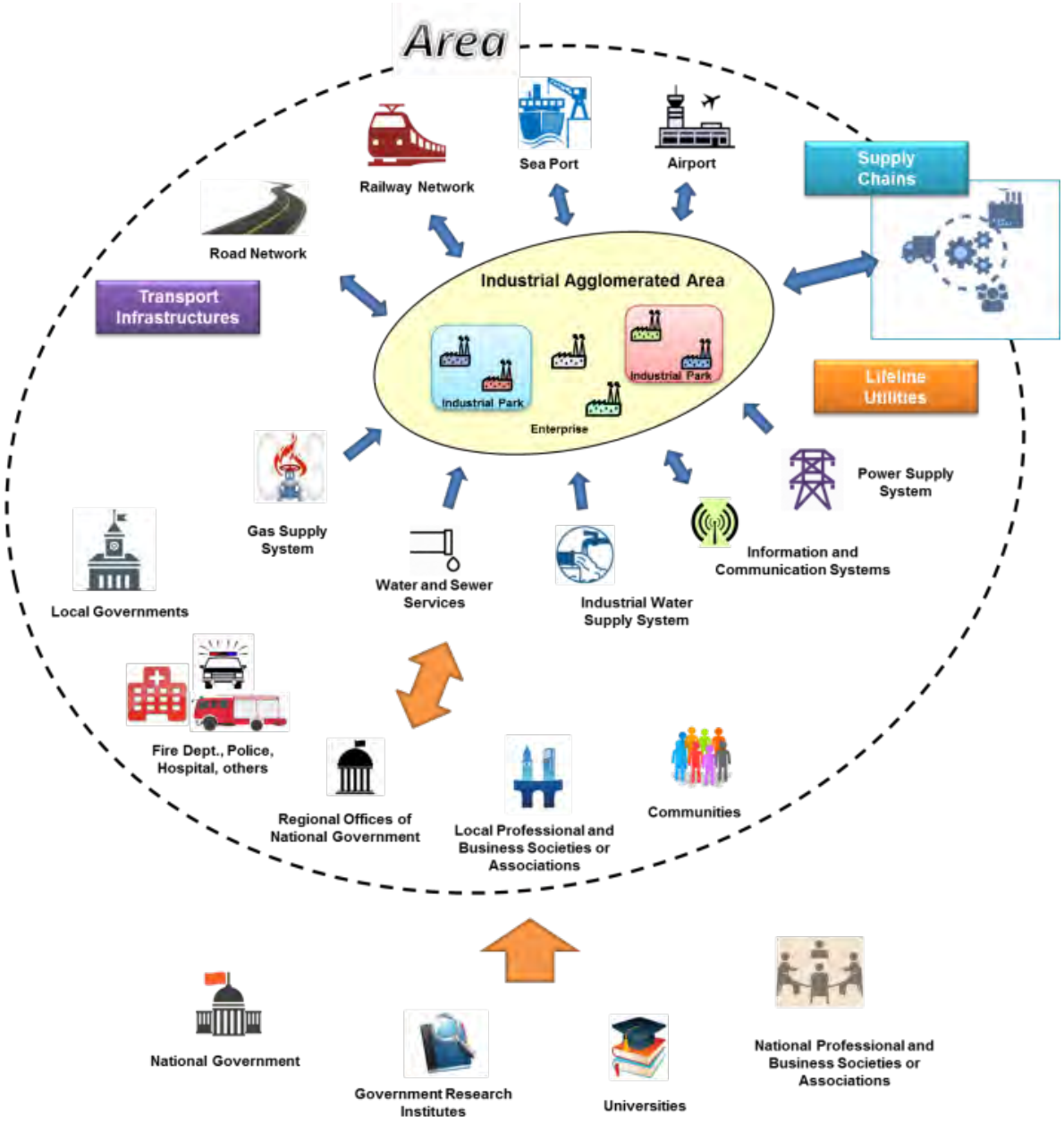


Figure 7.4 Stakeholders of Area BCM

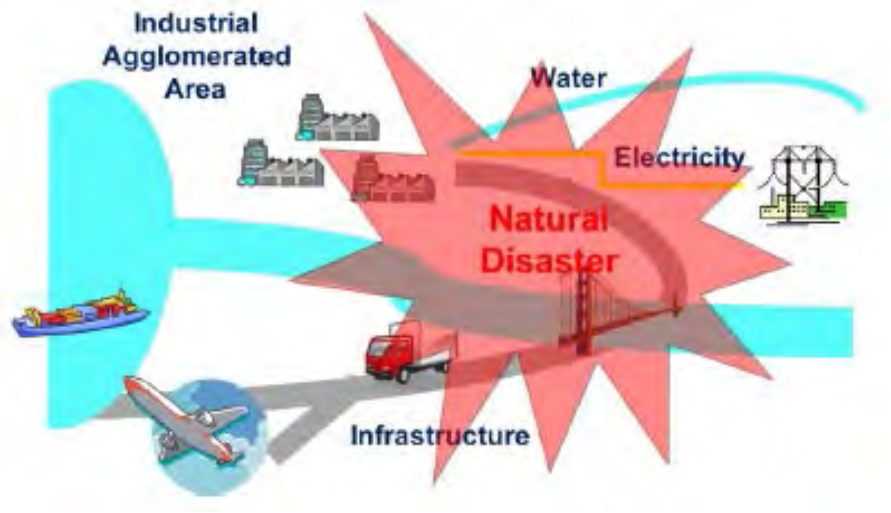


Figure 7.5 Shared Awareness of Disaster Risk among Stakeholders

7.3 Preparation of the Guidebook

The JICA study team developed a guidebook for local stakeholders to guide them in starting and implementing Area BCM, in order to promote Area BCM in the ASEAN region and elsewhere.

7.3.1 Outline of the Guidebook

This guidebook can be applied to the ASEAN region, as well as to countries elsewhere in the world. An industrial agglomerated area can vary from a single industrial park to an industrial area that crosses the borders of several administrative areas. This guidebook can also be applied to natural disasters and disasters of any other form.

The JICA study team developed this guidebook based on the experiences and lessons of the pilot study, and advices from the Advisory Committee in Japan and the Expert Panels from ASEAN.

This guidebook is expected to be revised continuously in the future as it is applied in the ASEAN region and elsewhere.

Table 7.2 Title of the Guidebook

Planning Guide for Area Business Continuity ~ Area BCM Toolkits ~

7.3.2 Contents of the Guidebook

The guidebook explains the ways to implement Area BCM step by step through the five phases of the Area BCM cycle. As an introduction, Part I of the guidebook shows the definitions of, need for, and benefits of Area BCM. Part II of the guidebook shows the content and methods to be carried out

through the Area BCM cycle. The guidebook comes with attached toolkits to help its implementation. The contents of the guidebook are given in Table 7.3.

The toolkits have been prepared to support implementation of Area BCM (Figure 7.6). They consist of the following: Area BCPs developed for the pilot areas in Indonesia, the Philippines, and Vietnam; procedures used for the pilot areas; detailed hazard assessment methodologies used for the pilot areas; lessons learned from extreme disasters; and, samples from a lesson-learned report on a natural disaster. Country reports of 10 ASEAN countries and risk profile reports of three pilot areas were prepared as examples of the information sources for Area BCM.

Table 7.3 Contents of the Guidebook

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Main Volume

I Understanding Area BCM

1 Introduction
1.1 Why is Area BCM Necessary?
1.2 Purpose and Scope of the Guidebook
1.3 Using This Guidebook
2 Area Business Continuity Management
2.1 What is Area BCM?
2.2 Integrating Area BCM into Your Approaches
2.3 Who are Stakeholders of Area BCM?
2.4 How to Implement Area BCM
2.5 Benefits of Area BCM

II Procedures for Area BCM

[Phase 1]
3 Understanding the Area
3.1 What is an Area
3.2 Knowing Stakeholders
3.3 Knowing the Area
3.4 Assessment of Hazards and Risks
[Phase 2]
4 Determining Area BCM Strategy
4.1 Disaster Scenario Creation
4.2 Individual Business Impact Analysis (Individual BIA)
4.3 Area Business Impact Analysis (Area BIA)
4.4 Identifying Bottlenecks of the Area
4.5 Determining Objectives of Area Business Continuity
4.6 Planning Activities of Improvement

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[Phase 3]
5 Developing Area BCP
5.1 Developing Area BCP
5.2 Contents of Area BCP
[Phase 4]
6 Implementing and Reviewing
6.1 Implementing
6.2 Reviewing
[Phase 5]
7 Improving Area BCM
7.1 Improving Area BCM.
7.2 Documentation of Improving Process

Appendices

Appendix 1 Glossary of Terms
Appendix 2 Procedures for Developing Area BCP in the Pilot Areas
Appendix 3 References

Supplementary Volume: Tools for Area BCM

Tool 1 Area BCPs Prepared for the Pilot Areas
Tool 2 Methodologies of Hazard Assessment / Used for the Pilot Study
Tool 3 Lessons Learned from the Extreme Natural Disasters
Tool 4 Samples of Lesson Learned Report

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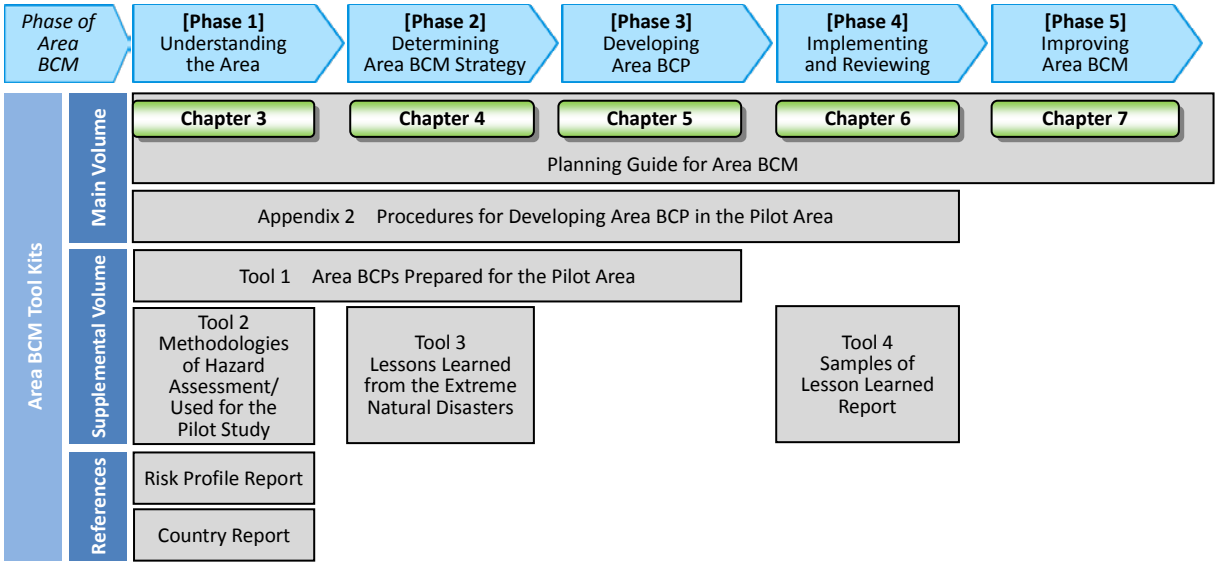

Figure 7.6 Structure of Tools for Area BCM

7.4 Issues and Recommendations

The following points are mentioned as future challenges.

- Recognition of Area BCM is not high in the ASEAN region. The activities of dissemination, promotion, and training implemented through the use of this guidebook and the toolkits are expected to raise awareness of Area BCM in the region.
- This guidebook is expected to be continually revised. The activities up to the "Development of Area BCP" were carried out in the pilot study and the experiences and lessons were incorporated into the guidebook. Note that "Implementing and Reviewing" and "Improving Area BCM" have not being exercised yet. The activities in these phases should be carried out and the guidebook should be improved accordingly.
- Efforts to improve Area BCM and this guidebook should be continued in the future through the application of Area BCM in the ASEAN region and elsewhere.

CHAPTER 8 DISSEMINATION AND PROMOTION OF THE OUTCOMES (SEMINARS AND WORKSHOPS)

8.1 Summary

In order to realize the understanding and dissemination of Area BCM/Area BCP, the following various seminars and workshops were carried out. The concept of Area BCM/Area BCP and the results of this study were presented to the public through these meetings.

Table 8.1 List of Seminars and Workshops

Name of Seminar and Workshop	Number of Events	Participants	Subjects
Practitioner's Seminar	4	Practitioners of national planning agency, national disaster management agency and ministry of industry or investment of ASEAN 10 countries	● Introduction and dissemination of Area BCM/ Area BCP, ● Introduction of the outcomes of the study
ASEAN Workshop	1	Executive members of national disaster management agency of ASEAN 10 countries	● Introduction and dissemination of Area BCM/ Area BCP, ● Introduction of the outcomes of the study
Progress Seminar	3	National government, local government, operators of infrastructure, private companies, researchers of Indonesia, the Philippine, Vietnam	● Intermediate reporting of outcomes of the study
Final Seminar	5	National government, local government, operators of infrastructure, private companies, researchers of Indonesia, the Philippine, Vietnam Two seminars were conducted at each country. One was targeted the national level and the other for the pilot area. (In the Philippines, one seminar was held for both targets.	● Presentation of outcomes of the study
AHA Centre Hazard Workshop	1	Young staff of national disaster management agency of ASEAN 10 countries	● Training of hazard and risk assessments

8.2 Practitioner's Seminar

8.2.1 Outline

In the promotion of Area BCM/Area BCP in ASEAN countries, the practitioners of the disaster management agency, planning agency, ministry of industry and others, who may become key organizations to facilitate dissemination in each country after this study, were invited to the seminars. The seminars were held 4 times in total, and for each seminar 3 persons were invited from each

country; however, the number of participants was 20 - 30, as shown in Table 8.2. As a general practice, different personnel were invited to each seminar from the same organization.

Table 8.2 Summary of Participants

Organization / Country	Disaster management agency				Planning agency				Ministry of Industry, and Other Agencies				Total			
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Brunei								1								1
Cambodia	1	1		1	1	1	1	1					2	2	1	2
Indonesia	1	2	1	1				1	2	1	2	1	3	3	3	3
Lao PDR	1	1	1	1	1	1	1	1	1	1	1	1	3	3	3	3
Malaysia	1	1	1	1					1		1	1	2	1	2	2
Myanmar	1	1	1	1			1	1					1	1	2	2
Philippines			1	1	1	1	1	1	1	1	1	1	2	2	3	3
Singapore	1	1	1	1									1	1	1	1
Thailand	1	1		1	1	1	1	1	1			2	3	2	1	4
Vietnam		3	1	1	1	2	1	1	1	2	1	1	2	7	3	3
Total	7	11	7	9	5	6	6	8	7	5	6	7	19	22	19	24

8.2.2 Implementation of Practitioner Seminar

The summary of each seminar and number of participants by country and organization are show in Tables 8.3 to 8.6. The agenda, minutes of meeting, and participant lists are shown in Appendix A4.

Table 8.3 Summary of 1st Practitioner Seminar

Date and time	December 5, 2013 8:30 - 17:00
Venue	Dusit Thani Hotel, Metropolitan Manila, the Philippines
Invited Participants	19 person
Agenda	(1) Introduction of the Project (2) Natural Hazard and Risk Assessment in the Philippines (3) Brief Report of Typhoon “YOLANDA” (4) Business Continuity Management in the Philippines (5) Pilot Study for Formulating Area BCP in the Philippines

Table 8.4 Summary of 2nd Practitioner Seminar

Date and time	February 24, 2014 8:30 - 17:00
Venue	Melia Hotel, Hanoi, Vietnam
Invited Participants	22 person (including 7 from Vietnam)
Agenda	(1) Introduction and Progress of the Project (2) Pilot Study for Formulating Area BCP in Viet Nam (3) Natural Hazard and Risk Assessment in Viet Nam

	(4) Business Continuity Management in Viet Nam

Table 8.5 Summary of 3rd Practitioner Seminar

Date and time	June 16, 2014 8:30 - 17:00
Venue	Sari Pan Pacific Hotel, Jakarta, Indonesia
Invited Participants	19 person
Agenda	(1) Introduction, Project and Area BCM (2) Developing Area BCM (3) Strategies for Promoting Area BCM in the ASEAN

Table 8.6 Summary of 4th Practitioner Seminar

Date and time	January 28, 2015 8:30 - 17:00
Venue	Westin Grande Sukhumvit Hotel, Bangkok, Thailand
Invited Participants	24 person
Agenda	(1) Introduction, Project and Area BCM (2) Plan and Toolkits of Area BCM (3) Approaches of Area BCM and BCM in Thailand

8.2.3 Summary of Outcomes

The study team introduced the basic concept and benefits of Area BCM/Area BCP, the outline of the project, the methodology to organize the working group, and the methodology of natural disaster risk assessment. The current situations regarding BCM/BCP and natural disaster risk assessment in host countries were also presented by the authorities in each country. The issues in relation to introduction and promotion of Area BCM in the ASEAN countries were discussed after the presentation.

The following are the main issues discussed in the seminar.

- Target organizations and stakeholders
- Role of the national government and local government
- How to define geographical area for Area BCM?
- How to select a target natural hazard?
- Relation between RTO (Recovery Time Objective) of a company and an industrial agglomerated area
- Applicability to SMEs (Small and Medium sized Enterprises)
- How to promote Area BCM in each country?
- How to secure required information and services for Area BCM?
- How to improve Area BCM?

8.2.4 Issues and Recommendations

In the 1st seminar, it was found through the Q/A session, discussion and questionnaire, that the participants deepened their understanding of the concepts and benefits of Area BCM/Area BCP. On the other hand, many participants asked the study team to offer more detailed methodology to formulate, maintain, and manage Area BCM, which was established through this study. A more practical methodology which was created in this study has been requested for future promotion activities regarding Area BCM/Area BCP.

8.3 ASEAN Workshop

8.3.1 Outline

In addition to the practitioner's seminars, ASEAN workshop was held to promote Area BCM/Area BCP in the ASEAN countries. One manager class staff was invited from the disaster management agencies of the ASEAN 10 countries.

8.3.2 Implementation of ASEAN seminar

The summary of the workshop is given in Table 8.7. The agenda, minutes of meeting and participants list are presented in Appendix A5.

Table 8.7 Summary of ASEAN Workshop

Date and time	September 1, 2014 8:30 - 17:00
Venue	Sari Pan Pacific Hotel, Jakarta, Indonesia
Invited Participants	13 person (including 3 from Indonesia)
Agenda	(1) Keynote Lecture (Prof. Kenji Watanabe, Nagoya Institute of Technology) (2) Project and Area BCM (3) Developing Area BCM (4) Tools for Area BCM (5) Approaches for Promoting Area BCM in ASEAN (Status report from 3 pilot countries and group discussion)

8.3.3 Summary of Outcomes

In the keynote lecture, Prof. Watanabe talked about; recent natural hazards from the view point of Area BCM, community rooted BCM and the importance of public-private partnership, examples of efforts to share information on local levels, which is supported by the government, and economic incentives to promote Area BCM.

After viewing of the promotion video, the study team presented the concept and benefit of Area BCM, and the activity and outputs in the pilot area in Indonesia. The 5 steps of Area BCM were introduced following the Area BCM cycle; namely, Understanding the Area, Determining Area BCM Strategy, Developing Area BCP, Implementing and Reviewing, and Improving Area BCM. Tools for Area BCM developed in the study were also introduced.

The following were the main issues brought up in the group discussions regarding the promotion of Area BCM.

- Necessity of specialized person for management
- Awareness raising among the stakeholders
- Incorporate into legal framework
- Scheduling of implementation
- Responsible organization for continuous activity
- Applicability to the emerging areas of future development
- Scarcity of human resources for training in some ASEAN countries
- Necessity of budgetary provision

8.3.4 Issues and Recommendations

The ASEAN workshop was held during the final stage of the study when the concept of Area BCM had been consolidated. The promotion video and guidebook were used in the seminar, and systematic information about Area BCM could be offered to the participants. The participants' understanding was inferred from the questions they asked. For further promotion in each country, the activities of manager class staff who were invited to this workshop is important and visual materials are necessary for them. Also, as raised in the discussion, in some countries there is a need to consider how to receive the assistance from Japan or from the pilot countries, namely Indonesia, the Philippines and Vietnam.

8.4 Progress Seminar

8.4.1 Summary of the Progress Seminars

The national/local governments, lifeline operators, transportation operators, private enterprises and other related organizations in the pilot countries were invited to the seminars. The purpose of these seminars was to introduce the basic concepts, methodology and benefits of Area BCM/Area BCP, and to present the progress of this project in the pilot areas and share the experiences and lessons from the pilot countries. About 70 - 100 persons attended the seminars, as summarized in Tables 8.8 to 8.10.

8.4.2 Implementation of the Progress Seminar

The summary of seminar and the detail of the attendants are summarized in Tables 8.8 to 8.10. Agenda, minutes, and attendant list are shown in Appendix A6.

Table 8.8 Summary of the Progress Seminar (Indonesia)

Date and Time	December 20, 2013
Venue	Sari Pan Pacific Jakarta , Jakarta, Indonesia
Addressed Guests	Mr. Said Faisal (AHA Centre) Ms. Takako Ito (Mission of Japan to ASEAN) Mr. Dody Ruswandi (National Agency for Disaster Management (BNPB))
Master of Ceremony	Dr. Krishna S. Pribadi Mr. Janggam Adhityawarma
Attendants	72 persons ・Central government: BNPB, Department of Defense, Department of Social, Department of Transportation, National Search and Rescue Agency, BMKG, Department of Manpower and Transmigration, BAPETEN, BAPPENAS, Department of Industry, Agency for the Assessment and Application of Technology, BAKOSURTANAL, Department of Marine and Fishery, etc. ・Local governments: Bappeda West Java ・Infrastructure companies: Airport administrator ・Private sector: PT Garuda Indonesia Tbk., PT. Telkomsel (Telecommunication),PT. GIA, PT.Limtaro, HM. Sampoerna, PT. BITA, etc. ・Research institute: Andalas University, Geological Institute, Volcanic geology disaster center ・Donor：Australia–Indonesia Facility for Disaster Reduction (AIFDR)、World Bank、Muslim Aid ・NGO: Indonesian National Network on Disaster Resource Partnership (DRP), Humanitarian Forum Indonesia

Table 8.9 Summary of the Progress Seminar (Philippines)

Date and Time	21 January, 2014 13:00 - 17:00
Venue	Mandarin Oriental Hotel, Makati City, Metro Manila, Philippines
Addressed Guests	Mr. Hayato Nakamura (JICA Philippines), Undersecretary Corazon T. Jimenez (General Manager, MMDA) MGen Romeo F. Fajardo AFP (Ret) (Deputy Administrator, OCD) read on his behalf Mr. Justo Porfirio Ll. Yusingco (Deputy Director General, PEZA)
Master of Ceremony	Mr. Ramon J. Santiago (Consultant, MMDA)
Attendants	71 persons ・National Government: Office of Civil Defense (OCD), National Economic Development Authority (NEDA), Philippine Economic Zone Authority (PEZA), Department of Transportation and Communication (DOTC), Department of Public Works & Highways (DPWH), Department of Energy (DOE), Philippine Atmospheric Geophysical and Astronomical Services (PAGASA), Philippine Institute of Volcanology and Seismology

	(PHIVOLCS) ・Local Government: Metro Manila Development Authority (MMDA), Provincial Government of Cavite, Provincial Government of Laguna ・Infrastructure Company: Manila Water ・Private Company and others: Philippine Chamber of Commerce and Industry Laguna, American Chamber of Commerce, Cavite Economic Zone (CEZ), Yazaki, Mitsuwa, Nanbu, Toyota

Table 8.10 Summary of the Progress Seminar (Vietnam)

Date and Time	December 13, 2013 14:00 - 17:00
Venue	Sofitel, Ha Noi, Viet Nam
Addressed Guests	Mr. Nguyen Huu Phuc, Director (MARD) Mr. Minoru Miyasaka (JICA Headqurter)
Master of Ceremony	Ms. Hoang Minh Nguyet
Attendants	95 persons HPPC, MARD, Planning and Investment, DMC, Hai Phong Economic zone Management Board, Industrial and Trade Dept., VCCI Hai Phong, Industrial Parks, Private Companies, Asia Foundation and etc.

8.4.3 Summary of Outcomes

Many participants joined the open forum actively. Especially, the discussion with the attendants from private companies regarding the basic concept of Area BCP, the disaster environment of each country, and other issues were substantial and useful for more concrete understandings.

8.4.4 Issues and Future Activities

- It is desired that more stakeholders, including SMEs, be encouraged to join in the implementation of Area BCM in the pilot areas.
- The dissemination of individual BCMs to SMEs and other stakeholders is necessary, in addition to the dissemination of Area BCM. That is why it is important to integrate Area BCM into other activities regarding BCMs in each country.

8.5 Final Seminar

8.5.1 Summary of the Final Seminars

The purpose of this seminar was to present the final outcomes of Area BCM to the stakeholders at the national level and to the stakeholders in the pilot areas in each pilot country. About 70 - 140 persons attended the seminars, as summarized in Table 8.11.

Table 8.11 Number of Attendants

		National and Local Governments University, and etc.	Private Sector	Transportation	Lifeline	Total	Study Team	Grand Total
Indonesia	Bangdung	29	16	6	9	60	11	71
	Jakarta	23	41	1	6	71	14	85
Philippines	Manila	81	20	10	8	119	19	138
Vietnam	Hai Phong	19	58	4		81	15	96
	Hanoi	41	32	4		77	14	91

8.5.2 Implementation of the Final Seminars

The summary of the seminars and details about the attendants are presented in Tables 8.12 to 8.16. Agenda, minutes, and attendant list are shown in Appendix A7.

Table 8.12 Summary of the Final Seminar (Indonesia, Bangdung)

Date and Time	26 August, 2014
Venue	Savoy Homann Bidakara Hotel, Bangdung city, Indonesia
Addressed Guests	Prof. Dr. Ir. Deny Juanda Puradimadja（Head of Bappeda West Java Province）
Master of Ceremony	Ms. Aria Mariany Dr. Krishna S. Pribadi
Panelists	Dr. Kridanto Surendro（Sekolah Tinggi Elektro dan Informatika (STEI) - ITB） Mr. Irwansyah（Karawang International Industrial City (KIIC)） Ms. Agustien Nurisamunandar（Bappeda Karawang Regency） Ms.Linda Al-Amin, ST, MT/ Ms.Ani Widiany, ST, MUT（Bappeda West Java Province）
Attendants	71 persons ・ Central government: Disperindag Jabar, Baperindag Jabar, BPBD Prov. Jabar, BAPPEDA Jabar, BAPPEDA DKI Jakarta, Dinas Bina Marga Prov. Jabar, BPLHD Jabar ・ Local government: BPBD Kab. Bekasi, BAPPEDA Kab. Purwakarta, BPBD Bekasi, Dinas Bina Marga Karawang, BAPPEDA Kab. Karawang, DISKOPERINDAG Kab. Purwakarta, DINSOS Karawang ・ Research Institute and University: STEI ITB, PWK UNIKOM, ITB, Univeristas Widyatama ・ Lifeline: B. HITA PUSAIR, DISHUB Jabar, PLN DJBB, DISHUB Karawang, PDAM Kab. Bogor, PDAM Karawang ・ Transportation: PUSJATAN, PUSJATAN PU, PT. Jasa Marga, BBWS Citarum ・ Private sector: Konsultan (PT.BITA), Tokionmarine Nichido Risk Consulting, PT. RayaKonsult, PT. Suryacipta Swadaya, PT. HITACHI, PT. TMMIN, PT. JAM, KIIC, PT. Chemio Harapan Nusantara

	・ Others: IAP Jabar, Forum PRB Jabar, Saudara Sejiwa Foundation Japan National Council of Social Welfare, KODAM III/SLW, Kantor Kesbangpol Kab.Karawang

Table 8.13 Summary of the Final Seminar (Indonesia, Jakarta)

Date and Time	28 August, 2014
Venue	Hotel Borobudur Jakarta, Jakarta, Indonesia
Addressed Guests	Ir. Dody Ruswandi（Deputy Chief for Prevention and Preparedness, Indonesian National Agency for Disaster Management (BNPB)）
Master of Ceremony	Ms. Aria Mariany Dr. Krishna S. Pribadi
Panelists	Dr. Kridanto Surendro（Sekolah Tinggi Elektro dan Informatika (STEI) - ITB） Ir. Aryawan Soetiarso Poetro（State Ministry of National Development Planning (BAPPENAS)） Ms. Anny Isgiati（Indonesian National Agency for Disaster Management (BNPB)） Mr. Faisal Djalal（Indonesian National Platform for Disaster Risk Reduction）
Attendants	85 persons -Central government: PVMBG-Badan Geologi, BAPPENAS, BNPB, BKPM, KEMENSOS RI, BASARNAS, Kementrian Perindustrian, PLANAS, BPPT/PLANAS, Kemenag RI, BIG, Badan Informasi Geospasial (BIG), Kementrian PU -Local government: BPBD, Prov. DKI Jakarta -Lifeline: PT. TELKOM, PT. Jasa Marga, PT. Arga Pura, PT. Jasa Marga Persero Tbk. -Transportation: PT. Jasa Marga -Private sector: PT. Uni Charm Indonesia, PT. SGL Indonesia, PT. Bridgestone, PT. SANKEN Indonesia, PT. XL Axiata, PT. Bekasi Fajar Industrial Estate, Astra Honda Motor, PT. MCI-WNI, PT. Marsh Indonesia, PT. ASAHIMAS Chemical, PT. NSI, PT. HITACHI Asia Indonesia, Bank Mizuho Indonesia, PT. Maligi Permata Industrial Estate, PT. Nagase Eks. Imp, PT. JIEP, PT. MCCI, PT. Mitsubishi Chemical Indonesia, PT. KBN Cakung, PTLWB, NEC, PT.YKK Ap. Indonesia, MHI, UNICHARM -Others: OXFAM, USAID, PLANAS Kom&info, PT.UNILEVER/PLANAS, Perk

Table 8.14 Summary of the Final Seminar (Philippines, Manila)

Date and Time	15 August, 2014
Venue	Crimson Hotel, Filinvest Corporate Center, Alabang, Muntinlupa City, Metro Manila
Addressed Guests	Mr. Noriaki Niwa（Chief Representative, JICA Philippine Office） BGen. Romeo F. Fajardo AFP (Ret)（Deputy Administrator, Office of Civil Defense (NDRRMC)）
Master of Ceremony	Mr. Ramon J. Santiago
Panelists	DDG. Justo Porfirio Ll. Yusingco（Philippines Economic Zone Authority (PEZA)）

	Commo. Rosauro Arnel Gonzales AFP (Ret)（Office of Civil Defence (OCD) Region IV A） Mr. Jesus I. Barrera（Cavite Provincial Government） Mr. Valentin P. Guidote, Jr.（Laguna Provincial Government） USec. Corazon T. Jimenez（General Manager, Metro Manila Development Authority (MMDA)） Mr. Donald James D. Gawe（National Economic and Development Authority (NEDA)） Ms. Grace G. Morella（Philippine Chamber of Commerce and Industry (PCCI)） Mr. Fidel Eblasin（Yazaki-Torres:Private Company） Mr. Marco R. Carlos（Manila Electric Company (MERALCO):Utility Company） Ms. Rebecca Olivia Dimasacat（Cavite Expressway (CAVITEX):Highway Operator） Dr. Hitoshi Baba（Senior Advisor, Japan International Cooperation Agency (JICA) HQ）
Attendants	138 persons ・Central government: Office of Civil Defense (OCD), OCD- National Capital Region(NCR), OCD, OCD Region IV-A, Metropolitan Manila Development Authority(MMDA), Laguna Lake Development Authority(LLDA), Philippine Economic Zone Authority (PEZA), PEZA, PEZA - Laguna Technopark, Inc., PEZA - Planning Department, PEZA - DRRMO, National Economic Development Authority (NEDA) Region IV-A, Department of Interior and Local Government(DILG), DILG, The Philippine National Police (PNP) - National Capital Regional Police Office (NCRPO), PNP-NCRPO, Department of Education -NCR, Philippine Information Agency (PIA)-NCR, Department of Trade and Industry(DTI), DTI, Deparment of Tourism(DOT), DOT, Manila International Airport Authority (MIAA), Philippine Coast Guard (PCG), Coast Guard District NCR-Central Luzon , PCG, Manila, Housing and Urban Development Coordinating Council, Climate Change Commission, Govt Service Insurance System (GSIS), Phil. Health Insurance Corporation (Philhealth), League of Cities of the Philippines, Armed Forces of the Philippines (AFP) - Joint Task Force (JTF) NCR, Department of Social Welfare and Development (DSWD), DSWD ・Government Research Institute: Philippine Atmospheric , Geophysical and Astronomical Services Administration (PAGASA), Philippine Institute of Volcanology and Seismology (PHIVOLCS), PHIVOLCS ・Local government: DILG Region IV-A, DSWD Region IV- A, Philippine National Police (PNP), Bureau of Fire Protection (BFP), BFP, DOE Region IV- A, Department of Environment and Natural Resources (DENR)-Environmental Management Bureau(EMB), DOT Region IV- A, DTI Region IV- A, Bangko Sentral Ng Pilipinas (BSP), BSP, Commission on Higher Education (CHED), Philippine Information Agency (PIA), National Irrigation Authority (NIA), Maritime Industry Authority (MARINA), National Commission on Indigenous Peoples (NCIP), Philippine Red

	Cross (PRC) -CAVITE, PRC -LAGUNA, Carmona, Cavite , Makati City DRRM Office, Malabon City DRRM Office, Manila City DRRM Office ・Lifeline: Manila Water Company, Inc., National Transmission Corporation (TRANSCO), TRANSCO , SMART, Phil Long Distance Telephone Company (PLDT), PLDT, Manila Electric Company (MERALCO) ・Transportation: South Metro Manila Skyway Project (SKYWAY), SKYWAY, Cavite Expressway(CAVITEX), CAVITEX, Department of Public Works and Highways(DPWH) -Region IV-A, DPWH -Region IV-A, DPWH -NCR ・Private sector: Philippine Chamber of Commerce and Industry(PCCI), Laguna Chamber of Commerce and Industry, Laguna TechnoPark, Inc., ROHM Electronics Philippines, Inc., Yazaki-Torres Manufacturing, Inc., NEP Logistics, Inc., Ichinomiya Electronics Philippines Corporation, Kou Fu Color Printing Corp., Kapco Manufacturing, Inc, Philippine International Manufacturing & Engineering Services Corporation (P. IMES), Bridgestone Precision Molding Philippines, Inc., San Technology, Inc.

Table 8.15 Summary of the Final Seminar (Vietnam, Hai Phong)

Date and Time	19August, 2014
Venue	Haiphong Convention Centre Hai Phong, Vietnam
Addressed Guests	Mr. Do Trung Thoai（Vice Chairman, Hai Phong People's Committee）
Master of Ceremony	Ms. Hoang Minh Nguyet Mr. Nguyen Thanh Ha
Panelists	Mr. Nguyen Ba Tien（Secretariat, Steering Committee for Flood & Storm Prevention, Search & Rescue/ Hai Phong People's Committee） Mr. Tran Vinh Hoan（Vice Director, Hai Phong Economic Zone Authority） Mr. Phan Cong Minh（Vietnam Chamber of Commerce and Industry）
Attendants	96 persons ・Central/Local government: Hai Phong city People's Committee, Office of Chairman, Hai Phong city People's Committee, Dyke Management and Flood and Storm Control Department of Agriculture and Rural Development Department, Hai Phong Economic Zone Management Board, Dept. of Planning and Investment, Dept. of Industry and Trade, Dept. of Natural Resources and Environment, Dept. of Construction, Department of Communication , Police Department of Fire Fighting, Hydrometeorology Forecasting Centre in Northern East Zone , Management Board of the Project for Infrastructure Construction of Indusstrial Zone of Hai Phong, Maritime Administration of Hai Phong , Department of Foreign Affairs, Hai Phong Police , Hai Phong Industry Zone Management Department ・Transportation/Lifeline :Dept. of Transportation, Dept. of Information and Communication, Hai Phong Electric One Member Limited Company, Hai Phong

	Water Supply Two Member Company ・Private sector: Hai Phong Port Holding Limited Liability Company, Trung Anh Security Co.,Ltd, Limited Liability Company Phu Vinh, Limited Liability Company Commercial Toan Tuan, Hai Phong Vinaline Services One Member Limited Company, International Huy Hoang JSC, 19-3 Cooperative , Silicat Viet An Company, Viet Nam Toyo Denso Limited Liability Company, International Hai Phong Container Company, Kokuyo Vietnam Limited Liability Company, Dai Duong Company, Hai Phong Water Supply Number No.2 , Construction Hai Phong No. 9 JSC, Hai Phong EIC , Duc Thanh Phuong Company, Hai Phong Maritime Service and Tourist Co.,Ltd, Vietran Branch in Hai Phong , Cao Minh Commercial Joint Stock Company, My Hao Joint Stock Company, Tay Au beer Joint Stock Company, Duyen Hai Company, Công ty CP & LĐ- HP, Thanh Hung Private Enterprise , Vietravel Hai Phong, Hai Phong Waterway Traffic Assurance One Member Limited Company , Song Cam Shipbuilding JSC, Hai Phong Eletronic Cables Co.,Ltd, Hai Phong PV Company , Hai Phong Station, Container Viet Nam Joint Stock Company, Sivico Joint Stock Company, A Chau Asest Investment and Management Company , Nam Binh Vu Investment Joint Stock Company, Truong Hong Printing and Advertisment Co.,Ltd, Hai Phong Steel and Material JSC, Hai Phong Port Service and Technical JSC, Seas and Island Department of Hai Phong , Kien Long Construction JSC, Sumi Rubber Viet Nam Limited Liability Company, Binh Duong International Investment JSC, Saigon Viet Nam Limited Liability Company, Hai Phong Union Tourism Services One Member Company , Huy Hoang Coal processing and trading factory , Lisemco Joint Stock Company, The North Steel JSC, Duc Giang Viet Hung Chemical Co.,Ldt , Duyen Hai PVI Company , Hai Phong Electric Industry JSC ・Donor: Peace Winds ・Media: Hai Phong Portal , Hai Phong Newspaper , Hai Phong Newspaper, Hai Phong Radio and Television

Table 8.16 Summary of the Final Seminar (Vietnam, Hanoi)

Date and Time	21 August, 2014
Venue	Melia Hotel, Hanoi city, Vietnam
Addressed Guests	Disaster Management Centre（Ministry of Agriculture and Rural Development MARD） Ms. Nguyen Thi Thu Le（JICA Vietnam Office）
Master of Ceremony	Ms. Hoang Minh Nguyet, Mr. Nguyen Thanh Ha
Panelists	Mr. Nguyen Ba Tien（Haiphong Dept. of Dyke and Flood Control）
Attendants	Mr. Dang Quang Minh（Acting Director,Disaster Management Centre, Ministry of Agriculture and Rural Development） Mr. Nguyen Chi Thanh（Senior Program Officer, Asia Foundation）

	Ms. Pham Viet Hoa（Head of Remote Sensing Department, Space Technology Institute）
	91 persons ・ Central/Local government :Ministry of Agriculture and Rural Department, DMC, Ministry of Agriculture and Rural Department, Directorate of Forest , Ministry of Agriculture and Rural Department, Dyke Management and Flood and StormPrevention Devision, Ministry of Trade and Industry, International Cooperation Department , Ministry of Planning and Investment, Ministry of Sources and Environment , Ministry of Resource and Environment, Vietnam Administration of Seas and Islands, Ha Noi Trade and Industry Department , Ha Noi Planning and Investment Department , Dyke Management and Flood and Storm Prevention Devision, Department of Agriculture and Rural Development of Hai Phong ・Transportation/Lifeline: Ministry of Transport, Environment Deapartment, Ministry of Transport, Science and Technology Institution, Ha Noi Construction Department ・ Private sector:TERUMO, Nikkei , Bao Viet- Tokio Marine , UIC United Insurance Co., Yashima Kizai Office in Hanoi, Petro Vietnam Group, Electricity Vietnam Ha Noi, MSIG Insurance Company , Viet nam Water Suply Sewerage & Inveronment General Company , VID Group, Peapros, 19-5 Garment Company ・International Organizations: The Asia Foundation , WHO, CARE Int', ADRA in Ha Noi , UNDP , SCDMII Project , Save The Children ・Media: Investment Newspaper, Agricuture Newspaper , Vietnam Investment Review , Resource and Environment Newspaper, Trade and Industry Newspaper , Jouralism Newspaper , VTC media - VTV 10, Ha noi Radio and Television , Ha noi Television Online , VTC media- VTV 14 ・Others: Insurance Association , Vietnam Woman Union, Vina SME Association, Vietnam Academy of Science and Technology, Institute of Geophysic, Academy of Science and Environment , Geoenvironment and Territorital Institution Center, Vietnam Academy of Science and Technology, Space Technology Institute , VNU University of Science, National Center for Hydrometeriorological Forecasing (NCHMF)

8.5.3 Summary of Outcomes

- The draft of Area BCP and future activities were introduced to the stakeholders in each pilot country by the JICA study team, and the future plan was presented by the candidate organization for the leader in the pilot area. Afterward, the issues for improvement and future activities were discussed.
- Attendants understood the organizational system to promote Area BCM in each pilot area and the necessity of continuous activities after this project.

- Important outcomes of this study are not limited to the formation of Area BCPs, but include groups of stakeholders in the pilot countries who understand Area BCM and have experience in the implementation of Area BCM.

8.5.4 Issues and Future Activities

- In the discussion during the final seminars, it was pointed out that the drafts of Area BCPs were general. They should be reviewed and improved to have more concrete strategies for Area BCM and measures for business continuity in future activities.
- The involvement of more private enterprises including SMEs to Area BCM is an important issue. The promotion of BCM for individual enterprises is equally important, especially for small and medium-sized enterprises (SMEs). It is necessary for the ASEAN countries to integrate the two approaches together; one for BCM and the other for Area BCM.

8.6 AHA Centre Hazard Workshop

8.6.1 Outline

AHA Centre hazard workshop was held to disseminate the basic knowledge of natural hazards and the concepts of Area BCM/Area BCP in ASEAN countries. The staff of AHA Centre and the staff of disaster management agencies of the ASEAN countries attended the workshop. This workshop has been held as a part of ACE Programme (AHA Centre Executive Programme).

8.6.2 Implementation of Workshop

The summary workshop is show below. The program, minutes of meeting and participants list are shown in Appendix A8.

Table 8.17 Summary of AHA Centre Hazard Workshop

Date and time	February 23 and 24, 2015 9:00 - 16:00
Venue	Sari Pan Pacific Hotel, Jakarta, Indonesia
Participants	16 trainees of ACE Programme 1 officer from AHA Centre
Lecture item	1 Flood Disaster Management 2 Tropical Cyclone (Storm Surge) 3 Earthquake Hazard and Disaster Management 4 Tsunami Hazard and Disaster Management 5 Introduction to Area BCM 6 Natural Disaster Assessment for Area BCM

8.6.3 Summary of Results

As the trainees had not have sufficient background of scientific and technical matters, the study team lectured mainly about technical terms and basic knowledge of natural hazards and disaster risks. The video contents were used for better understanding. The pre/post tests were conducted as requested by AHA Centre, and the results were used to evaluate how well the lectures had been understood.

CHAPTER 9 DISSEMINATION AND PROMOTION OF THE OUTCOMES (PREPARATION OF DISSEMINATION MATERIALS)

9.1 Outline

The dissemination and promotional materials listed in Table 9.1 were developed and utilized in the study to disseminate and promote Area BCM / Area BCP.

Table 9.1 List of Dissemination and Promotion Materials

Name	Number	Target	Contents
Promotional movie	1	High level officials from the ministries and agencies of national governments, local governments, policy makers, private enterprise managers, academic societies, professional societies, chambers of commerce and industry, international organizations, members of working groups, and others	● Necessity and benefits of Area BCM / Area BCP ● Concept of Area BCM
Newsletter	8	Ministries and agencies of national governments, local governments, private enterprises, academic societies, professional societies, chambers of commerce and industry, international organizations, members of working groups, and others	● Activities of the study ● Educational articles on natural hazards and disasters, and Area BCM / Area BCP ● Future activities of the study

9.2 Production of the Promotional Movie

9.2.1 Outline of the Promotional Movie

As a part of Area BCM awareness activities, a promotional movie running 4 minutes and 44 seconds was produced and has been screened during the seminars, workshops, and individual meetings.

Table 9.2 Outline of the Promotional Movie

Title of the Movie	Area BCM in ASEAN
Outline of the Movie	・The need to support Area BCM in ASEAN ・Challenges of BCM and proposals for Area BCM ・Explanations on Area BCM ・Benefits of Area BCM
Targets Audiences	Meetings among ministers in charge of disaster prevention, round-table conferences among economic ministers, various meetings, seminars, workshops, conferences, individual meetings with related organizations, and others.
URL to View	http://youtu.be/ubjh8JIUWwk

9.2.2 Utilization of the Promotional Movie

As a part of the Area BCM awareness activities, the promotional movie has been screened during presentations at seminars, workshops, and meetings conducted during the study as summarized in Table 9.3. This movie has also been uploaded to YouTube (http://youtu.be/ubjh8JIUWwk) in response to requests from the attendants of the seminars and workshops for their own promotional activities.

Table 9.3 Utilization of the Promotional Movie

Date	Names of seminars and workshops
February 20, 2014	2nd Workshop for Area BCP Formulation, Manila, the Philippines
February 27, 2014	2nd Workshop for Area BCP Formulation, Hai Phong, Vietnam
March 6, 2014	2nd Workshop for Area BCP Formulation, Karawang, Indonesia
April 10, 2014	4th Advisory Committee Meeting, Tokyo, Japan
June 16, 2014	3rd Seminar for Practitioners, Jakarta, Indonesia
June 20, 2014	3rd Panel of Experts Meeting, Ha Noi, Vietnam
August 15, 2014	Final Seminar, Manila, the Philippines
August 19, 2014	Final Seminar, Hai Phong, Vietnam
August 21, 2014	Final Seminar, Ha Noi, Vietnam
August 26, 2014	Final Seminar, Bandung, Indonesia
August 28, 2014	Final Seminar, Jakarta, Indonesia
September 1, 2014	ASEAN Workshop, Jakarta, Indonesia
January 28, 2015	4th Seminar for Practitioners, Bangkok, Thailand
January 30, 2015	4th Panel of Experts Meeting, Bangkok, Thailand
February 5, 2015	JSPP21 International Disaster Management Course, Singapore
February 23, 2015	AHA Centre Hazard Workshop, Jakarta, Indonesia

9.3 Publishing Newsletters

9.3.1 Outline of the Newsletters

Newsletters have been issued with the view to reporting the progress of the study, and fostering understanding on Area BCM and natural disaster risks while disseminating Area BCM among ASEAN Member States. Eight editions have been published (editions 0 to 7) in four languages: Japanese, English, Bahasa Indonesian, and Vietnamese. About 100 copies of each edition were distributed among ASEAN Member States. The newsletters were designed to be easily readable and understandable with help from pictures, figures and tables.

Table 9.4 Outline of the Newsletters

No.	Date of Issue	Contents
0	July 30, 2013	・Background to the Study ・Outline of the Study ・Outcome of the Study ・Stakeholders of Area BCPs ・Workshops
1	February 10, 2013	・Why the Project is Necessary? ・What is an Area BCP? ・Future Plan and Events ・FOCUS AHA Centre – JICA Study Team
2	January 15, 2014	・Study Trip 1 ・1st Advisory Committee Meeting ・Study Trip 2 ・Natural Hazards in ASEAN Region 1 -Earthquake, Tsunami and Volcano- ・FOCUS the AHA Centre
3	February 1, 2014	・1st Panel of Experts Meeting ・Study Trip-3 ・2nd Advisory Committee Meeting ・What is the Hazard and Risk Assessment for an Area BCP? ・FOCUS Introduction of Pilot Site (1) Hai Phong, Vietnam
4	June 1, 201 4	・1st Area BCP Workshops in three pilot areas ・1st Seminar for Practitioners ・Progress Seminars in three Pilot Countries ・Natural Hazards in ASEAN Region 2 - Flood - ・FOCUS Introduction of Key organization of Area BCM, West Java Regional Planning Development Agency, Indonesia
5	July 1, 2014	・3rd Advisory Committee Meeting ・2nd Seminar for Practitioners ・2nd Panel of Experts Meeting ・2nd Area BCP Workshops in three pilot areas ・Natural Hazards in ASEAN Region 3 - Meteorological Disaster -
6	August 1, 2014	・3rd Area BCP Workshops in three pilot areas ・3rd Seminar for Practitioners ・3rd Panel of Experts Meeting ・Proposed Area BCM/BCP
7	April 1, 2015	・Guidebook for Area BCM ・Risk Profile Report ・Country Report

9.3.2 Utilization of the Newsletter

Details of the newsletter distribution are summarized in Table 9.5. The newsletters are attached to Appendix A11 of this report.

Table 9.5 Utilization of the Newsletter

Distributed to	【Institutions in pilot areas】(English or local language version) Central government institutions, research institutions studying natural disasters, local governments, operators of transportation infrastructures or lifeline utilities, organizations managing Industrial Agglomerated Areas, chambers of commerce, industrial groups, disaster-prevention-related institutions, investment-related institutions (investment promotion institutions, etc., financial institutions), universities/research institutions, private corporations, etc. 【Related institutions of Japan located in ASEAN Member States】(Japanese version) JICA, the Japanese embassies, Japanese chambers of commerce, Japanese companies, experts from JICA, others
Distribution method	【Pilot countries (Indonesia, the Philippines, and Vietnam)】 Directly distributed to participants in project workshops and seminars, decision-making institutions, etc. 【5 ASEAN Member States (Cambodia, Laos, Malaysia, Myanmar, and Thailand)】 Distributed to the central government institutions, etc. responsible for industry, planning, and disaster management (to be invited to the Seminar for Practitioners through the JICA office). 【Brunei】 Distributed to the central government institutions, etc. responsible for industry, planning, and disaster management (to be invited to the Seminar for Practitioners through the National Disaster Management Center, Ministry of Home Affairs) 【Singapore】 Distributed to the central government institutions, etc. responsible for industry, planning, and disaster management (to be invited to the Seminar for Practitioners through the Singapore Civil Defense Force.)

CHAPTER 10 DISSEMINATION AND PROMOTION OF THE OUTCOMES (ATTENDANCE AT MEETINGS)

10.1 Summary

The information on Area BCM proposed in this study and the outcomes of the study were disseminated to the ASEAN countries through the following 3 types of meetings. Dissemination of the final results of the project was carried out at the last stage of the project for key organizations of the pilot countries and Thailand.

Table 10.1 List of Meetings for Dissemination and Promotion

Name	Attendants	Date	Venue
ACDM Workshop	ASEAN Secretariat, AHA Centre and two participants each from national disaster management agency of Cambodia, Indonesia, the Philippines and Vietnam	April 24, 2013	Jakarta, Indonesia
ASEAN Forum	Staff of disaster management agencies of ASEAN countries	March 19, 2013	Bangkok, Thailand
JSPP21 International Disaster Management Course	Staff of disaster management agencies of ASEAN countries (20-30 persons)	January 17, 2014 February 5, 2015	Singapore
Dissemination of the Final Results	Key organizations of the pilot 3 countries and NESDB of Thailand	April 22, 2015 ~ April 29, 2015 May 10, 2015 ~ May 23, 2015	Manila, the Philippines Bangkok, Thailand Haiphong and Hanoi, Vietnam Bandung and Jakarta, Indonesia

10.2 ACDM Workshop

10.2.1 Outline of the ACDM Workshop

As one of the flagship projects under the AADMER Work Programme 2010-2015, a Working Group on Risk Assessment, Early Warning and Monitoring was scheduled on April 25. To strengthen inter-organizational partnerships among related countries, AHA Centre held a preliminary workshop in advance of the said Working Group with a focus on the following objectives.

(1) Discussion on commonly used definitions of the terms for disaster risk assessment in the region,

(2) Discussion on a protocol and mechanism for information sharing and cooperation which support disaster risk assessment of the region,

(3) Briefing JICA's project components, namely risk assessment and formulation of BCPs, and

(4) Discussion on disaster information on early warning such as earthquake disaster information provided by ASEAN Earthquake Information Centre, and an information-sharing mechanism.

Table 10.2 Outline of the Event (ACDM Workshop)

Date	April 24, 2013, 9:00-17:30
Venue	Padjadjaran Suites Hotel in Bogor, Indonesia
Participants	ASEAN Secretariat, AHA Centre, two representatives from respective disaster management agencies of Cambodia, Indonesia, the Philippines and Vietnam, and JICA

10.2.2 Dissemination of the Study Outputs and Responses Obtained

- The study team explained backgrounds and rationales of the Study intended to formulate Area BCPs, and also presented its progress achieved so far.
- A range of questions to understand more about Area BCM were posed by participants for this emerging new concept, including what industrial agglomerated areas were targeted, whether the necessary data was obtained and analysed, who were the target beneficiaries of Area BCM, and to what extent different stakeholders are involved in Area BCM.
- A participant from the Philippines introduced that the country's Pandemic BCP regarding eight sectors is currently being created.
- In regard to question of the necessity of an additional study in countries other than the three pilot countries, AHA Centre responded that it would be further discussed in the following Working Group session (on April 25).
- Through the question-and-answer session, participants in the workshop obtained a general understanding of Area BCM.

10.3 ASEAN Forum (Bangkok)

10.3.1 Summary of ASEAN Forum

For disseminating Area BCM, the JICA Study Team participated in the ASEAN Capacity Building Forum on Risk Assessment, which was held to share information among ASEAN countries regarding disaster management. The theme of the forum was "Bridging Science and Practice in Disaster Risk Management Towards Community Resilience".

Table 10.3 Summary of ASEAN Forum

Date and time	March 19, 2013 8:00-17:00
Venue	Amari Watergate Hotel Bangkok, Thailand
Attendants	Persons concerned with disaster management

10.3.2 Dissemination and Outcomes

- An outline of Area BCM was given to the persons concerned with this project, such as Prof. Pan (Panel of Experts member), Mr. Faisal (AHA center), Mr. Janggam (AHA center), and Ms. Adelina (ASEAN secretariat) at the forum, and it assisted in their understanding.
- Area BCM was disseminated to other attendants at the same table or during breaks, and it assisted in their understanding.


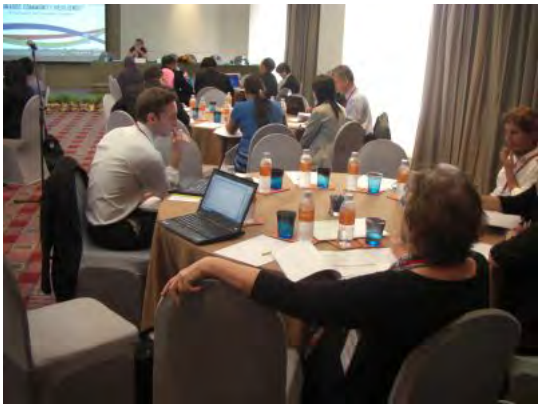

Figure 10.1 Scenes of ASEAN Forum (Bangkok)

10.4 JSPP21 International Disaster Management Course (Singapore)

10.4.1 Summary of JSPP21

The attendants from ASEAN region participated in JSPP21. The purpose of JSPP21 was to share knowledge and experiences from Japan and Singapore regarding disaster management in order to train attendants. Through the lectures, attendants learned about information regarding the proposed Area BCM and the disaster risk management that was used in the study.

Table 10.4 Summary of JSPP21

Date and time	January 17, 2014 and February 5, 2015
Venue	Civil Defense Academy, Singapore (Civil Defence Complex. 101, Jalan Bahar Singapore 649734 TEL:+65-67945503/4)
Attendants	Persons concerned with disaster management from ASEAN region (20-30 persons)
Contents of lecture	1) Disaster Management Cycle(2 lectures) 2) Natural Disaster Risk Assessment and Area Business Continuity Management(4 lectures) *1) was lectured by Dr. Baba (JICA) and 2) was lectured by JICA Study Team.

10.4.2 Dissemination and Outcomes

- The participants gained a general understanding of disaster risk management, hazard and risk assessments and Area BCM through a series of lectures and a fruitful discussion following the lectures.


Figure 10.2 Scenes of JSPP21 (Singapore)

10.5 Dissemination of the Final Results

10.5.1 Outline of Dissemination of the Final Results

In order to disseminate the outcomes of the project at the end of the project, the following activities were carried out for the key organizations of the pilot 3 countries, AHA Centre and panel members, and NESDB of Thailand.

(1) Introduction and explanation of the final report and the guidebook,
(2) Confirmation of activities by the key organizations after completion of the project, and
(3) Discussion on who and how to continue the activities of Area BCM.

Time schedule of the trips is as follows:

Table 10.5 Time Schedule of the Trips

Country	Period of Visit	Joint Session or Visit Individual Organization
The Philippines	April 22 ~ April 25, 2015	・Joint session at MMDA ・ Visit OCD, PEZA and JICA Philippines
Thailand	April 25 ~ April 29, 2015	・Joint session at NESDB
Vietnam	May 10 ~ May 17, 2015	・Visit HPPC, HEZA and VCCI Haiphong (Haiphong) ・Visit DMC, MPI, NCHMF, Hanoi University, VCCI and JICA Vietnam (Hanoi)

Indonesia	May 17 ~ May 23, 2015	・Joint session at BNPB (Jakarta) ・Visit AHA Centre, JICA Indonesia ・Joint session at BAPPEDA West Java (Bandung)

10.5.2 Dissemination of Outcomes

(1) Confirmation of Activities by the Key Organizations after Completion of the Project

Table 10.6 Activities of the Key Organization by Their Own Initiatives in FY 2015

Country	Activities in FY 2015	
	Plan at February 2015	**Achievements by May 2015**
Indonesia	・Maintain cooperation and communication among WG members ・Disseminate Area BCM and BCM among local governments, industrial parks, private companies and others ・Communicate with the national government	・BNPB is currently implementing 5 year plan (2015-2019) where a budget on program for developing Area BCP for SMEs is allocated, and the program has already initiated. ・Presentation by the national coordinator the concept and pilot project of Area BCM / Area BCP at the IABI（Association of Indonesian Professionals in Disaster Management）conference and meeting. ・No activities by BAPPEDA West Java
The Philippines	・Disseminate Area BCM and BCM (mobilize companies in industrial parks) ・Plan promotion of Area BCM and BCM	・The Toyata Suppliers Club has conducted the awareness-raising activities of BCP and Area BCM for companies in Cavite Economic Zone and Laguna Techno Park. They also intend to develop the capacity of developing BCP. They are supported by umbrella organizations in Cavite, Laguna and Metro Manila. ・MMD has programmed activities for dissemination of Area BCM and BCM, targeting private companies in Metro Manila. Plan 3 awareness-rising seminars in FY 2015. Mobilize attendants through PCCI and PEZA.
Vietnam	・Disseminate Area BCM and BCM among local governments, industrial parks, private companies and others ・Communicate with the national government ・Plan promotion of Area BCM and BCM	・HPP plans to organize a dissemination seminar of Area BCM / Area BCP for stakeholders in the pilot area. ・DMC plan a dissemination seminar of Area BCM / Area BCP for staffs of MARD.

(2) Discussion on Who and How to Continue the Activities of Area BCM

Table 10.7 Discussions at Joint Sessions and Individual Meetings

Country	Joint Session/Individual Meeting	Discussions
Indonesia	Joint Session at BNPB BNPB Min. of Industry Min. of Cooperative & SMEs Min. of Commerce AIFDR（Australia-Indonesia Facility for Disaster Reduction）	（BNPB） ・ Continuous activities of Area BCM is necessary. ・ The national government agencies should act as main players, not as supporters. ・ A working group including the national government agencies is necessary in order to promote Area BCM. Participation of governmental research institutes and universities are essential for providing disaster risk information. ・ The guidebook can be applied to SMEs, but incentives are necessary for SMEs. ・ Localization to include Indonesian contexts is necessary. ・ Could start with areas where local stakeholders are more proactive and cooperative. （Min. of Cooperative and SMEs） ・ The Ministry is focusing on the issues for local economy empowerment of the areas that exposed to disasters. ・ Support from International Cooperative Development Fund is considering. ・ Currently no policies related to pre-disaster preparedness for SMEs. （Min. of Commerce） ・ At the Ministry, BCP is focused on the availability of fundamental goods such as rice, sugar, LPG, cement, steel and others in the post disaster situation. ・ Mapping warehouses nationally and the available stocks within the warehouses. （AIFDR） ・ Can Area BCM/Area BCP be applied to agglomeration of SMEs?
	BNPB Mr. Wisnu Wijaya Deputy for Prevention and Preparedness	・ BNPB is implementing the 5 year program based on the new government strategy for development, which in particular stated the economical independence and resilience as the strategy. ・ BNPB plans to request though BAPPENAS the 2nd stage of Area BCM ・ This can be combined with the supports from AUSAID, OECD and ERIA.
	Joint Session at BAPPEDA	・ BAPPEDA West Java appreciate the pilot project and its outcomes.

	BAPPEDA West Java ITB CCI West Java	・ CCI showed strong interest on the approach of Area BCM. CCI will try to influence BAPPEDA to continue Area BCM.
The Philippines	Joint Session at MMDA OCD DILG NEDA MMDA PAGASA Aichi Forging Co. of Asia Inc. Yazaki-Torres	・ All parties were in agreement to push through with continuing Area BCM, and to continue awareness-raising activities. ・ Area BCM/Area BCP need more concrete strategy and measures. ・ Need involvement of more private sector as well as infrastructure and lifeline operators. ・ To proceed to the 2nd phase of the project and to promote Area BCM nationwide, it is recommend to create a Technical Working Group within the NDRRMC. Members include OCD, DILG, NED and MMDA. ・ Necessary to meet the Administrator of OCD (Executive Director of EDRRMC).
	OCD USEC Alexander P. Pama Administrator BGen. Romeo F. Fajardo Deputy Administrator	・ Expressed enthusiasm over Area BCM project and stated that this is very useful for the private sector. ・ He met with the leading private sector companies recently who were looking for a project that they can support. ・ He will form an Area BCM Focal Unit within OCD. ・ He expressed willingness to provide funds for Area BCM activities. Ask JICA to support activities that local funds cannot cover.
	PEZA Mr. Porfirio Ll Yusingco Deputy Director General	・ Support the continuation of Area BCM in the pilot area and the expansion to other Economic Zones then after.
Vietnam	HPPC Mr. Do Trung Thoai, Vice Chairman, HPPC Mr. Nguyen Ba Tien Director, DARD	・ Highly evaluates the pilot project and its results. ・ HPPC is keen on having the continuous support for the 2nd phase of Area BCM. Need more concrete plan in the 2nd phase. ・ Agree with the idea of selecting Dinh Vu Industrial Zone in the 2nd phase. ・ DARD will coordinate with HEZA in both preparation of the proposal and implementation.
	HEZA Mr. Tran Vinh Hoan Vice Director	・ Some large scale infrastructure have been completed, including Cat Bi Airport, Hanoi-Haiphong express way, Lach Huyen Bridge, Halong-Haiphong expressway. Sea dyke system is also under development to protect storm surge. ・ Agree with selecting Dinh Vu Industrial Zone for the 2nd phase, however, suggesting to look

		at a wider industrial area in future, in which Dinh Vu is only a part. ・ HEZA will coordinate with HPPC to prepare the proposal.
	VCCI Haiphong	・ VCCI is an umbrella organization of SMEs. When the 2nd phase of the project focuses on big SOEs and foreign companies in the industrial zone, VCCI's role is limited. ・ Suggesting that the project should also look at SMEs that are outside of the industrial zone, because SMEs are more vulnerable to the risks and have less preparedness including BCP.
	DMC Mr. Dang Quang Minh Director Vu Kien Trung Vice Director	・ In the pilot project, the role of MARD/DMC was limited, because we joined as "observer". ・ Although HPPC will still be the "owner" of the 2nd phase, MARD/DMC would like to involve more actively especially in the technical field. ・ In this way, MARD/DMC will be able to replicate Area BCM/BCM to other provinces/cities in future. ・ DMC is willing to discuss with HPPC about preparation of the proposal.
	MPI Mr. Nguyen Hoang Linh Head of Japanese Division Foreign Economic Relations Dept.	・ Area BCM/Area BCP is a new concept for MPI, and seems to be important. MPI will support this approach. ・ Last year, HPPC submitted a proposal, and MPI has already included it in the list of proposed project to the Prime Minister. Hence, this year, MPI can send the proposal to JICA without approval of PM. ・ However, MPI need to make clear the results and experiences of the pilot project.
	NCHMF Dr. Nguyen Thanh Mai Vice Director Panel Member	・ Need to focus on the central part of Vietnam such as Da Nang and Quang Ngai provinces where natural disaster risks are high. ・ Role of stakeholders need to be stated more clearly in the next phase of Area BCM project. ・ Lack of information on natural disaster risk in Vietnam. Need a portal site using a tool such as WebGIS.
	Hanoi University of Science Dr. Tran Ngoc Anh Panel Member	・ MARD reorganized its organization and created a new department, "Disaster Prevention and Mitigation" at the central level, and plan to expand the reorganization to the local level. Due to the lack of human resources and budget, the next phase of the project should include a component of capacity development. ・ The Hanoi University is now carrying out the project, " System Integration and Technical Assistance for Strengthening of Weather Forecasting and Early Warning System in

		Vietnam". ・ This can be the important information for the portal site, which was proposed in the pilot project.
	VCCI Mr. Le Anh Tuan Director of Legal Division Panel Member	・ In future, the approach of Area BCM should expand to other areas of the northern Vietnam, and the central and southern parts of Vietnam. ・ Thus, in the next phase, promotion is essential for key persons not only of Haiphong and the national level, but also of the other parts of Vietnam. ・ If seminars are for private sector, VCCI would be a great partner. ・ VCCI will have a seminar in this summer, we will send an invitation to JICA to join and introduce the pilot study and Area BCM.

(3) Summary

A half year has been passed since the completion of activities in the pilot areas in December, 2014. During the trip for dissemination of the final results, activities implemented and planed for promotion of Area BCM / Area BCP by the key organizations were confirmed. BNPB of Indonesia is currently implementing 5 year plan (2015-2019) where a budget on program for developing Area BCP for SMEs is allocated and the program has already initiated.

All the key organizations of the pilot 3 countries are willing to continue the approach of Area BCM. For the next step of the project, they have commented on improvements, such as development more concrete plan, active involvement of the national government, targeting SMEs as well, participation of more private companies, preparation of disaster risk information by the governmental research institutions and universities, and continuation of advocacy and dissemination activities in the national level.

In the pilot study, the JICA study team carried out most of the activities of Area BCM. In the next phase of the project, a success is depended on proactive involvement of the stakeholders of the pilot areas and the countries for planning and implementation of Area BCM. The role of JICA would be focused on supporting the activities by the stakeholders.

CHAPTER 11 TRAINING OF JUNIOR RESEARCHERS

11.1 Summary

Junior Researchers from the pilot country (Indonesia, the Philippines, and Vietnam) were selected to participate in training on the formulation of Area BCM/Area BCP through various seminars and workshops in the JICA-AHA study, as described in Chapters 2 to 10. The junior researchers have learned the Area BCM concept and procedures for implementing Area BCM, and conducted dissemination and promotion activities.

1) Attend various meetings, workshops and seminars held in their home countries as activities for the JICA-AHA study;
2) Assist workshop preparation (including coordination with related organizations) and provide administrative support and act as facilitators at the workshops;
3) Attend at the 3rd Panel of Expert Meeting and 1st Junior Researchers' Meeting in Hanoi, Vietnam to present their activities and participate in the discussion regarding Area BCM/Area BCP;
4) Prepare activity reports.

A list of the junior researchers selected from the three pilot countries and their activity reports are provided in Appendix A9.

11.2 Activities

11.2.1 Activity Summary

The activities reported by each junior researcher from the pilot countries are summarized below.

Table 11.1 Summary of Activities Reported by the Junior Researcher in Indonesia

Date	Activities	Descriptions
August 22, 2013	Meeting with related organizations	● Assist the coordination with the Bappeda West Java Province, BPBD West Java Province, and the working group members from infrastructure and lifeline operators, local government, industrial park, companies, and other supporters
December 17, 2013	1st Workshop	● Facilitator ● Assist the workshop committee and national coordinator
December 20, 2013	Progress Seminar 1	● Rapporteur
January to February, 2014	Flood Damage Survey	● Field coordinator and develop survey report
March 6, 2014	2nd Workshop	● Facilitator ● Assist the workshop committee and national coordinator

May 22, 2014	3rd Workshop	● Facilitator ● Assist the workshop committee and national coordinator
June 18, 2014	Junior Researcher's Meeting (Hanoi, Vietnam)	● Discuss with other junior researchers ● Presented the activities and findings
June 19 to 20, 2014	3rd Panel Meeting (Hanoi, Vietnam)	● Participant to meeting and field trip
August 26, 2014	Final Seminar (Bang Dong)	● MC ● Assist the workshop committee and national coordinator
August 28, 2014	Final Seminar (Jakarta)	● MC ● Assist the workshop committee and national coordinator
September 1, 2014	ASEAN Seminar	● Note taker ● Assist the seminar organizer and national coordinator
September to October, 2014	Revision of Area BCP ver. 1	● Collect the document review from working group member
November 20, 2014	4th Workshop	● Facilitator ● Assist the workshop committee and national coordinator
February 23, 2015	AHA Centre Hazard Workshop	● Participate the meeting and assisted the organizer

Table 11.2 Summary of Activities Reported by the Junior Researcher in the Philippines

Date	Activities	Descriptions
August 13, 2013	1st Meeting for Working Group Member	● Participate the meeting and assisted the organizer
December 1, 2013	TOT Meeting for 1st Workshop	● Facilitator ● Prepare summary of results of break-out group
December 3, 2013	1st Workshop	● Facilitator ● Prepare summary of results of break-out group
January 21, 2014	Progress Seminar	● Participate the meeting and assisted the organizer
January 23 to 24, 2013	2nd Panel Meeting (Makati, the Philippines)	● Facilitator for Field Trip ● presentation of information on Taal Volcano
February 20, 2014	2nd Workshop	● Facilitator ● Prepare summary of results of break-out group
May 27, 2014	3rd Workshop	● Facilitator ● Prepare summary of results of break-out group
June 18, 2014	Junior Researcher's Meeting (Hanoi, Vietnam)	● Discuss with other junior researchers ● Presented the activities and findings

June 19 to 20, 2014	3rd Panel Meeting (Hanoi, Vietnam)	● Participant to meeting and field trip
August 15, 2014	Final Seminar	● Participate the meeting and assisted the organizer
November 27, 2014	4th Workshop	● Facilitator ● Prepare summary of results of break-out group

Table 11.3 Summary of Activities Reported by the Junior Researcher in Vietnam

Date	Activities	Descriptions
September 19, 2013	1st Meeting for Working Group Members	● Help to prepare documents ● Assist when Meeting was carried out ● Explain for stakeholders to understand about the project, information provided by team members.
December 11, 2013	1st Workshop	● Help to prepare documents ● Assist when workshop was carried out ● Work as facilator ● Contribute suggestions about disaster scenario and hazard maps.
December 13, 2014	Progress Seminar	● Help to prepare documents ● Assist when Seminar was carried out ● Answer questions of invited guests about the project.
February 24, 2014	Seminar for Practitioners	● Help to prepare documents ● Assist when Seminar was carried out ● Answer questions of invited guests about the project.
February 28, 2014	2nd Workshop	● Help to prepare documents ● Assist when workshop was carried out ● Work as facilator
June 3, 2014	3rd Workshop	● Help to prepare documents ● Assist when workshop was carried out ● Work as facilator ● Join in and suggest ideas in discussion of team members after workshop
June 18, 2014	Junior Researcher's Meeting (Hanoi, Vietnam)	● Discuss with other junior researchers ● Presented the activities and findings
June 20, 2014	3rd Panel Meeting (Hanoi, Vietnam)	● Participant at the meeting
August 19, 2014	Final Seminar (Hai Phong, Vietnam)	● Help to prepare documents ● Help to edit list of invitees ● Assist when Seminar was carried out
August 21, 2014	Final Seminar (Hanoi,Vietnam)	● Help to prepare documents ● Help to contact with invitees ● Assist when Seminar was carried out

December 3, 2014	4th Workshop	● Help to prepare documents ● Assist when workshop was carried out ● Work as facilator

11.3 Summary of Achievement

The junior researchers have obtained a better understanding of Area BCM/Area BCP and hazard analysis through the training. In particular, they have learned the basic concept of Area BCM/Area BCP, various methodologies for hazard analysis and disaster risk analysis, and the current status of BCP implementation and disaster risk in the ASEAN region, especially the pilot countries. The junior researchers have proposed how to utilize those information and experience in their future work and research. They were encouraged to communicate and collaborate with other junior researchers and experts from various countries at the junior researchers meeting and the Panel of Experts meeting. They were also actively involved in the discussions at those meetings and prepared comments and suggestions for the project.

Following are the comments and suggestions discussed at the junior researchers meeting:

- The key players in this study were formed mainly from the local level organizations, including local government units. It was suggested, however, that national-level organizations also be involved, as they will most likely be the organizations responsible for operating the public infrastructures.
- We have only selected one hazard for one pilot area in this study. It was suggested that different kinds of hazards with various scenarios be applied for the development of Area BCM/Area BCP.
- The contents of Area BCP should be written in a way that every stakeholder can easily understand.
- In order to encourage the participation of stakeholders, it is necessary to briefly explain the benefits of implementing Area BCM.
- There is a need to explain the methods for utilizing the Guidebook, as well as to clarify the role and responsibilities of each organization.
- Some organizations appointed a different participant for each workshop, which made it difficult to carry out consecutive discussion through the four workshops. Each organization should appoint a designated Area BCM/Area BCP officer and form an activity group.

The junior researchers are expected to become one of the key persons for continuous activities to disseminate Area BCM/Area BCP in the ASEAN region. The knowledge, experiences, and lessons gained throughout this training in the various stages of the study are expected to expand the view and scope of the future works and research of the junior researchers.

CHAPTER 12 CONCLUSIONS AND RECOMMENDATIONS

12.1 Conclusions

The pilot study has been implemented in the representative industrial agglomerated areas in Indonesia, the Philippines, and Vietnam among ASEAN Member States for the purposes of establishing the concept and the procedures of implementation of Area Business Continuity Management (Area BCM). Area Business Continuity Plans (Area BCP) for the pilot areas were formulated in the process of Area BCM. As Area BCM / Area BCP were new concepts, the pilot study placed an emphasis on the activities of dissemination and promotion in the pilot areas, the pilot countries, and other ASEAN Member States.

The study team defined Area BCM as "a process of risk management for continuous/early recovery of industrial functions in case of occurrence of emergency circumstances, such as natural disasters, which could damage the entire area", and proposed a process which is composed of the following 5 phases (activities):

Phase 1: Understanding the area;
Phase 2: Determining Area BCM Strategy;
Phase 3: Developing Area BCP;
Phase 4: Implementation and review;
Phase 5: Improving Area BCM.

Remarkable features of Area BCM are as follows:

- Collaborative and cooperative approach by stakeholders, including public-private partnership, engagement of multi-sectoral collaboration, as well as participation from enterprises ranging from multinational ones to small and medium enterprises (SMEs);
- Information sharing among stakeholders;
- Risk-informed decision making;
- Emphasis on the importance of infrastructures and lifelines.

Area BCM is efforts to connect the individual organizations and the development of the area. For each organization, the participant to Area BCM will contribute to promote and enhance their own BCM and activities for disaster risk reduction. Improvement of resilience in each organization will contribute to the improved resilience of the entire area. The advance of Area BCM and integration with the disaster risk reduction planning of the area will contribute to the sustainable development in the area.

The approaches in Area BCM are applicable not only to ASEAN regions, but also to any country in the world. An industrial agglomerated area can be a single industrial park or an area where industries are concentrated through several local administrative areas. It could also be applied to other types of disasters such as disasters caused by biological hazards and technological hazards.

Area BCM was implemented in the pilot areas on a trial basis. Stakeholders from a broad range of organizations participated in the trial such as ministries and agencies of the national governments, local government units, operators of transport infrastructure and lifeline utilities, management organizations of industrial parks, private enterprises, governmental research institutions, universities, and others. Workshops were held by the stakeholders in order to implement the activities from phase 1 to 4 of Area BCM cycle. The workshops employed a table-top exercise method.

In the various stages of Area BCM risk-informed decision making is key. In this regard, a GIS database was developed and GIS maps were prepared by summarizing information on natural disasters, disaster risks, important transport infrastructures and lifeline utilities, resources for disaster risk reduction, and others. By using the information plotted on the maps, the stakeholders discussed selecting critical natural disasters that seriously affect the area, developed disaster scenarios, specified bottlenecks in the area in case of the disaster, reviewed Area BCM strategy, as well as selected measures to reduce impacts caused by a disaster.

The concept and implementation method of Area BCM developed in the pilot areas was described clearly in the guidebook. The procedures of Area BCM were hereby explained step by step along with the 5 phases of the Area BCM cycle.

In addition to the guidebook, tools were prepared to support other industrial agglomerated areas in starting and implementing Area BCM. These are the Area BCPs in the pilot areas (planning document developed for the 3 pilot areas), methodologies of hazard assessment used for the pilot areas, a summary of lessons learned from extreme natural disasters throughout the world, and examples of a lessons-learned report. Furthermore, the risk profile reports for the pilot areas, which summarize risk information of the pilot areas, and the country reports, which contain risk information of 10 ASEAN Member States, were prepared as sources of information to make decisions in Area BCM. The guidebook, tools, and sources of information can be utilized when starting and implementing Area BCM in industrial agglomerated areas in other regions.

Various seminars, workshops and meetings were held with an aim to disseminate and promote Area BCM, targeting the pilot areas, the pilot countries, and the 10 ASEAN Member States. Moreover, young researchers from the 3 pilot countries were trained and their skills to promote Area BCM/Area BCP in the future were improved.

The study team has received advices from experts and professionals of Japan and the ASEAN countries in the establishment of the fundamental concept of Area BCM, the development of an implementation method of Area BCM, and the selection of methodologies of hazard and risk assessments.

12.2 Recommendations

(1) Area BCM/Area BCP

The process of Area BCM and its written plan, Area BCP, should be improved by repeating the Area BCM cycle, which consists of 5 phases. In this study, Phase 1 "Understanding the Area" to Phase 3 "Developing Area BCP" and a part of Phase 4 "Implementing and Reviewing" have been practiced on a trial basis.

- In the pilot areas, a system, or a group of stakeholders who implement Area BCM has been established. They participated in the workshops and gained knowledge and experiences of Area BCM / Area BCP implementation. The continuation of Area BCM in the pilot areas and also the revision of Area BCPs are expected to be implemented by the efforts of the stakeholders.
- This study was focused on developing the concepts and the implementation procedures of Area BCM. Therefore, the descriptions of some of the contents of the planning documents, Area BCPs, remained generic in nature. For the revision of Area BCPs, it is necessary to have detailed understanding of the current situations in the areas, more specific reviews on bottlenecks and possible countermeasures, considerations of new emerging risks for the plan, analysis about social and industrial impacts, analysis on the impacts to supply chains, and others.
- Area BCPs established by the study have remained within the circles of the attendants to the workshops. It is expected that the plans would be discussed and reviewed within the member organizations of the working groups, approved by the management of the member organizations and authorized (through a formal process) by leader institutions such as local governments.

(2) Implementation of Area BCM

Area BCM is supposed to be implemented by stakeholders of the area. Since the JICA study team took the initiatives to plan and implement Area BCM during the study, the involvement of the stakeholders in the area has been limited to the understanding of the concepts of Area BCM and to experience its implementation procedure. After this study, the stakeholders of the area are expected to: conduct planning and promotion of Area BCM; collect, summarize and distribute risk information of the area; conduct hazard and risk assessments; plan and implement workshops, documentation and revision of Area BCP; and others.

Important points for the stakeholders of the area to promote Area BCM are summarized as:

- The leader of Area BCM, be they the national government, local government or a relevant organization, should have an ownership of Area BCM. Their active participation is indispensable for success.
- The participants of the workshops discussed the issues and expressed opinions as individuals, not members of the organizations they belong. It is important that top management of organizations

understand the importance and benefit of Area BCM, and discussion on the issues within the organizations is also important.

- In the pilot study, private sector participation in the working groups was small. It may be necessary to create some incentives to encourage those from the private sector to participate in Area BCM.

- In this pilot study, the JICA study team mainly worked to plan and implement the workshops. Training of local coordinators is necessary to play in the future as an alternative of the JICA study team to plan and implement Area BCM. As a part of the training which aims to achieve this goal, local consultants and university academic staff joined the study team to support in the implementation of the pilot study.

- For smooth progress of the workshop, the role of facilitators is important. In the future, facilitators are expected to be trained. In the pilot study, local consultants and university students acted as facilitators.

(3) Risk-informed Decision Making

"Risk-informed decision making" is the fundamental approach used for Area BCM. The selection of critical natural disasters seriously affecting the area, the development of disaster scenarios, the specifying of bottlenecks in the area in case of disaster, the review of Area BCM strategy, the selection of measures, and others should be carried out based on the risk information such as that regarding hazard, disaster risks, social infrastructures and disaster management systems, and their capacity.

- Collection, summarization and mapping of information on industrial agglomerated areas and statuses of civil infrastructures such as transport infrastructures and lifeline utilities can be done by the stakeholders. Disaster management system and capacity of local governments, operators of transport infrastructures and lifeline utilities, and private enterprises can also be summarized by the stakeholders.

- On the other hand, one of the major issues of implementing Area BCM is how the stakeholders can access the hazard and risk information as well as technical and scientific methods for hazard and risk assessments. This is a big challenge for the private sector, especially for SMEs. It is indispensable that hazard and risk information be displayed simply for easy understanding and easy application for decision making.

- The task of the governmental research institutes, universities or private consulting firms is to carry out hazard and risk assessments. The stakeholders need to be informed of who can provide what kinds of scientific and technical services.

- In order to fulfill the gap of risk information, it is beneficial to have a portal site that provides information sources for planning mitigation and prevention measures, emergency responses, and

rehabilitation and reconstruction. Such information can be used not only for Area BCM, but also for BCMs of individual organizations and disaster risk reduction planning of local governments. The task of the national government or local government is to prepare the portal site. This is a separate approach for them than that of the promotion of Area BCM.

- The country reports and risk profile reports prepared by the study were the very first versions of the portal site for the countries and the pilot areas, respectively. It is expected that responsible organizations in the respective countries and pilot areas will improve and revise those reports with more detailed information.
- In the future, it is expected that the risk information will be open to the public through, for example, a WebGIS which will allow wider applications by more users.

(4) Dissemination of Area BCM

Area BCM is the new concept proposed in the study, and the procedure of implementation is still under development. Therefore, it can be said unfortunately that the recognition of its importance and necessity is low in the pilot countries and even in the pilot areas. The activities of dissemination and promotion of Area BCM shall continue even after the completion of the study.

- In the pilot areas, the members of the working groups established during the pilot study should play the key role to continue the approaches such as the improvement of their Area BCMs and the revision of their Area BCPs. It is expected that the continuous approach would deepen the support for Area BCM from a wide range of private enterprises, industrial parks, local governments, operators of transport infrastructure and lifeline utilities, and others.
- For dissemination and promotion in the pilot countries, the key is to have a strong interest and collaboration from:
  - Ministries and agencies of the national governments in charge of planning; disaster management; industry; small and medium enterprises (SMEs); local governments and others,
  - Local governments; technical organizations such as governmental research institutions, universities and professional societies; and organization of private sector including the national chamber of commerce and industry, and other industry groups.
- It is advisable that the dissemination and promotion of Area BCM should go hand in hand with that of the BCMs of individual companies and organizations.
- For the dissemination and promotion among ASEAN Member States, it is important to increase the number of cases of Area BCM within the ASEAN region. The strong interest expressed by the government of Thailand is encouraging. It is important to share the outcomes, experiences, and lessons of the pilot countries, namely Indonesia, the Philippines, and Vietnam, as well as that of Thailand with other member states through the system of ASEAN Secretariat. AHA Centre can play an important role to accumulate, share and disseminate information on hazards and risks.

Other frameworks of Asia, such as APEC and ESCAP can also be considered for dissemination and promotion.

- The dissemination and promotion of Area BCM worldwide will require the involvement and collaboration of numerous institutions. As experienced with community based disaster risk reduction and school disaster risk reduction, which have been widely spread, involvement of UN institutions, international organizations, donor countries, NGOs, and others are required for the promotion of Area BCM. In addition to these institutions and organizations, support from the private sector is crucial for Area BCM.