Planning Guide for Area Business Continuity
~ Area BCM Toolkits ~

Version 2

Supplemental Volume
Tools for Area BCM

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Tool 1:Area BCPs Prepared for the Pilot Areas

Area Business Continuity Plan (Area BCP), Version 2, Karawang and Bekasi, West Java, Indonesia

Area Business Continuity Plan (Area BCP), Version 2, Cavite, Laguna and Metro Manila, The Philippines.

Area Business Continuity Plan (Area BCP), Version 2, Hai Phong, Viet Nam

Area Business Continuity Plan（Area BCP）

Version 2

－Karawang and Bekasi, West Java, Indonesia－

November2014

Local Planning and Development Agency,

Province of West Java

○This plan (version 2) was promoted by local Planning and Development Agency,Province of West Java, and was formulated with the participation of local government, public sectors and private sectors in Bekasi and Karawang under the cooperation of JICA Study Team.

○The stakeholdersin Bekasi and Karawang will be expected to continue the activities of Area BCM, and revise this plan.

Contents

1 Purpose of the Plan

1.1 Introduction to the Version 2

This Version 2 is an updated version of the Version 1 rewritten of the JICA study team to reflect the discussion in the WS by the stakeholders. The activities to update the Version 1 is shown in Table 1-1 and described further bellow.

Table 1-2 Activities for Preparation of an Updated Plan (Version 2)

Activity	Details	Method	Output
Studying and Improvement of the Plan (Version 1) by the Members	● Members study and improve contents of the plan (Version 1) within their organization	● Discussions within the organization of members	● Activity Report
Reviewing the Plan	● Update the plan by the leader, members and supporters from outputs of the study of the members	● A workshop (Workshop 4)	● Updated Plan (Version 2)

○Studying and Improvement of the Plan (Version 1) by the Members

・Each member confirms and/or modifies contents of the current Area BCP (Version 1) through discussions within an organization attended by executives and key staffs of related sections/departments.

・Items to be confirmed and/or modified include impacts to the area, strategies for business continuity, actions for business continuity, roles and responsibilities of the member, related plans, documents and others owned by the member, responsible person for Area BCM, and his/her contact details.

・Each member summarizes outputs from the discussions and prepares an activity report.

○Reviewing the Plan

・The input from the members and supporters are compiled to produce this draft of Version 2, to be reviewed in the Workshop 4 to produce the Version 2.

1.2 Purpose of the Plan[1]

[1] The purpose of the plan (version 2) was rewritten from the version 1 draft, which was rewritten of the JICA study team to reflect the discussion in the WS by the stakeholders.

The Purpose of this Area business continuity plan (Area BCP)is that for the sustainable development of Bekasi and Karawang area,the continuity or rapid recovery of industry function should be achieved in emergency such as natural disasters that affect the entire area.

Area business continuity is realized in that local government and Infrastructure operators, industrial parks, companies in the area willpromote their own BCM or disaster reduction measures with cooperation.

This plan shows the important information to be shared among stakeholders, the roles of stakeholders,the strategy and contents of activity for Area business continuity, and thecontinual operation of this plan.

2 Scope of the Plan

2.1 Organization

The stakeholders of this plan (a leader, members and supporters) are described in the following description. The role of the stakeholders is further shown in Chapter 7.

2.1.1 Leader

A leadershall be responsible to promote Area BCM. A leader shall demonstrate leadership with respect to Area BCM and manage to formulate and maintain Area BCP.

・Local Planning and Development Agency,Province of West Java（BAPEDA）

2.1.2 Members

Membersshallparticipate in Area BCM to formulate Area BCP. Members shallprovide information necessary for Area BCMand promote disaster management measures and BCP of their own organization.

・Local Governments and Local Offices of National Government, Operators of Infrastructure and Lifeline, Industrial Parks, Private Enterprises

2.1.3 Supporters

Supportersshall support Area BCM implemented by a leader and members. As examples of the support, supportersshallencourage institutional or advise technically, including risk assessment.

・National Government, Governmental Research Institutions, Universities and Others

2.2 Area

This plan is directed to the following areas.

- Industrial agglomerated area in Bekasi Regency, Bekasi city and Karawang Regency
- Area that facilities of infrastructure and lifeline are distributedto be utilized by the industry

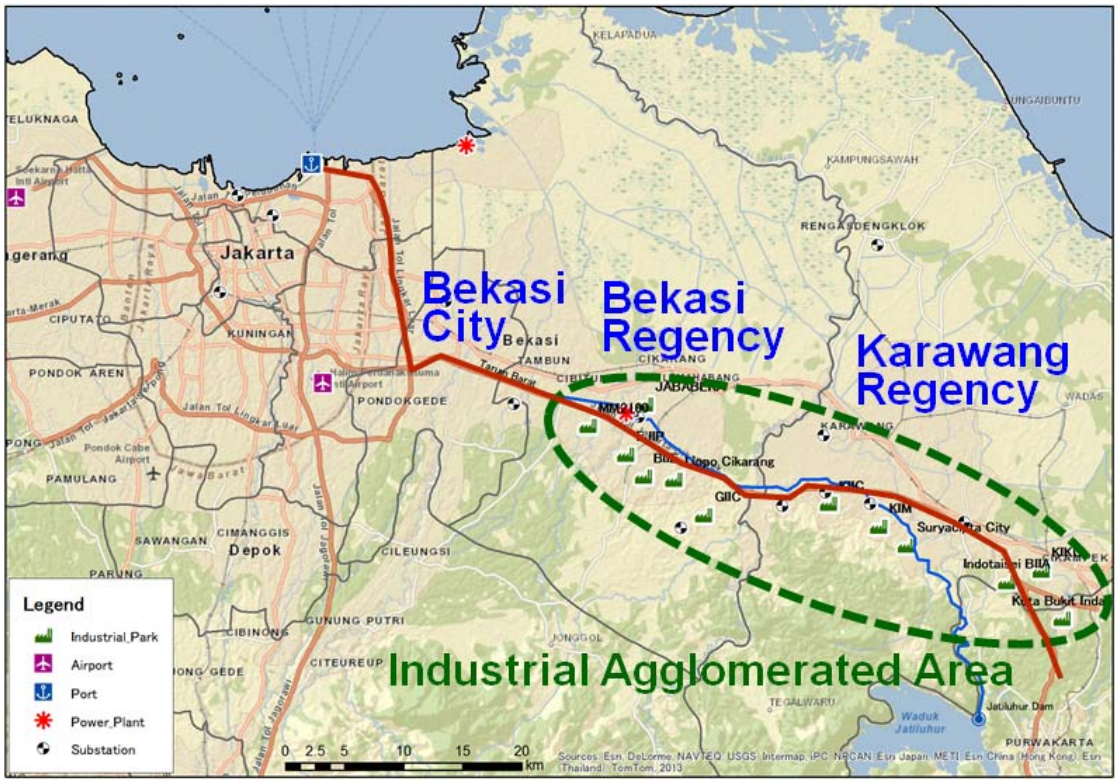


Fig.2-1 The area of this plan

2.3 Hazard

This plan is directed to anticipate the following multi-hazard.

- Natural disasters (earthquake and tsunami disaster, storm, flood, volcanic disaster)

2.4 Formulation Process and Version Management

This plan will be revised as appropriate though the activity of Area BCM by the stakeholders. The process to formulate the version - 1 and 2 is as following. After version 2,the process to revise will be appended here.

- The version 1 of the planwas undertaken as JICA project. With the support of JICA,preparation meetings (Jun 2013-August 2013, two times)and workshops (December 2013-May 2014, three times)[2] were held, and the stakeholders discussed on Area business continuity. This plan was formulated to compile theseefforts.

[2] The activity of WS is shown in Appendix A.

- This draft version 2 of the plan was a revision of the version 1, incorporating all the comments and input from the working group members captured from a series of meetings and interviews with the working group members during the period of June-October 2014.

3 Understanding of the Area

This Chapter describes stakeholders who participate in Area BCM of the Area, and industrial environment and disaster risks of the Area to be considered in Area BCM.

3.1 Stakeholders of the Area

Stakeholders who participate in Area BCM include local governments, operators of infrastructure and lifelines, industrial parks, private enterprises, national government, governmental research institutions, universities and others.

The stakeholders are divided intothree categories, i.e.: leader, members and supporters of Area BCM.

- Stakeholders of the Bekasi and Karawang Area, and their roles and responsibilities are listed in Table 3.1. Local governments that are concerned with Bekasi and Karawang Area are Bekasi Regency, Karawang Regency, Kota Bekasi and the Province of West Java who administer the aforementioned three administrations.
- The stakeholders in the table are those who attended workshops for formulation of the first version of Area BCP.
- A composition of the stakeholders can be modified by such as inviting other essential organizations.
- A list of the stakeholders is provided in Appendix B.

Table3-1 Stakeholders of the Bekasi and Karawang Area

Category	Organization	Role
Leader	・BAPPEDA (Local Planning and Development Agency), the Province of West Java	・ Promote and manage Area BCM ・ Formulate and maintain Area BCP ・ In charge of studies, disaster risk assessment, workshops / seminars and others necessary for implementing Area BCM system ・ Conduct inventory of programs and activities of Area BCM ・ Develop a budget to support the Area BCM program ・ Planning disaster evacuation routes, evacuation shelter, emergency response, recovery of flood area, disaster mitigation for Area BCP ・ Promote the projects on flood control and land use planning for the flood resilient city ・ Provides helpful information for Area BCM (e.g. risk assessment, disaster warning information)
Members	・Local Governments ・Local Offices of National Government ・Operators of Infrastructure and Lifeline ・Industrial Parks ・Private Enterprises	・Participate in Area BCM ・Formulate Area BCP ・Attendance of workshops and others ・Provide information and documentsnecessary for Area BCM ・Formulate, update and promote disaster management measures and BCP of her own organization Input from BappedaKarawang District ・ □ Develop Disaster Management Plan (RPB) Karawang and will integrate ABCPlan into RPB ・ □ Develop a Local Action Plan for Disaster Risk Reduction (DRR Plan) Karawang District and will integrate ABCPlan into DRR Plan ・ Will integrate the RPB and DRR Plan into local development planning (RPJMD)

		・ Helps BAPPEDA West Java Province BCP and BCM in the district of Karawang ・ Get involved in the implementation of disaster management in the area (e.g. become a member of the Water Resources Management Coordination Team (TKPSDA) CitarumBestari) ・ Integrating disaster aspect in the preparation of Spatial Planning Input from Local Disaster Management Agency (BPBD) Karawang District ・ Based on local regulation in 2014, BPBD Karawang District is established ・ As director and implementing disaster management in the area ・ Responsible for the implementation of disaster management in the area ・ Develop Guidelines for Disaster Management
Supporters	・National Government, ・Governmental Research Institutions ・Universities ・Others	・Support Area BCM implemented by a leader and members ・Provide information, knowledge and technical advices necessary for Area BCM ・Provide services such as study and disaster risk assessment necessary for Area BCM ・Promote Area BCM in the national level ・Formulation of systems for Area BCM

3.2 Structure of the Local industry[3]

In this area, an industrial agglomerated is located.The characteristic of the industry agglomerated area is as follows.

- In Bekasi and Karawang, many industrial parks are located along Jakarta-Cikampek toll road.
- In these industrial park, many large assembly plants are located and operating,such as automobiles and electrical machinery plants, which include also foreign capital.
- There are large scale employment and production in these industrial parks.hence local economy is largely dependent on industrial parks.
- Transport of industrial parks is almost dependent on Jakarta-Cikampek Toll Road and Tamjung Priok port.

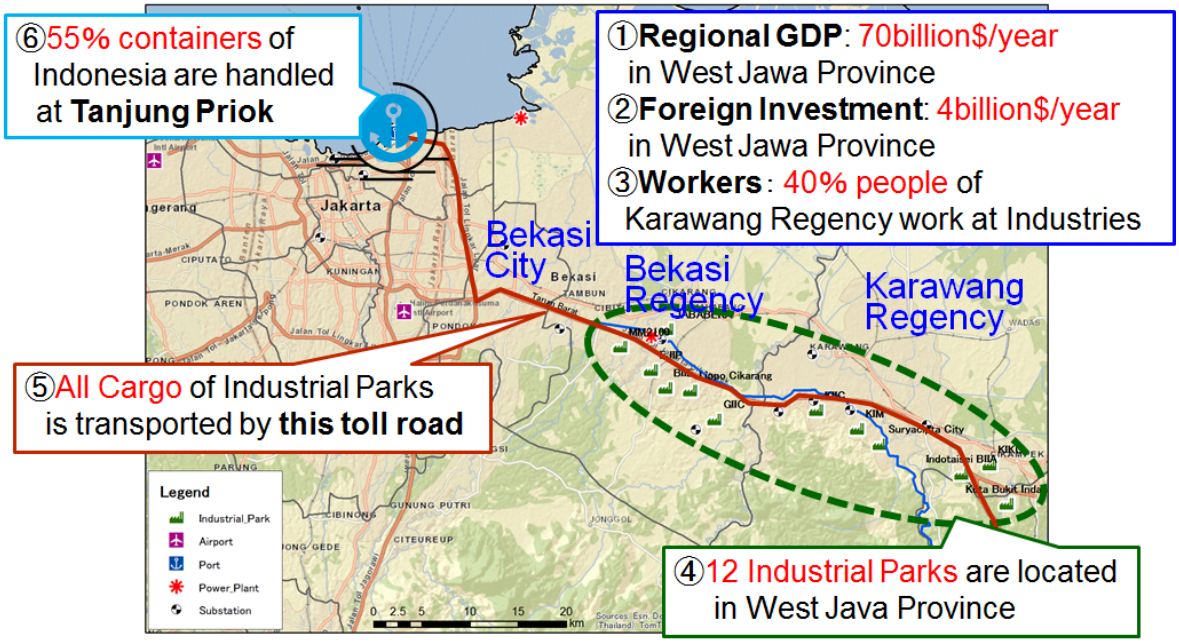


Fig.3-1 Structure of local industry

[3] Appropriateand useful information shall be updated or added. (For example: the amount, items and countries of trade)

3.3 Infrastructure in the Area

■Traffic Infrastructure

The industrial parks in Bekasi and Karawang area are located along the Jakarta - Cikampek toll road which is connected to the Jakarta Ring Road. The Jakarta - Cikampek toll road is the major transport facility connecting Bekasi and Karawang area with Jakarta. The National Route No.1 also connects this area with Jakarta.

Tanjung Priok Port is the major harbor that the industrial parks in Bekasi and Karawang area are using. The nearest airports are Soekarno-Hatta Airport and Halim Perdanakusuma Airport in Jakarta.

■Lifeline Facilities

The major electric power plant servicing to Bekasi and Karawang area is the Muara Tawar Power Plant at the coast of Tarumajaya subdistrict in Bekasi regency. Many electric substations are located along Jakarta - Cikampek toll road. The industrial water is taken from the irrigation canal (Tarum Barat which tke water from Jatiluhur Dam) that supply water to Jakarta..

The main infrastructure and facilities are presented in Table 3-2. It is to be noted that in addition to the organizations shown in the Table, the central ministries such as Ministry of Public Works, Ministry of Transportation and Ministry of Energy and Mineral Resources should be are the main policy makers related to the main infrastructure and facilities.

Table3-2 Summary of main infrastructure facilities

Facilities	Summary	Management
Jakarta - Cikampek Toll Road	Jakarta to Cikampek Length: 73km	PT Jasa Marga Tbk
National Route No.1	West to East highway in Java Island along north shore Merak to Ketapang Length: 1,316km	Directorate General of Highway, Ministry of Public Works
Tamjung Priok Port	Terminal: 7 Container berth: 14 Gantry crane: 31	PT Pelabuhan Indonesia II
Soekarno-Hatta Airport	Runway: 3600m x 2 Passenger Terminal: 3	PT Angkasa Pura II
Halim Perdanakusuma Airport	Runway: 3000m x 1	PT Angkasa Pura II
Muara Tawar Thermal	Generation Capacity: 920MW	PT Pembangkitan Jawa

Power Plant		Bali
Jatiluhur Dam	Reservoir Capacity: 3 billion m^3	PT Perum Jasa Tirta II
Tarum Barat	82m3/sec	PT Perum Jasa Tirta II

Fig.3-2 Infrastructure facilities in the area

3.4 Disaster Risks that threaten the Local Industry

The once in 100 to 200 years probability is considered for the natural hazards affecting Karawang Regency, Bekasi Regency, and Kota Bekasiin the estimation of the situation of catastrophe. The smaller but more frequent disasters are requested to be studied in the future.

Among the several natural hazards, flood gives the largest impact to the local industries in Bekasi and Karawang area in the period of 100 to 200 years. Earthquake is the second but the impact by tsunami is much smaller. The effect by volcanic eruption is smaller than flood and earthquake. The disaster risk by the flood is considered in this plan for the above reason. (Referred Databases: EM-DAT[4], PRCC[5], GLIDEnumber[6], NOAA[7], Dartmouth[8])

The distribution of inundation area by the flood that is supposed to occur once in 200 years is shown in Figure3-4. The blue color in the figure means the inundation depth. The maximum depth is larger than 4 meters. The duration of inundation is supposed to continue more than 2 weeks. The disaster risks to the local industries in Bekasi and Karawang area by this flood are shown in Table3-3.

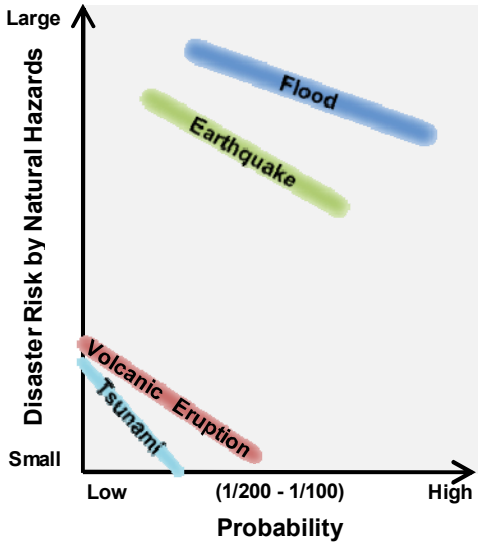


Fig.3-3 Comparison of the natural disaster risk to the local industry

The disaster risks are evaluated by the number of dead people and amount of loss based on the existing disaster database.

[4] OFDA/CRED International Disaster Database, http://www.emdat.be/
[5] Pacific Rim Coordination Center Disaster Data, http://data.pacificrimnetwork.org/
[6] GLobal IDEntifier Number, http://www.glidenumber.net/
[7] National Ocean and Atmosphere Administration, National Geophysical Data Center, http://www.ngdc.noaa.gov/hazard/hazards.shtml
[8] Dartmouth Flood Observatory, http://www.dartmouth.edu/~floods/Archives/

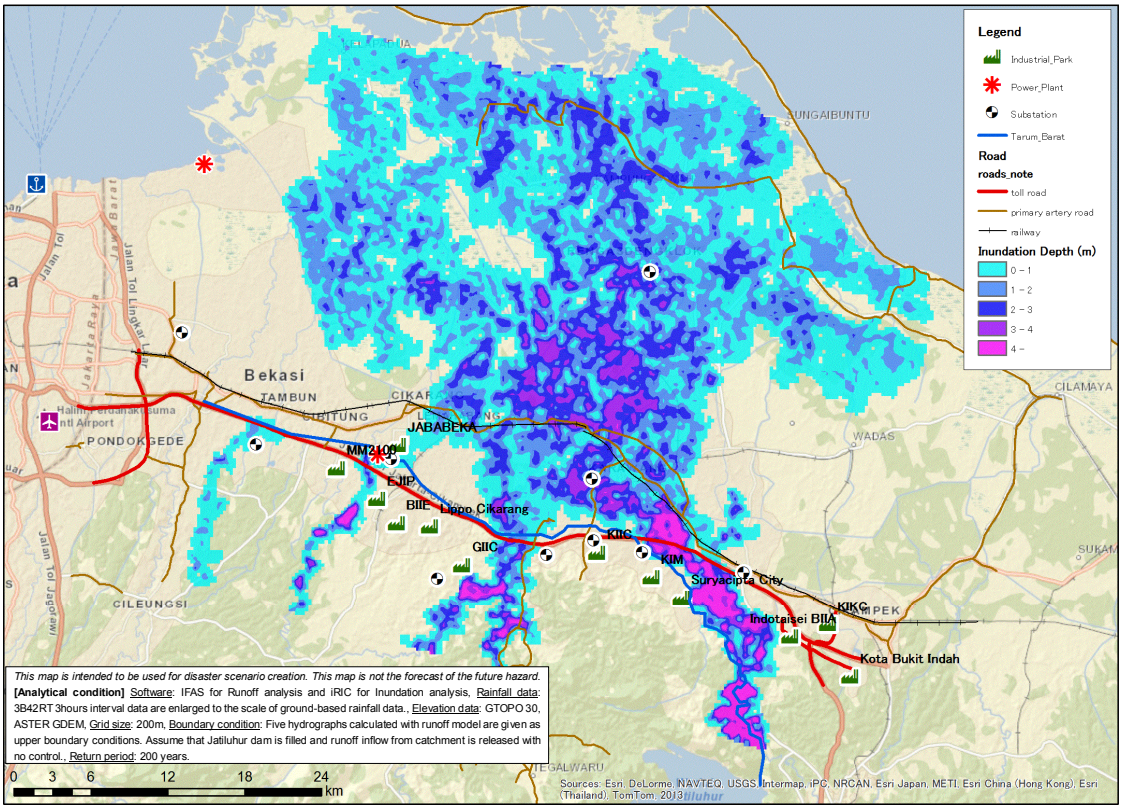


Fig.3-4 Distribution of the inundation depth by the flood

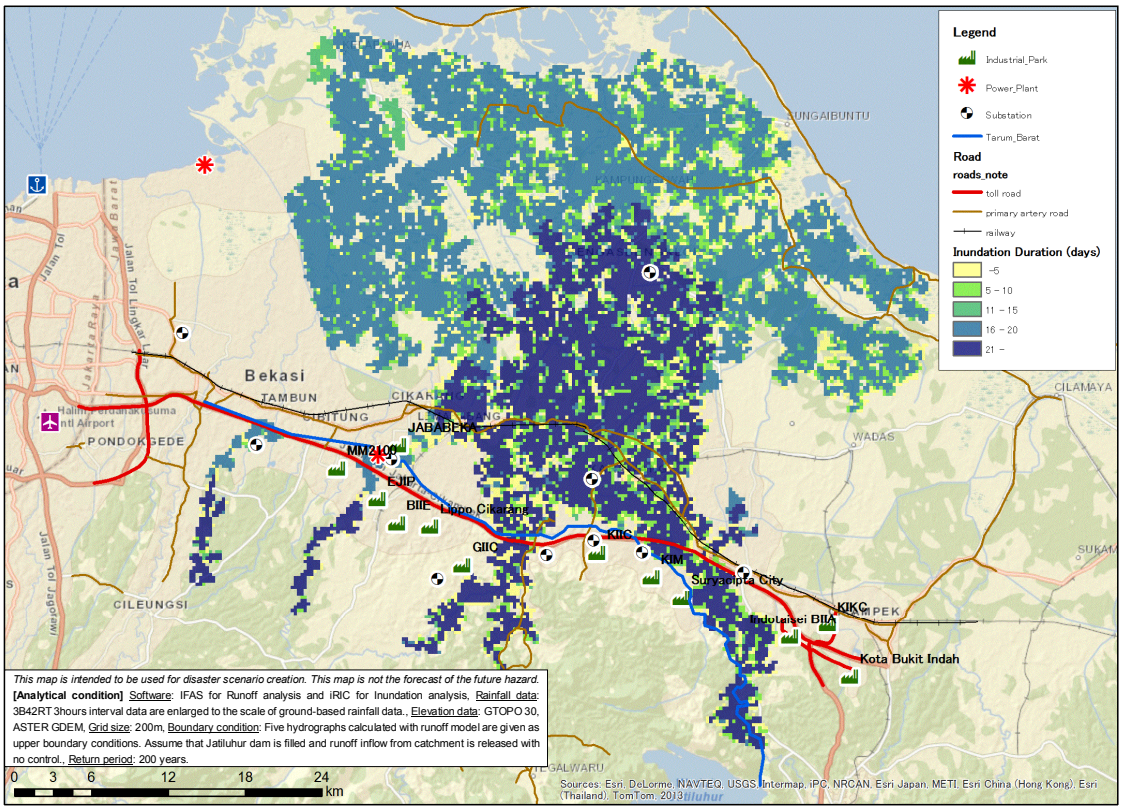


Fig.3-5 Distribution of the inundation duration by the flood

Table3-3 Disaster scenario by the flood for Karawang area

Category	Disaster Risks in Karawan
Buildings in Industrial Park	・Industrial agglomerated area is not inundated.
Lifeline Facilities	・ Substation and Water treatment plant in and next to Industrial Parks are not damaged. ・ Substation in Karawang City is inundated over 2m. ・Some of base stations of telephone/ mobile phone stop their operation because of the shortage of electric power.
Traffic Infrastructures	・ Jakarta-Cikampek Toll Road is closed more than 2 weeks. ・Highway 1 is closed in Karawang City more than 2 weeks.
Workers of Industrial Park	・ Karawang City and surrounding area is inundated more than 2 weeks. ・ Many employee will be absent because of the inundation of their houses. ・The traffic condition becomes worse and come late for factory.

Table3-3b Disaster scenario by the flood for Bekasi

Category	Disaster Risks in Bekasi
Buildings in Industrial Park	・ Industrial agglomerated area is not inundated, but ・ many other locations outside the industrial area are flooded
Lifeline Facilities	・ Electrical substation and water treatment plants in and near the Industrial zone are not damaged. ・ Electrical substations in Bekasi City are inundated by more than 50 cm - 100 cm. ・ Some fixed stations (base station) phone / cell phone ceased operations due to power shortage.
Traffic Infrastructures	・ The toll road Jakarta-Cikampek (Bekasi) is not closed ・ The national road in Bekasi is not closed. ・ Many inundated areason provincial roads and city streets in Bekasi City (Medan Satria industrial area, North Bekasi, West Bekasi, Bantargebang), closed for 1 week
Workers of Industrial Park	・ Bekasi and its surrounding areas are inundated for more than 1 week ・ Many employees fail to show up at work because their house is inundated ・ Access to the industrial area is inundated by flood, vehicles havedifficultes to pass the flooded area ・ Traffic condition become worst and causes employees' delay to to work

As the industrial agglomerated areas are strongly connected to Jakarta by means of transportation infrastructures and lifelines, the disaster risks to the local industries in Bekasi and Karawang area if Jakarta is inundated by the flood are shown in Table3-4.

Table3-4 Disaster scenario in case of inundation in Jakarta

Category	Disaster Risks
Lifeline Facilities	・Muara Tawar thermal power plant is damaged and electric power supply to Jakarta and West Java is limited.
Traffic Infrastructures	・The access road to Tanjung Priok Port will be totally blocked by inundation in Jakarta.

4 Impact Analysis of the Area

4.1 Impact to the Area by Disaster

4.1.1 Impact to Critical Resources

To continue the local industry in disaster, the facilities in industrial parks must be available and the employeescan work. In addition, the services of transportation infrastructure and lifelinemust be available.

In the assumed disaster, the impact of these critical resources is estimated as follows.

- In the assumed flood in Bekasi and Karawang, it is estimated that buildings in the industrial parks, the power supplied to the industrial parks and the portnear Jakarta (Tanjung Priok) supporting the industrial parks would not be damaged most.
- It is estimated that the toll road to be used by the industrial parks would not be available for 2 weeks by flooding, and the transport function will be greatly reduced by traffic jam.
- It is estimated that many employees of companies in the industrial park could not be attendance for 2 weeks due to inundation of their houses and commuter roads, and thereafter employees who have lost their houses in the flood could not be attendance.
- As a result,it is estimated thatalmost companies in the industrial park would be forced to stop theiroperations for two weeks, and thereafter the decreases in productionswould continue.

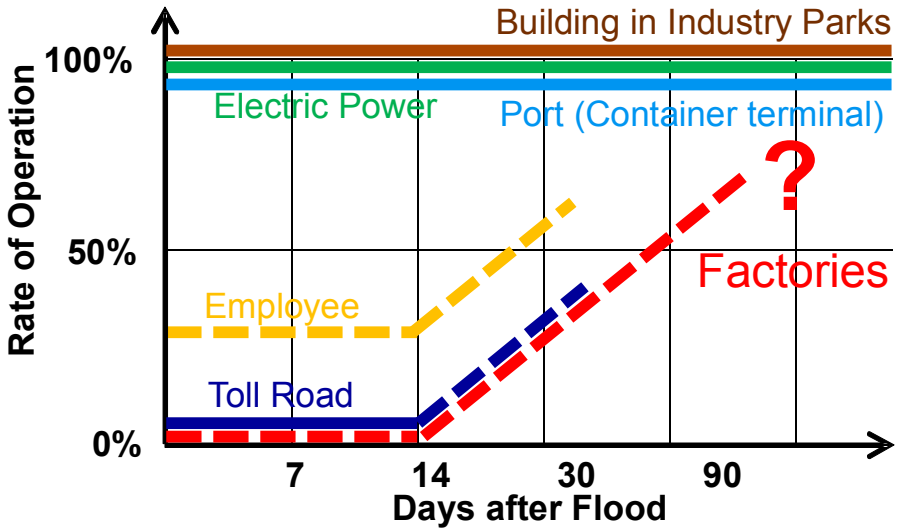


Fig.4-1 Recovery of Critical Resources for Industrial Parks Estimated in Assumed Flood[9]

[9] This figure shows the simulation results under the limited information by the JICA study team. This is not the information elaborate, but useful to understand the impact by the disaster. Though Area BCM, this figure will be expected to revise continually.

4.1.2 Impact to the Local Society and Industry

In the assumed flood, the following impact is estimated to local society and industry in the area. It is an important issuefor the area to reduce the risk of the assumed flood.

- In the assumed flood in Bekasi and Karawang, it is estimated that a wide range of the city would be inundated for two weeks.
- In this flood, it is estimated that many people would be affected, there are casualties and evacuees due to the lost of their houses, andmany facilities to support the society and industry would be damaged.
- Due to the affected people and damage of facilities, it is estimated that the security would be worse, and shutdown of production, loss of employment and bankruptcy of companies would be caused. As a result, thelocal economywould be led to decline.

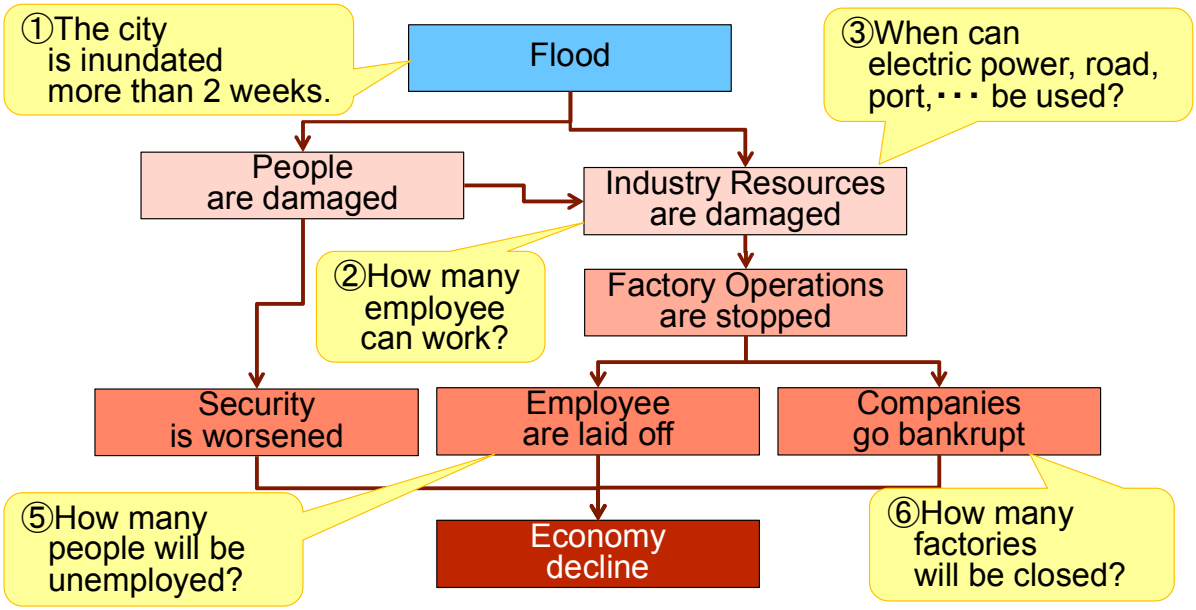


Fig.4-2 Flow of impact to local society and industry by flood

Table4-1 Impact to the area (in the assumed flood)[10]

Category	Item	Content
Assumed disaster		・River flood (About once in 200 years[*1])
Direct damage		・A wide range of the city would be inundated for two weeks.[*1]
Outline of impact		・Almost productions of local industry would be shut down for 2 weeks[*1] and thereafter low level of productions would be continued. ・Many people would be casualties, evacuees or unemployed, so local society would be confused.
Society	Population	・Many affected people (Ex: evacuees50-100 thousand)[*2], casualties ・Infection、Mental stress（especially children）
	Security	・Security worsen, Slum ・Degradation of public service due to evacuees (Ex:railway）
	Community	・Discrete family
	Other	・Tax revenue decrease
Industry	Production	・Significant reduction in production (Ex:10%, 50%, 70%)[*2] ・Shutdown of production (Ex:：for 1 month in 50% of companies[*2])
	Company	・Many bankruptcy including small companies (Ex:75%, 80%)[*2]
	Investment	・Reduction of investment (Ex:25%)[*2] ・New investment to zero[*2]
	Employment	・Many unemployment

*1：Simulation results under the limited information by JICA Study Team

*2：Examples of impact amountshown in discussion of the WS by stakeholders

Note:On the other hand, the effect of positive aspects is also expected in disaster, such as an actively help each other in the community and an investment demand to recover the damaged facilities.

[10] This table shows the simulation results under the limited information by the JICA study team. This is not the information elaborate, but useful to understand the impact by the disaster. Though Area BCM, this table will be expected to revise continually.

4.1.3 Other Residual Risk

In addition to the assumed disaster, the residual risk may be described as following.

- The all transport of industrial parks are dependent to Tanjung Priok portnear Jakarta. If a flood would occur in around Jakarta, theport would not be available and the production of industrial parks would be stopped completely.
- As a more severe disaster than the assumed rivers flood, the collapse of Jatiluhur Dam would give catastrophic impact to society and industry of Bekasi and Karawang.

Table4-2 Impact to the Area (Residual Risk) Part1

Item	Contents
Assumed disaster	・Flood in around Jakarta
Direct damage	・Tanjung Priok port would not be available
Outline of impact	・The production of industrial parks in Bekasi and Karawang would be stopped completely

Table4-3 Impact to the Area (Residual Risk) Part2

Item	Contents
Assumed disaster	・The Jatiluhur dam break ・Break of Curug weir supplying Tarum Barat canal
Direct damage	・Sudden inundation in many areas of the city, heavy casualties. ・Loss of raw water for industry
Outline of impact	・The people and industry in Bekasi and Karawang area will be greatly affected

4.2 Concerns of the Industry Continuity

4.2.1 Concerns on Assumed Disaster

Among resources on the local industry, the critical resources are bottlenecks that would be damaged greatly in disaster and could not be taken alternatives.

In the assumed disaster, the following issues will become the bottlenecks for industry continuity in the area.[11]

- In Bekasi and Karawang , there is a high risk of flood. In the assumed flood, a wide range of the city would be inundated for two weeks.
- The most critical concern is the reduction of transport function of Jakarta-Cikampek Toll Road.
- The critical concern is the worsening of living condition of people, including employees.
- The other critical concern is the restriction of fixed-line phone and mobile phone due to power failure.

Table4-4 Bottlenecks for industry continuity in the assumed flood

Category	Bottleneck	Impact to industry
Most critical concern	the reduction of transport function of Jakarta-Cikampek Toll Road	・The transport of industrial parks is almost dependent on Jakarta-Cikampek Toll Road and Tamjung Priok port. This toll road would not be available for 2 weeks by flooding and the traffic jam on this road would be continued for a long period. As a result, most of the companies in the industrial parks would be forced to stop or reduce their operations.
Critical concern	the worsening of living condition of people, including employees	・Many employees could not come to work due to inundation of their houses or outage of lifeline, until their living condition would be recovered. Some evacuees would stay in road or other public facilities, and then the local industry would suffer trouble in operations. After the inundation for 2 weeks, the evacuated living of people might be prolonged until the recovery of living condition would be finished.
	the reduction of communication function (fixed-line phone and mobile phone)	・In industrial activity, mobile phone and fixed-line telephone is used frequently. In the assumed flood, these communication services would be limited due to outage of power those facilities would be inundated.

[11] In consideration of magnitude of the impact to industry continuity, the bottlenecks were classified as "the most critical concern" and " the critical concern ".

4.2.2 Concerns on Other Residual Risk

In addition to the assumed disaster, the concerns on other disasters that would give a large impact to the industry continuity may be mentioned as following.

・The critical concern is the reduction of transport function of Tanjung Priok Port.

Table4-5 Bottlenecks for industry continuity on other residual risk

Category	Bottleneck	Impact to industry
Critical concern	the reduction of transport function of Tanjung Priok Port	・The transport of industrial parks is almost dependent on Tanjung Priok port. Then most of the companies in the industrial parks would be forced to stop or reduce their operations.

5 Strategies for the Industry Continuity

5.1 Policy of Industry Continuity

The policy of the industry continuity in the area is as following.

Table5-1　policy of the industry continuity

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

5.2 Role of the Stakeholders

According to the policy, all stakeholders shall act work to pay each role in Area BCM.

Tabele5-2 Role of Stakeholders in Area BCM

Stakeholder	Role
Local Government	・To promote the flood control project and the land use planning for the strong city to flood ・To promote measures of response and recover in disaster (ex: Disaster warning system, Instruction and accommodation of evacuation, Restoring the inundation area, Relief of victims) ・To provide useful information for Area BCM (ex: Risk assessment, Alerting information) ・To promote their own BCM
Infrastructure operator	・To promote their own BCM ・To provide useful information for Area BCM (ex: Risk assessment, Recovery objective) ・To recover without delay to restart of the industrial park ・ To assess disaster impact to road infrastructure, bridges and water channels ・ To conduct emergency response for the road infrastructure, bridges and water canals ・ To develop emergency response plan which details can not be known in advance, planning block grant on call budget Note : When the affected infrastructure are those beyond the authority of local governments (district or city) , there are impediments to decisions as bureaucratic procedures need to be followed to obtain approvals on then type of response, which will take some time.
Lifeline operator	・To promote their own BCM ・To provide useful information for Area BCM (ex: Risk assessment, Recovery objective) ・To recover without delay to restart of the industrial park
Industrial park	・To promote their own BCM and strengthen their own facilities ・To provide useful information for Area BCM (ex: Activity of their own BCM) ・To coordinate among BCM of companies in the industrial park
Company	・To promote their own BCM and strengthen their own facilities

(in industrial park)	・To provide useful information for Area BCM (ex: Activity of their own BCM) ・To keep the employment after the disaster

6 Improvement Activities for Capability of Industry Continuity

6.1 Category of Improvement Measures

Through Area BCM, the improvement measures to resolve the bottleneck are studied and extracted, and stakeholders practice these measures and manage the progress.

- The measures for industry continuity are categorized into Prevention, Mitigation, Preparedness, Response.
- As for the progress, most of the proposed measures are now in the stage of idea. Through Area BCM, the stage will step up, Idea→Concept→Implement→Achieved.

Table6-1 Category of Improvement Measures

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

Reference: The United Nations International Strategy for Disaster Reduction Secretariat (UNISDR) Terminology on Disaster Risk Reduction (2009)

Table6-2 Stage of Improvement Measures

Stage	Content
Idea	Just an idea of stakeholders.
Concept	The official conceptual plan is agreed by administrator.
Implement	The budget is ensured and the schedule is planned.
Achieved	The measure is achieved.

6.2 Progress Management of Improvement Measures

The proposed measures as following are expected to be practiced by the stakeholders. Through Area BCM, as appropriate, the progress of the measures will update and new proposed measures will be added in this table.

Table6-3 Proposed Measures for Industry Continuity[12] 1/3

Severity	Bottleneck	Stakeholder	Category	Proposed measures	Stage
Most critical concern (Assumed disaster)	the reduction of transport function of Jakarta - Cikampek Toll Road	Central / Local Government	Prevention	To promote flood control projects. (ex: River improvement, revitalization of lakes and ponds, flood control basin, normalization and maintenance of drainage, pumping facilities, tree planting, information system)	Idea
				Projects to support flood control (normalization of rivers, drainage and irrigation channels , construction of ponds and polders and retaining basins), The DED for these projects are available and some are budgeted in 2014)	Implementation
		Central / Local Government, Administrator of Road / Port / Air port	Mitigation	To develop a new port and a new airport at different regions of Jakarta, and to develop a road leading to the port. (Redundant traffic function)	Concept

[12] This table (1st version) shows the simulation results under the limited information by the JICA study team and the discussion results of WS by the stakeholders.

		Administrator of Road	Mitigation	To promote expansion of toll road, development of bypass road and inundation prevention measures such as raising road and building integrated inter-zone road system	Idea
				FS and DED for bypass ring roads West Karawang and East Karawang is currently developed by Bappeda and Road and Water Agency	Implementation
		Administrator of Road	Response	To carry out pumping measures of inundation and traffic control in disaster.	Idea
				Road and Water Agency provides 400 water level observers and 60 road inspectors spread in Karawang District coordinated by the Local Technical Unit, prepared to conduct flood emergency response	Achieved

Table6-3 Proposed Measures for Industry Continuity 2/3

Severity	Bottleneck	Stakeholder	Category	Proposed measures	Stage
Critical concern (Assumed disaster)	the worsening of living condition of people, including employees	Central / Local Government	Prevention	To promote flood control projects such as dams, Citarum and Cibeet rivers normalization	Idea
		Local Government	Prevention	To promote land use plan in consideration for flood (ex: Upland relocation of the city)	Idea
				Control building site coefficient and green site coefficient for each building permit	Idea
				Local budget flood control projects	Idea
				Request support from central and provincial government for flood control projects	Idea
				Continuous infrastructure maintenance	Idea
				Expansion of green space	Concept
				Polder/retention pond for large scale residential areas (minimum 10 ha)	Concept
			Mitigation	Build access infrastructure from employees residential areas to industrial areas to reduce obstacle for the workers' access	Idea
				Normalization of drainage and sewerage channels and building higher and stronger dikes to be used as alternative	Idea

				roads	
			Response	To strengthen response measures (ex: Evacuation order, Medical care, shelter for victims, Relief supplies, Pumping system) Other measures : ・ Provision of emergency response materials (gabions and san bags) ・ Emergency construction ・ Post-disaster permanent construction ・ Field technical team	Idea
			Recovery	To strengthen recovery measures(ex: Relief for victims), post-disaster permanent reconstruction of infrastructure ・	Idea
		Industrial park, Company	Mitigation	To build dormitory for employees near industrial parks	Idea
			Recovery	To carry out early recover and to keep employment	Idea
	the reduction of communication function (fixed-line phone and mobile phone)	Central / Local Government	Prevention	To promote flood control projects.	Idea
			Mitigation	Developing Fiber Optic Network special for industrial parks	Concept
		Power operator	Mitigation	To promote flood mitigation measures(ex: raising of power facilities)	Idea

			Recovery	To proceed with the early restoration of power facilities flooded	Idea
		Tele-communication operator	Mitigation	To promote measures for service continuity in power failure (ex: Emergency generator)	Idea
		Company	Mitigation	To prepare other means of communication (ex: satellite phone)	Idea

Table6-3 Proposed Measures for Industry Continuity 3/3

Severity	Bottleneck	Stakeholder	Category	Proposed measures	Stage
Critical concern (Other Residual Risk)	the reduction of transport function of Tamjung Priok Port	Central / Local Government, Administrator of Road / Port	Mitigation	To develop new portsat other locations outside of Jakarta, and to develop roads leading to the ports. (Redundant traffic function) Note : Currently the development of new port in Karawang District, initiated by JICA, is still under discussion, and feared to be cancelled due to resistance from PT PERTAMINA (Persero).	Concept

7 Implementation of the Plan

7.1 Area BCM

The Plan is implemented by following Area BCM System.

- •Understanding the Area
- •Determining Area BCM Strategy
- •Formulate Area BCP
- •Exercising and Reviewing
- •Maintaining and Improving

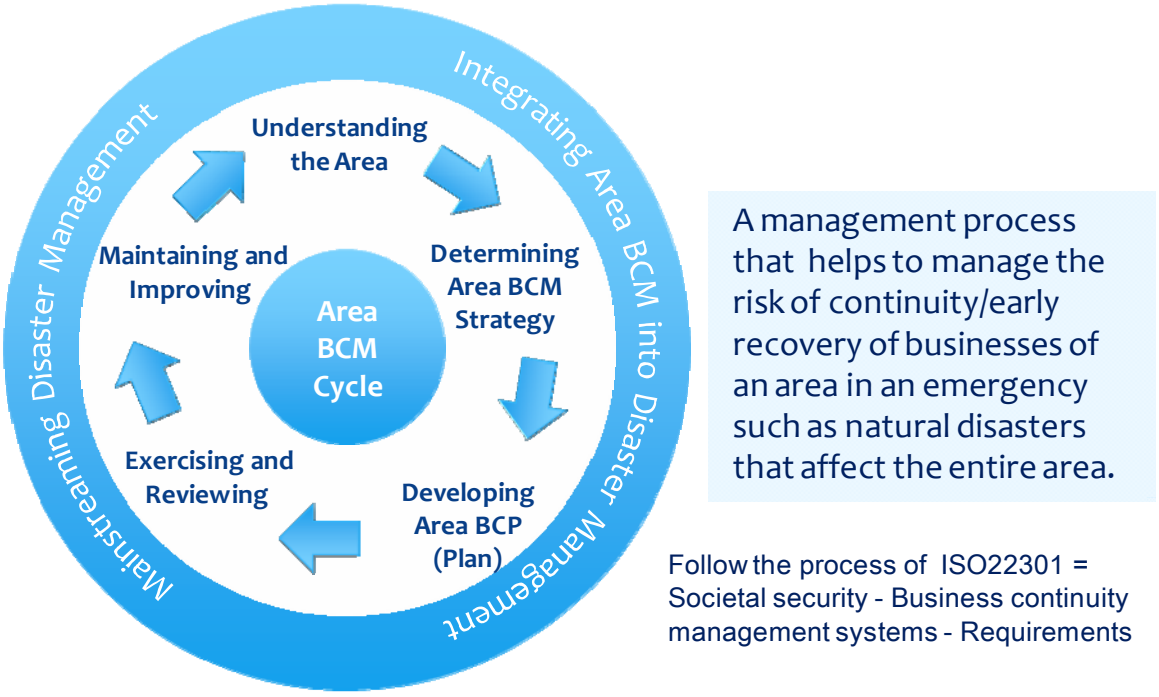


Fig.7-1 Area BCM System

Effective implementation of Area BCM requires active participation of stakeholders of the area, and a continuous approach and endeavor of the stakeholders of the area. Identify stakeholders and establish a system for promoting and implementing Area BCM are important. Private and public coordination is also essential.

Understanding of the area can be deepened and the strategy of Area BCM can be improved by a continuous approach for the Area BCM process.

7.2 System of Implementing Area BCM

Area BCM is promoted and implemented by the following system.

•Roles and responsibilities of the leader, members and supporters are described in Table 3-1.

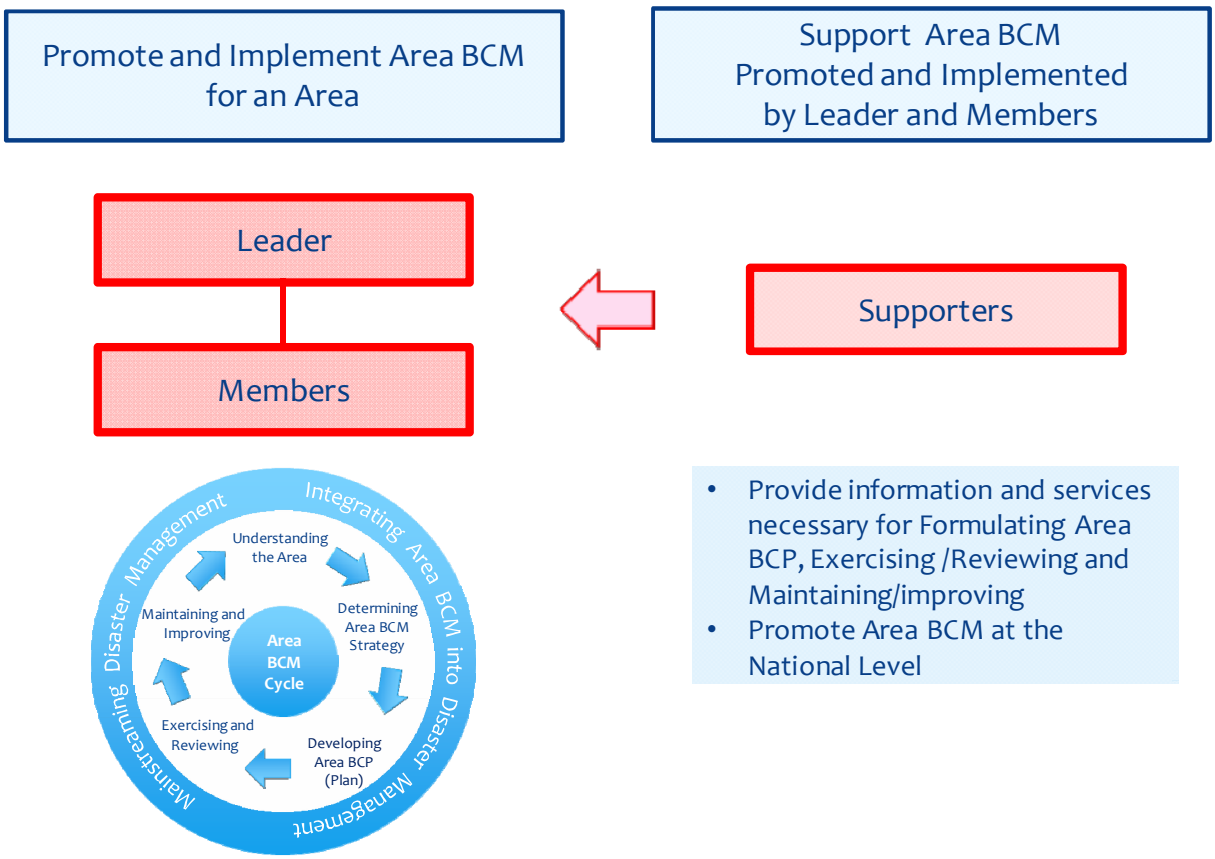


Fig.7-2 System of Implementation of Area BCM

7.3 Exercising and Reviewing

Through exercising and reviewing, effective implementation of Area BCM system is validated, and the plan is confirmed that it is kept up to date. Activities of exercising and reviewing are studying and improvement of the plan by the members, reviewing the plan, formulating a plan for another natural disaster scenario, study lessons from natural disasters occurred in the area and surroundings, and promotion and awareness rising.

Table7-1 Activities of Exercising and Reviewing

Activity	Details	Method	Output
Studying Conformity and Integrity with Disaster Management Plan and/or BCP of Members	● Members study conformity and integrity of Area BCP with their disaster management measures and/or BCP. ● Highlight issues and propose improvement of Area BCM/Area BCP ● Formulate and/or revise their disaster management measures and BCP by members	● Discussions within the organization of members ● Table-top exercises by using a scenario of the Area BCP	● Activity Report
Study Lessons from Natural Disasters Occurred in the Area and Surroundings	● Study lessons from natural disasters occurred in the area and surroundings	● Field Survey, Interview, and Questionnaires	● Lesson Learned Report
Promotion and Awareness Rising	● Utilize discussions within a member for improving the plan as dissemination and awareness rising activity; targeting executives and key staffs of related sections/department. ● Disseminate and promote Area BCM/BCP to other parties of local and national levels	● Discussions within the organization of a member ● Trainings ● Seminars	● Activity Report

○Studying Conformity and Integrity with Disaster management Measures and/or BCP of Members

- The members study conformity and integrity of Area BCP with their disaster management measures and/or BCP through discussions within their organizations. Executives and key staffs of related sections/departments are required to attend the meetings for discussion. Table-top exercises by using a scenario of the Area BCP can be useful.
- Items to be discussed and commented include impacts to the area, strategies for business continuation, actions for business continuity, roles and responsibilities of the member, related plans, documents and others owned by the member, responsible person for Area BCM, and his/her contact details.

- The members summarize outcomes of the discussions, including issues and proposal for improvements of Area BCM/Area BCP, in an activity report.
- The members can also revise and/or formulate their own disaster management measures and BCP from the outcomes of the discussions.

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

- If natural hazards occur within the target area and its surroundings, a lesson learned report is prepared by conducting a field survey and/or interviews and questionnaires. The report includes outline of the hazard, outline of the damages, responses of the members, issues to consider and lessons.
- The lessons learned will be used to improve a plan of the next version.

○Promotion and Awareness Rising

- The discussions for conformity and integrity by the members should utilize as opportunities to disseminate and rise awareness of Area BCM/Area BCP to executives and key staffs of related sections/departments. If necessary, training programs are planned and implemented.
- Dissemination and promotion of Area BCM/Area BCP are planned and implemented for other parties of local and national levels.
- Outputs are recorded in an activity report.

7.4 Maintaining and Improving

After putting Area BCM system in place, the plan is required to keep up to date in order to follow the changing conditions. A maintenance program is prepared that ensure the plans are up to date.

- •if there are any changes of a composition of stakeholders
- •if the target area of the plan is changed
- •if a new natural disaster risk (s) emerged
- •following lessons learned from exercising and reviewing
- •following lessons learned from natural disasters in the area and other locations
- •other necessary occasions

For updating the plan, if necessary, activities such as studies and risk assessments in "Understanding the Area" and "Determining Area BCM Strategy" of Area BCM System are carried out. An updated plan or a newly formed plan is prepared through workshops organized by the leader and attended by the members and supporters.

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

The leader validates and approves the updated plan after receiving advices from experts and discussions by the working group.

7.5 Reporting

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

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

7.6 Issues and Items for Improvement

To be filled after discussions at the 4th workshop, related to the following issues

1. Description of roles and responsibilities of stakeholders in more detail n the Area BCP document, so that each stakeholders can understand their roles more clearly.

2. Implementation plan and SOP (STandar Operating Procedure) in the Area BCP, to clarify the action of each stakeholders.

7.7 Next Steps (Proposed)

2015～

- Strengthen coordination and communication among stakeholders within working group members
- Raising awareness &commitment of stakeholders & WG members through meeting, workshops and seminars
- Discussion with national stakeholders (BAPPENAS, BNPB) to obtain support

2016

- Initiate 2nd cycle of ABCM to produce ABCP (v.3) for new conditions, with the support from BAPPENAS and JICA
- Strengthen coordination & communication of WG members and stakeholders

8 Definitions of Terms (Draft)

Term	Definition	Ref.
Business Continuity Management (BCM)	Holistic management process that identifies potential threats to an organization and the impacts to business operations those threats, if realized, might cause, and which provides a framework for building organizational resilience with the capability of an effective response that safeguards the interests of its key stakeholders, reputation, brand and value-creating activities	*1
Business Continuity Plan (BCP)	Documented procedures that guide organizations to respond, recover, resume, and restore to a pre-defined level of operation following disruption NOTE: Typically this covers resources, services and activities required to ensure the continuity of critical business functions.	*1
Area Business Continuity Management (Area BCM)	A management process that helps to manage the risk of continuity/early recovery of businesses of an area in emergency such as natural disasters that affect the entire area.	*3
Area Business Continuity Plan (Area BCP)	A documented set of procedures and information intended to promote continuity/early recovery of businesses of an area in emergency such as natural disasters that affect the entire area.	*3
Hazard	A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.	*2
Disaster Risk	The potential disaster losses, in lives, health status, livelihoods, assets and services, which could occur to a particular community or a society over some specified future time period.	*2

[Reference]

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

*2:UNISDR Terminology on Disaster Risk Reduction (2009)

*3: Original in this plan

Appendix A Activity of Workshop (version 2)

Item	Date	Location	Number of participants	Theme
1st WS	17December, 2013	Bandung	37	・The policy of Area BCP ・Significant hazards for business continuity of each organization ・Serious problems for business continuity of each organization
2nd WS	6 March, 2014	Karawang	57	・Impacts on the local society and Industries by Disaster ・Bottlenecks for Industry Continuity ・Measures for Industry Continuity
3rd WS	22 May, 2014	Bekasi	43	・Area BCP version 1(draft) ・Next step of Area BCM
4th WS	20 Nov, 2014	Bandung	43	・Reviewed Area BCP version 1 ・Roles and Responsibilities ・Next cycle of Area BCM

Appendix B List of Stakeholders (2nd-version)

○Leader

BAPPEDA (Local Planning and Development Agency),Province of West Java

○Members (Local Governments and Local Offices of National Government)

BBWS (Balai Besar Wilayah Sungai) Citarum (Citarum River Basin Management Unit), Ministry of Public Works
BPBD (Local Disaster Management Agency),Province of West Java
DISHUB (Department of Transportation),Province of West Java
POLDA (Regional Police),Province of West Java
BPLHD (Natural Environment Management Agency),Province of West Java
KODAM III/SLW, (Indonesian National Armed Force-West Java Territorial)
BAPPEDA (Local Planning and Development Agency),Bekasi Regency
BPBD (Local Disaster Management Agency),Bekasi Regency
BPLHD (Natural Environment Management Agency),Bekasi Regency
Diskominfo (Transportation, Communication & Infomatic Agency),Bekasi Regency
Kesbanglinmas (Agency of National Unity, Politics & Civil Protection),Bekasi Regency
Dinas Kebakaran (Fire Brigade Agency),Bekasi Regency
BAPPEDA (Local Planning and Development Agency),Karawang Regency
BPBD (Local Disaster Management Agency),Karawang Regency
BPLHD (Natural Environment Management Agency),Karawang Regency
Dishubkominfo (Transportation, Communication & Infomatic Agency),Karawang Regency
Dinas Bina Marga & Pengairan (Department of Road and Irrigation), Karawang Regency
Dinas Perindustrian ,Perdagangan, Pertambangan dan Energy (Industry, Trade, Mineral and Energy Agency),Karawang Regency
Kesbanglinpol (Agency of National Unity, Politics &Politic),Karawang Regency
Dinas Sosial dan Penanggulangan Bencana (Social Affaire and Disaster Management Agency),Karawang Regency
Dishub (Transportation Agency),Kota Bekasi
Disbimarta (Road and Water Agency),Kota Bekasi

○Members (Operators of Infrastructure and Lifeline)

PT. Jasa Marga
PT. Kereta Api Indonesia(Train Operating Company)
PDAM Bekashi Regency(District Water Company)
PDAM Tirta Tarum Karawang(District Water Company)
PT Telkom
PT Telkom Bekasi
PT Telkom Karawang

Perum Jasa Tirta(Management of Jatiluhur Dam)

○Members (Industrial Parks)
PT Maligi KIIC
MM2100 Industrial Park
PT KBN

○Members (Private Enterprises)
Sharp Electronics Indonesia
PT. Toyota
PT. TMMIN
PT. Jotun Indonesia
PT. HM Sampoerna
PT Lookman Djaya(Transportation Company)

○Supporters (National Government, Governmental Research Institutions, Universities and Others)
BNPB
Ministry of Home Affairs
Ministry of Industry
Ministry of Cooperation & Small-Medium Enterprises
Ministry of Research and Technology
Bandung Institute of Technology
Coordinating Ministry of Economic AffairsMinistry of Public Work
Ministry of BUMN
National Planning Agency (Bappenas)
Ministry of Transportation

○Others
The Indonesian Employers Association (Asosiasi Pengusaha Indonesia)
Indonesian Chamber of Commerce and Industry (Kamar Dagang dan Industri)
Kabar Gapura (local newspaper)
Universities

Appendix C Activities, Roles and Responsibilities of Stakeholders

Organization	Roles and Responsibilities	Related Plans, Documents and Others Owned by Organization (Availability and How to Obtain)
Leader		
BAPPEDA (Local Planning and Development Agency), Province of West Java	1. Role and responsibility of West Java province in ABCP should refer to the local regulation of West Java Province No. 2 Year 2010 concerning the implementation of disaster management and adjusted with the main task and role of each institution; 2. Disaster management implementation consists of pre-disaster, emergecy, recovery, and post-disaster stages (Article 13). Bappeda West Java Province can play its role in the pre-disaster stage through disaaster mitigation efforts and in the post-disaster. Meanwhile, in emergency response and recovery, the role of Local Disaster Management Agency (BPBD) West Java Province is more important. 3. In pre-disaster, Bappeda West Java Province can take part in: (Article 15) a. Disaster management planning, which covers: 1) Disaster risk reduction; 2) Integration of disaster management into development plan; 3) Disaster risk analysis; 4) Implementation and law enforcement of regional spatial plan. b. Disaster mitigation measures to reduce the disaster risk and impact to the community who lives in disaster prone areas, are conducted through: (Article 30 point 2) 1) Planning and implementation of disaster risk analysis-based regional spatial plan; 2) Development regulation, infrastructure provision and site plan. 4. West Java Province has developed the Master Plan of Disaster Management in 2008 that contains the disaster risk analysis in West Java. 5. Provincial Spatial Plan (RTRWP) of West Java 2009-2029 has implement the disaster mitigation principle. In RTRWP West Java Province, the disaster prone area that are landslide prone area, tidal wave prone area, flood prone area and geological disaster prone area, is designated as protected area (the area that is designated to have main function to protect the natural environment sustainability, which covers the natural and artifical resources, as well as historical and cultural value of community, for sustainable development issue). 6. In RTRWP West Java Province, Karawang District and Bekasi District is mentioned as flood prone area. The zoning direction for the flood prone area is designated by considering: a. The determination of flood plain boundary; b. The use of flood plain for green open space and controlling low density development for public facilities; c. The regulation concerning prohibition of activities for public facilities; and d. Controlling settlement in flood prone area. 7. Related to the local development planning, in local mid-term development plan	1. Rencana Tata Ruang Wilayah Provinsi Jawa Barat 2009-2029 (2009-2029 West Java Provincial Spatial Plan) 2. Rencana Pembangunan Jangka Menengah Daerah Provinsi Jawa Barat 2013-2018 (2013-2018 West Java Mid-term Development Plan) 3. Rencana Kerja Pemerintah Daerah 2013 (2013 West Java Government Work Plan) 4. Peraturan Daerah Provinsi Jawa Barat No. 2 Tahun 2010 tentang Penyelenggaraan Penanggulangan Bencana (West Java Provincial Regulation No.2 Year 2010 on Implementation of disaster Management) 5. Rencana Induk Penanggulangan Bencana Provinsi Jawa Barat (West Java Province Disaster Management Masterplan) 6. Rencana Aksi Daerah Penurunan Emisi Gas Rumah Kaca Provinsi Jawa Barat (West Java Provincial Action Plan on Reduction of Greenhouse Gas Emmision) 7. Kajian-kajian (Studies) on West Java Province Metropolitan Development Management for Metropolitan Bodebek-Karpur The above documents can be downloaded from http://www.bappeda.jabarprov.go.id or requested at the Physical Division of Bappeda west Java Province Jl. Ir. H. Juanda No. 287 Bandung

	(RPJMD) of West Java Province Year 2013-2018, one of strategic issue of West Java Province development is the rapidity and accuracy of disaster management and community adaptation toward disaster. The disaster issue has also been integrated into the mission number four, i.e. to realize the comfortable West Java and sustainable development of strategic infrastructure, with one of the objective is to increase the carrying capacity and capacity of environment as well as quality of disaster management. 8. Development programs that are related to the disaster issue are: 1) Program of natural disaster management and community protection with the objective of the availability of emergency response aid, the facilitation of solving problems for conflict and social disaster, and the increasing of community/volunteer participation in disaster management; 2) Program of Climate Change Adaptation and Mitigation, with the objective of increasing the mitigation effort of climate change through the decreasing of greenhouse gas emission in agriculture, forestry, energy, transportation, industry, waste and garbage, and the increasing of community resilience toward the impact of climate change. 9. In post-disaster stage, the role of Bappeda West Java Province is determining the priority of rehabilitation of public structure and infrastructure to fulfill the needs of : transportation, continuity of economic activity, and social cultural activities, which consist of the improvement of infrastructure, social and public facilities. (Article 65).	
Members (Local Governments and Local Offices of National Government)		
BPBD (Local Disaster Management Agency), Province of West Java	1. The roles and responsibility of BPBD West Java Province are contained in the Local Regulation of West Java Province N0. 2 Year 2010 concerning The Implementation of Disaster Management; 2. The basic tasks of BPBD are: to determine the guideline and direction, standardization and standard procedure; to develop and to determine as well as to manage the system of disaster data and information; to control the collection and distribution of money and goods; to be accountable on the use of budget both from local budget (ABPD) or other legal resources; and to report the implementation of disaster management (Article 8 Point 1) 3. Functions of BPBD are the formulation and the determination of disaster management and refugee management policy by acting quickly, accurately, effectively, and efficiently; and coordination of disaster management implementation as planned, integrated, and comprehensive. (Article 8 point 2) 4. The role of BPBD is in all stages of disaster management, i.e. in pre-disaster, emergency response, recovery, and post-disaster. 5. In disaster mitigation effort, BPBD can take part in the development of disaster information, data base, and disaster map, which covers: (Article 30 point 3) a. The area of district/city, sub-district, and village; b. Number of population in district/city, sub-district, and village; c. Number of community houses, government building, market, schools,	1. Disaster Map of West Java Province 2. Disaster Data and Information of West Java Province 3. Document of Disaster Management Plan Those documents can be downloaded from http://bpbd.jabarprov.go.id or go directly to the BPBD West Java Office at Jalan Soekarno-Hatta No. 629 Bandung 40268

	community health service, hospital, religious/worship facilities, public facilities, and social facilities; d. Type of disasters that frequently or recurrently occur; e. Disaster prone area and disaster risk; f. The coverage area of disaster prone area; g. Evacuation place; h. Evacuation route; i. Human resources. 6. Disaster information system, data base and disaster map is needed for: (Article 30 point 4) a. Develop the policy, strategy and plan for disaster management action; b. Identify, observe the hazard, vulnerability, and the capacity to deal with disaster; c. Provide the protection to the community in disaster prone area; d. Develop the early warning system; e. Understand the hazard, disaster risk, and the impact of disaster; and 7. Implement the disaster-adapted development and prepare the community to live in harmony with the hazard.	
DISHUB (Department of Transportation), Province of West Java	1. Formulating the objective of technical policy of traffic operational and engineering management and maintenance 2. Business plan activity of International Airport Kertajati West Java. 3. Activity of traffic facilites development in West Java. 4. Activity of operational management and supervision of transportation facilites and infrastructure	-
POLDA (Regional Police), Province of West Java	Community protection, including in disaster situation, through: 1. Preparedness training for community to face the disaster 2. Emergency response during disaster	-
BPLHD (Natural Environment Management Agency), Province of West Java	1. Increasing the recovery and conservation of water, air, forest, and land resources 2. Reducing the disaster risk 3. Increasing the function and the area of protection forest	Publication documents can be seen at and downloaded from http://www.bplhdjabar.go.id The documents available such as: • The program of institution • Strategic issues of environment in West Java Province
KODAM III/SLW, SOPS (Indonesian National Armed Force)	1. Helping in preparing the temporary shelter, 2. Helping in recovery of public facilities and infrastructure 3. Supporting the security in disaster area 4. Supporting communication during disaster	-
BAPPEDA(Local Planning and Development Agency), Bekasi Regency	1. Develop a Disaster Management Plan (RPB) and integrate the ABC Plan into RPB of Bekasi District; 2. Will integrate DRR and Local Action Plan for Disaster Risk Reduction into medium-term development plan (RPJMD); 3. Help BAPPEDA West Java Province to promote BCP and BCM in the Bekasi District; 4. Get involved in the implementation of disaster management in the area;	1. Rencana Pembangunan Jangka Menengah Daerah (RPJMD) Kabupaten Bekasi Tahun 2012 - 2017 2. Peraturan Daerah Kabupaten Bekasi Nomor 3 Tahun 2010Tentang Rencana Pembangunan Jangka Panjang Daerah(RPJPD) Kabupaten Bekasi Tahun 2005 – 2025 Can be accessed at http://www.rkpdkabbekasi.com

	5. Integrating disaster aspects in the preparation of spatial planning.	Or requested at the office: Komplek Perkantoran Pemerintah Kabupaten Bekasi Cikarang pusat
BPBD (Local Disaster Management Agency), Bekasi Regency	1. Develop Regent's Regulation concerning the implementation of emergency response 2. Develop Regent's Regulation concerning direct aid to the affected people. 3. Develop disaster risk map 4. Socialization of disaster mitigation to the PRIVATE SECTOR 5. Socialization of local regulation No.2/Year 2012 6. Establish the Committee of the local parliament on the management of man-made disaster 7. Develop the Guideline on Disaster Management Plan 8. Develop the disaster contingency plan	Disaster information Can be accessed in http://bpbd.bekasikab.go.id Or to the office: Komplek Perkantoran Pemerintah Kabupaten Bekasi Cikarang pusat
BPLHD(Natural Environment Management Agency), Bekasi Regency	1. Increasing the recovery and conservation of water, air, forest, and land resources 2. Reducing the disaster risk 3. Increasing the function and the area of protection forest	
Diskominfo (Transportation, Communication & Informatics Agency), Bekasi Regency	1. Conduct research and assessment of telecommunication system in disaster prone area. It is important in pre-disaster situation, emergency situation and rehabilitation and reconstruction; 2. Responsible for recovery and prevent better communication system in an area where disaster occurs	
Kesbanglinmas (Agency of National Unity, Politics & Civil Protection), Bekasi Regency	1. The role of Kesbangpollinmas in industry is related to the worker, in the permitting process for worker. 2. Handling the conflict, in particular when industry will acquire land, it helps with security issues together with the POLICE. Include also labor dispute and conflict resolution between the company and surrounding community. 3. In disaster, Kesbangpollinmas (SATLAK) has human resources that can help during disaster (emergency situation) 4. Provide needed relief aids to displaced persons through community organizations.	
Dinas Pertamanan, Kebersihan dan Pemadam Kebakaran (Park, Cleaning, and Fire Brigade Agency), Bekasi Regency	1. Implement the prevention activity toward fire or natural disaster 2. Implement the activity of fire or natural disaster management; 3. Coordinate with other organization both government and private sector 4. Supervise and control the building that is prone to fire	-
Dishub (Transportation Agency) Bekasi Regency	1. Conduct research and assessment of telecommunication system in disaster prone area. It is important in pre-disaster situation, emergency situation and rehabilitation and reconstruction; 2. Responsible for recovery and prevent better communication system in an area where disaster occurs	
BAPPEDA(Local	1. Develop a Disaster Management Plan (RPB) and integrate the ABCPlan into RPB of	1. Local Regulation (Perda) Karawang District Number 2 Year 2013, Concerning

Planning and Development Agency), Karawang Regency	Karawang District; 2. Develop a Local Action Plan for Disaster Risk Reduction of Karawang District in collaboration with Local Disaster Management Agency (BPBD) Karawang District and integrate ABCPlan into DRR plan; 3. Will integrate DRR and Local Action Plan for Disaster Risk Reduction into medium-term development plan (RPJMD); 4. Help BAPPEDA West Java Province to promote BCP and BCM in the Karawang District; 5. Get involved in the implementation of disaster management in the area (e.g. become a member of the Water Resources Management Coordination Team (TKSPDA)CitarumBestari); 6. Integrating disaster aspects in the preparation of spatial planning.	Regional Spatial Plan of Karawang District Year 2011-2031; 2. Local Regulation (Perda) Karawang District Number 8 Year 2011, concerning Mid-term Local Development Plan (RPJM) of Karawang District Year 2011-2015 3. Local Regulation (Perda) Karawang District Number 2 Year 2010, concerning Long-term Local Development Plan (RPJP) of Karawang District Year 2005-2025 Planning documents are available in soft copy and hard copy (official documentation) When soft copy of the planning document is needed, the contact is BAPPEDA Karawang, Jl. A. Yani No. 1 Karawang, Prov. West Java
BPBD(Local Disaster Management Agency), Karawang Regency	1. In 2014 a discussion on local regulation on the establishment of BPBD ofKarawang District was held; 2. BPBD's role is to direct and implement disaster management in the area; 3. Responsible for the implementation of disaster management in the area; 4. Develop Guidelines for Disaster Management 5. Since the responsibe official and the implementing staff in BPBD KarawangDistrict have not been sworn,all the responsibility and authority for disaster management is still under Social and Disaster Management Agency of Karawang District for a while	
BPLHD (Natural Environment Management Agency), Karawang Regency	1. Increasing the recovery and conservation of water, air, forest, and land resources 2. Reducing the disaster risk 3. Increasing the function and the area of protection forest	
Dishubkominfo (Transportation, Communication & Infomatic Agency), Karawang Regency	1. Conduct research and assessment of telecommunication system in disaster prone area. It is important in pre-disaster situation, emergency situation and rehabilitation and reconstruction; 2. Responsible for recovery and prevent better communication system in an area where disaster occurs	
Dinas Bina Marga & Pengairan (Department of Road and Irrigation), Karawang Regency	Post disaster recovery that is related to infrastructure road, bridge, and water channel	Database on Road, Bridge and Water Canals in Karawang Regency and also spots that are prone to damage due to disaster *To have the document, you can contact the contact address*
Dinas Perindustrian & Perdagangan (Department of Industry and Trade), Karawang Regency	1. Regulation of technical operational activity in Industry, Trade, Mining and Energy, and consumer protection, 2. Implementation of government program in. 3. Implementation of service in Industry, Trade, Mining and Energy.	Number of industry in Karawang Regency The data can be accessed in the office.

Dinas Sosial dan Penanggulangan Bencana (Social Affaire and Disaster Management Agency),Karawang Regency	1. During disaster, we, as SATLAK, are responsible to the implementation of emergency response, logistic aid, evacuation, and rehabilitation and reconstruction 2. Pre-disaster, Social and Disaster Managaement Agency conduct a socialication and training regarding disaster issue 3. Disaster prone area mapping (based on field experience within 5 latest years). 4. In ABCP for industry, social agency is not directly involved 5. Contingency plan, collaboration between social and disaster management agency and health agency of Karawang District, is manifested in conducting the disaster training.	
Kesbanglinmas (Agency of National Unity, Politics & Civil Protection), Karawang Regency	Currently, it is not related directly to disaster as disaster affair is now under the Social Agency. The obligation of KESBANGPOLLINMAS is to maintain and create a condusive atmosphere in the Karawang District and deal with the issue of ideology, politic, economic, social, cultural, defense, and security. In terms of economics is to improve the living standard of the people in Karawang District. Together with vertical agency team in dealing with the ideology, politic, economic, social, cultural, defense, and security, KESBANGPOLLINMAS conduct: 1) handling the security issues, and 2) develop local community intelligence. In industrial areas, the task is to control the security and economic turmoil such as labor conflict. In the event of disaster, KESBANGPOLLINMAS participates in the security safeguards to avoid riot and theft. KESBANGPOLLINMAS also directs Social Agency to carry out its duties. KESBANGPOLLINMAS will also encourage the relevant agencies. , such as when a disaster occurs, and there is damage in the industrial area, KESBANGPOLLINMAS will encourage companies to immediately repair the damage to reduce employee laid off or extended work stoppage..	
BAPPEDA (Local Planning and Development Agency), Bekasi City	1. Inventory of programs and activities of Area BCM 2. Develop a budget to support the Area BCM program 3. Planning for a disaster evacuation route, evacuation shelter, emergency response, recovery of flood area, disaster mitigation for Area BCP 4. Responsible to conduct study, disaster risk assessment, workshops / seminars, and other matters necessary for the implementation of the Area BCM system 5. Promote projects for flood management and land use planning for flood resilient city 6. Provides helpful information for Area BCM (e.g. risk assessment, disaster warning information)	1. Regional spatial plan (RTRW) 2. Detailed spatial plan (RDTR), which contains therein evacuation route, disaster evacuation shelter, plan locations of the folder / retention ponds as flood control, point depot location of Firefighters 3. Strategic Environmental Assessment (SEA) 4. Disaster Risk Impact Analysis 5. Document of the feasibility study, DED of construction of retention pond / water folder 6. Drainage Master Plan for the City (BAPPEDA, Public Work and Water Agency) 7. Master plan of Fire Fighting System (Building Agency) 8. DED of construction of retention pond / water folder (Public Work and Water Agency)
Disbub (Transportation Agency), Kota Bekasi	1. Formulating the objective of technical policy of traffic operational and engineering management and maintenance 2. Activity of traffic facilites development in Bekasi City. 3. Activity of operational management and supervision of transportation facilites and infrastructure	
Disbimarta (Road and Water Agency),Kota Bekasi	1. Post disaster recovery that is related to infrastructure road, bridge, and drainage 2. Supervise and control the drainage to manage the flood	Database Road, Bridge and Drainage in Bekasi City *To obtain the documents, you can contact the contact address*

Members (Operators of Infrastructure and Lifeline)		
PT PLN (Persero) Distribution West Java and Banten	1. Secure the electricity network in disaster area to avid victims due to electricity 2. Provide temporary infrastructure of electricity	-
PT. Jasa Marga	1. Accelerating Toll Road Development 2. Providing an Efficient and Reliable Toll Road 3. Improving Efficiency in Distribution of Goods and Services 4. Provide aid during emergency response	• Annual report of PT. Jasa Marga • Information regarding toll road and traffic of toll road *Information can be accessed at* *http://www.jasamarga.com/*
PT. Kereta Api Indonesia (Train Operating Company)	1. Inventory the disaster prone route 2. Provide aid during emergency response	Annual report of PT. KAI *It is can be accessed in* *http:///www.kereta-api.co.id*
PDAM Bekasi Regency (District Water Company)	1. The water company does not serve the industry as they have their own water treatment plant (WTP). 2. Water company is serving the needs of the population, mostly industrial company employees	
PDAM Bekasi City (District Water Company)	1. Serve approximately 35.000 customers spread in north Bekasi, Medan Satria and West Bekasi. The rest of Bekasi Citystill is served by PDAM Bhagasasi, Bekasi Regency. 2. Patriot Water Company is not serving the industry due to the limitation of electric power and unstable raw water.	
PDAM Tirta Tarum Karawang (District Water Company)	1. Implement the clean water provision and also the infrastructure to serve the people of Karawang Regency	Information on facilities of PDAM It can be accessed in website: http://tirtatarum.com or go direct to the office
PT Telekom Div West Java Region	1. Provide humanitarian aid for disaster refugee. 2. Provide telecommunication infrastructure for community	
PT Telkom Bekasi	1. Provide humanitarian aid for disaster refugee. 2. Provide telecommunication infrastructure for community	
PT Telkom Karawang	1. Provide humanitarian aid for disaster refugee. 2. Provide telecommunication infrastructure for community	
PT. Perum Jasa Tirta (PJT) II (Management of Jatiluhur Dam)	1. Exploitation and Maintenance of water and electricity facilities; 2. Provision of water, water and electricity resources; 3. Management of watershed, such as protection, development, and the use of water and water resources 4. Rehabilitation of electricity infrastructure 5. Provision of disaster emergency aid	Dam Break Analysis The Data can be accessed in the office at: *Jatiluhur, Purwakarta West Java, or* *Jl. Lengkong Besar, Bandung, West Java*

BBWS CITARUM	1. Water resources management that covers the conservation and use of water resources and controlling the water damage in Citarum Basin 2. The implementation of water resources operational and maintenance in Citarum Basin	Document of Management Pattern of Water Resources in The Citarum Basin
Members (Industrial Parks)		
PT. Maligi Permata Industrial Estate (KIIC)	-	Emergency response procedure *To have the document please contact the contact address*
MM2100 Industrial Park	-	-
PT. KBN		
Members (Private Enterprises)		
Sharp Electronics Indonesia	Gives aid during emergency situation as part of social response	-
PT. Toyota (TMMIN)	Flood Risk Management at TMMIN: • Preventive (Division in charge: EAD, GAD, PAD, PED, HRD) • Monitoring (Division in charge: GAD, PAD) • Risk Event Management (Division in charge: GAD, PAD, HRD) Note: - EAD : External Affairs Division - GAD: General Affairs Division - HRD: Human Resources Division - PAD: Plant Administration Division - PED: Plant Engineering Division	Documents: • Organization Structure • Rescue Support • Mapping (Contour, Residences, etc) • Contacts List • System & Procedure (before, when, after) • Production arrangment • Man Power arrangement • Station (posko) • Logistics (meals, medicines, water, etc) Supply Procedure • Health Station Management • Transportation Management Note: They don't clarify yet which documents could be shared to external.
PT. HM Sampoerna	Disaster management is one social responsibility of PT. HM Sampoerna. Such as establishment of emergency response team (SAR) that equipped by rubber boat, ambulance, fire truck, electricity generator, mobile medical center, public kitchen and clean water distillation	-
Lookman Djaya (Transportation Company)	-	-
PT. Jotun Indonesia	-	-
Members (Association)		
APINDO	1. In line with the capacity and the authority of organization, DPP APINDO West Java give fully appreaciation to the implementation of Arean BCM. 2. Continue the information regarding the implementation of Area BCM to the members. 3. Developing the Area BCM gradually.	1. Data of member of APINDO in West Java. 2. Data of Chairman Board of City/Regency (DPK) of APINDO in West Java. 3. Routine (coordination) meeting APINDO in West Java.

Indonesian Chamber of Commerce and Industry (Kamar Dagang dan Industri – KADIN) WEST JAVA PROVINCE	1. Linking the government (the policy maker) to private parties (implementer) 2. Giving inputs to the government in order to make a regulations that related on industry, include to give input about safety, disaster, and development of industrial area permit 3. Input to the police, demonstration should be handled by police department of city level, not only from police department of DKI, to reduce sweeping activity by demonstrator that not from its region.	-
Supporters (National Government, Governmental Research Institutions, Universities and Others)		
BNPB	1. Give the guideline and direction to disaster management that contains disaster prevention, emergency response, rehabilitation, and reconstruction in a fair and equitable; 2. Determination the standard and the needs of disaster management implementation based on law regulation; 3. Providing information of disaster management activity to the community. 4. Reporting the implementation of disaster management to the president once a month in normal situation and every time during emergency.	• Disaster information • Disaster map You can access the web: http://bnpb.go.id
Ministry of Industry		
Ministry of Cooperation & Small-Medium Enterprises		
Ministry of Research and Technology		
Bandung Institute of Technology	1. To play significant roles in delivering safer community and stakeholders who are aware, responsive and able to overcome potential natural and man-made disaster, 2. To enhance fundamental and applied research activities, which are able to anticipate, respond to and mitigate the disaster risk, 3. To promote fundamental and applied research results that can strengthen the policy development in disaster management in order to achieve sustainable development, 4. To support the formation of disaster mitigation expert-communities in Indonesia through education	• Document research of disaster risk assessment • Document research of disaster mitigation The documents and information can be seen in the website http://ppmb.itb.ac.id

Area-Business Continuity Plan（Area BCP）

(Version 2)

－Cavite, Laguna and Metro Manila, The Philippines－

November 2014

PEZA, OCD, DILG, MMDA and NEDA

○This plan (version 2) is promoted by PEZA, OCD, DILG, MMDA and NEDA was formulated with the participation of local governments, national government agencies, and private sectors in Cavite, Laguna and Metro Manila under the guidance and cooperation of JICA Study Team.

○The stakeholders in Cavite, Laguna and Metro Manila are expected to continue with the activities of Area BCM and revise this plan spontaneously.

Contents

1 Purpose of the Plan[13]

The Purpose of this Area-business continuity plan (Area BCP) is to sustain the development in the Cavite, Laguna and Metro Manila area, the continuity or rapid recovery of industry function immediately after an emergency such as disasters caused by natural phenomena that affected the entire area.

Area-BusinessContinuity shallbe realized through the 1) promotion and sustained practice of Business Continuity Planning (BCP) within each private enterprises, 2) cooperation and close coordination among the local and national government organizations operating within these areas, Infrastructure Operators (Energy, Power, and Water and Transport, Roads and Highways, IndustrialParks Administrators (government and private), and the 3) deliberate implementation of disaster reduction and mitigation measures, disaster awareness and preparedness activities, contingency planning and enhancement of emergency response programs of all identified takeholders, including the communities.

This plan shows the important information to be shared among stakeholders, the roles of stakeholders, the strategy and contents of activities for Area-Business Continuity, and the continual operationalization of this plan.

[13] The purpose of the plan (1st- version) was rewritten from the draft of the JICA study team to reflect the discussion in the WS by the stakeholders.

2 Scope of the Plan

2.1 Organization

The stakeholders of this plan shalll be comprised of Lead and Co-Lead Members and Support Organizations. Each stakeholder organization shall be represented by a focal person with their respective alternate. The specific roles and tasks of these stakeholders are shown in Chapter 7. A Secretariat shall be established by the Lead and Co-Lead organizations to support the partnership and conduct follow-through activities. The composition shall be agreed upon by PEZA, OCD, NEDA and MMDA.

2.1.1 Leader

The Lead and Co-Lead Organizations or Agencies shall be responsible for the promotion of the Area BCM Framework in areas in the Philippines where there are presence of agglomerated industrial complexes. They shall exercise stewardship or oversight over the formulation, development, and continuing review, revision, maintenance and implementation or exercises of Area BCM Plans in these areas

In the case of the Philippines, the Philippine Economic Zone Authority (PEZA) shall embrace the lead role in ABCM Program and act as the Lead entity. Co-Lead Organizations are the Office of Civil Defense (pursuant to its mandated functions under RA 10121 and being the execuroty arm of the National Disaster Risk Reduction and Management Council or NDRRMC), the Department of Interior and Local Government (DILG), and in the case of Metro Manila – the Metropolitan Manila Development Authority (MMDA). The National Economic Development Authority (NEDA) being the Lead Economic Development agency in the different Administrative Regions of the Philippines can also serve Co-Leader.

The Leader shall initiate identification of Industrial Agglomerated Areas or Economic Zones where an Area BCM Plan should be established and formulated. The Co-Leader organizations shall assist in mobilizing other stakeholders like local government units, national government agencies involved with disaster risk reduction, and the private sector to actively participate in relevant ABCM planning and activities. This functional arrangement takes cognizance of certain limitations of the Leader organization in terms of authority beyond the economic zones and leverage and influence over other entitites whose participation, involvement, and commitment to ABCM is very crucial. The Co-Leaders were chosen on the basis of their powers and mandates under existing Philippine Laws to facilitate the formulation of ABCM Plans in selected Areas.

2.1.2 Members

The Members shall actively participate in Area BCM formulation in each Industrial Agglomerated Area and may be chosen among the dominant organizations or agencies operating in the locality. Members shall provide information necessary for Area BCM Plan and promote disaster risk reduction, mitigation, preparedness and emergency response enhancement measures and BCP practice itself within their repective organizations. Local Government Units (Province, Cities and Towns, or Barangays) shall normally be engaged in the preparation of ABCM together with the National Government Agencies (NGAs), Lifeline (Power and Energy, Water, Comunications, Transportation, Road and Highways) Organizations, and the Private Sector or Business including concerned Economic Parks Adminitrators, present in each area to be covered.

2.1.3 Support Organizations

Support Organizations shall provide technical advice and expertise to the Working Organization tasked to promote, formulate, and implement Area BCM in a particularly selected agglomerated industrial area (Cavite Economic Zone, Laguna Industrial Park and Economic Zone in outhern Metro Manila) most especially in term of Natural Hazards identification and Impact and Risk Assessment.

For this purpose, the following agencies shall primarily comprise the Supporting Organizations for the ABCM Plan for Cavite, Laguna an outhern Metro Manila:

- Philippine Institute of Volcanology and Seismology (PHIVOLCS), Department of Science and Technology (DOST)
- Mines and Geosciences Bureau (MGB), Department of Environment Natural Resources (DENR), and
- Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA), DOT

Academic, Research and other Technical Personalities and Institutions may be tapped for specific concerns on recommendation of above-mentioned agencies.

2.2 Area

This plan shall cover the following areas.

- Industrial agglomerated area in the Cavite, Laguna and Metro Manila. Spcifically the peripheries of Cavite Economic Zone, Laguna Industrial Park, and the Special Economic Zones located at the southern part of Metro Manila such as those within the Cities of Muntinlupa, Las Pinas, and Paranaque.
- Areas where the production facilities of infrastructure and lifeline companies or organizations are located or distribute their proucts and services for utilization of industries operating in the areas mentioned above.

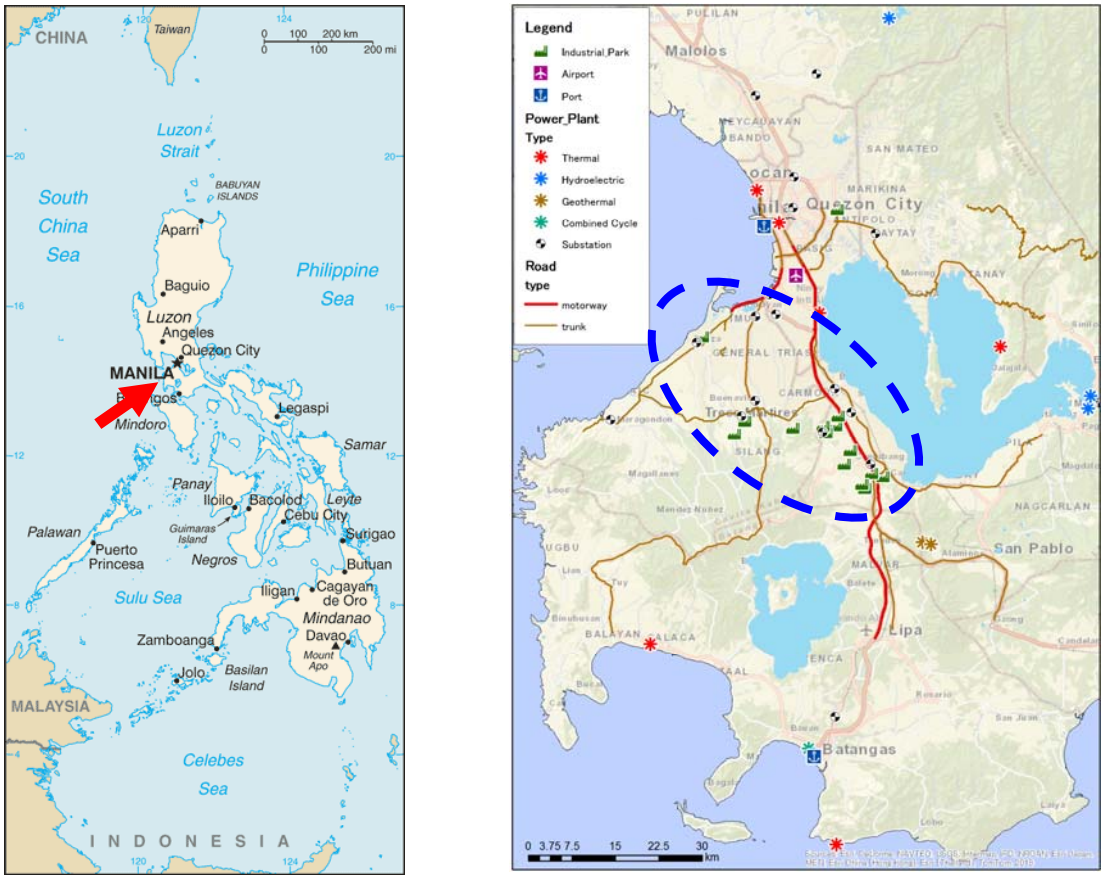


Fig.2-1 The area of this plan

2.3 Hazards

- This plan initially, considers only the following Hazards that may be brought about by Nature and cause a Disaster::**Primary** – Earthquake
- Plans for Secondary hazards like Tunami, Flood, and Volcanic Eruption and other hydro-meteorological hazards shall be considered separately and covered by other ABCM Plans and activities in the future.

Other hazards induced by human activities shall, likewise, be covered by separate plans applying the ABCM Planning Framework and as agreed upon by the stakeholders.

2.4 Formulation Process and Version Management

This plan will will undergo continuing improvement and shall be revised as appropriate by the stakeholders following the activities prescribed by the Area BCM Planning Framework. This Version (No. 2) shall be appended to the Version 1 and form part of the Demonstration Process of the Pilot Component of the enhancement of the AHA Center (ASEAN Coordinating Center for Humanitarian Assistance and Disaster Management) with the help of the Government of Japan under the AHA-JICA "Natural Disaster Risk Assessment and Formulation of Area Business Continuity Management Plan for the Industrial Agglomerated Areas in the ASEAN Region" Project.

- Initially, these plan verions (1 and 2) were products of said JICA project. The JICA Study Team undertook the preparation of meetings (Jun 2013-August 2013, two times) and guided the workshops (December 2013-November 2014, four times) [14] that were held during which the Working Group Members from the Stakeholder organizations were oriented to the Concept of ABCM and the Planning Process. The ideas generated through the stakeholders' discussions an interaction with the JICA Study Team were compiled to arrive at these ABCM Plan Versions.

Henceforth, the resulting ABCM Plan Version after the conclusion of the Project may be adopted for local implementation and testing in the Provinces of Cavite an Laguna (specifically at the CEZ and LIP Areas) and Metro Manila, as aplicable. Appropriate documents such as Memorandum of Agreements (MOAs), Resolutions, or Circulars shall be prepared by the concerned stakeholders to ratify or demonstrate adoption of this ABCM Plan.

[14] The activity of WS is shown in Appendix A.

3 Understanding of the Area

This Chapter describes stakeholders who participated in the formulation of the Area BCM Plan for Cavite, Laguna, and Southern Part of Metro Manila where the industrial environment exists and the identified disaster risks threatens. The economic infrastructure and the disaster risks were both considered in the planning process.

3.1 Stakeholders of the Area

Stakeholders who participated in Area BCM Planning included local government units from provinces that have territorial and political jurisdiction where the industrial zones are situated , operators of infrastructure and lifelines, industrial parks, private enterprises, national government agencies, governmental research institutions, universities and others.

The stakeholders were grouped in accordance with their roles as Lead (or Co-Lead), Members and Supporters of Area BCM. In some instances, a particular agency or organization may take up dual or multiple roles because of their mandate or capacity.

- Stakeholders of the Cavite, Laguna and Metro Manila Area, and their roles and responsibilities are listed in Table 3-1. Local governments in the Area are Cavite Province, Laguna Province, National Capital Region (NCR), and cities and municipalities in the Provinces and NCR.
- The stakeholders in the table are those who attended workshops for the formulation of the first version of Area BCP.
- A composition of the stakeholders may be modified by inviting other essential organizations that may be identified in the future like the Petroleum Industry.
- A list of the stakeholders is provided in Appendix B.

Table3-1 Stakeholders of the Cavite, Laguna and Metro Manila Area

Category	Organization	Role
Leader	• PEZA as Lead Agency being the primary government regulatory body for Economic Zones • OCD as Co-Lead in its capacity as DRRMC prime mover • NEDA as Co-Lead being the initiator of regional economic planning activities • DILG as Co-Lead also and has administrative power over LGUs • MMDA as Co-Lead, in the case of Metro Manila being the coordinating body for Metro Manila	• Initiate ABCM Planning activities and mobilize relevant stakeholders. • Promote BCP among Private Enterprises and manage Area BCM for wider area coverage • Oversee the Formulation and Updating of Area BCPs/M (Encourage and support review and updating of Plans) • Initiate through collaborative effort or direct conduct of studies, disaster risk assessments, planning workshops, awareness seminars and other activities necessary for implementation of Area BCM and its component systems • Lead in the establishment or formulation of the Incident Command System (ICS) or Protocols that would be adopted during actual emergencies. • Provide or identify possible resources to support ABCM activities.
Members	• Provinces of Cavite and Laguna • Regional Offices of National Government Agencies in Region IV-A and Metro Manila (as applicable) • CAVITEX,SLEX • DPWH (IVA & NCR) • PPA & MIAA • MERALCO & NGCP • MWSS, LWUA, MWC, & MWSI, PLDT, SMART & GLOBE • DOE & PIP(Operators of Infrastructure and Lifeline) • Industrial Parks (CEZ & LIP • Private Enterprises • PCCI Representative	• Participate in the Area BCM Activities or Programs • Formulate Area BCP • Attend workshops and others planning activities • Provide information and documents necessary for Area BCM • Formulate, update and promote disaster reduction and management measures and BCP in their respective organization • Institute and integrate disaster-resistant designs into infra projects. • Formulate detailed immediate recovery/restoration plan for lifelines
Supporters	• PHIVOLCS (DOST)	• Support Area BCM Activities • Provide information, knowledge and technical

	• MGB (DENR) • PAGASA (DOST) (Other Relevant National Government Research Institutions, Academic Bodies such as Universities and other Resource Persons	advices necessary for Area BCM to the concerned stakeholders • Provide services such as study and disaster risk assessment necessary for Area BCM • Promote Area BCM at the national level • Provide Technical Advice in the Formulation of systems needed for Area BCM

3.2 Structure of the Local industry[15]

In these areas, agglomerated industrial complexes are located. The characteristics of the economic environemtn are as follows:

- In the Cavite, Laguna and Metro Manila Areas, many industrial parks are located along South Luzon Expressway (SLEX) /Skyway and other major roads. (PEZA/LGUs concerned may be able to provide list or numbers)

- In these industrial parks, many large production plants are located and operation such as electronics and fabricated metal are financed by foreign capital. . The Cavite Economic Zone (CEZ) has 408 locator companies while the Laguna Techno Park (LIP) has 266 locator companies, The estimated combined revenues from export of these areas alone is US$ 8.5 Billion.[16]

- Employment and production of these industrial parks is a large-scale. Therefore, the Local economy is largely dependent on these industrial parks. CEZ has a direct employment of 69,814 while LIP companies employ another 100, 981. CEZ and LIP has an indirect employment of 418,884 and 605,886, respectively.[17]

- Transport of people, services and goods of industrial parks is almost dependent on Manila ports, Cavite Expressway (CAVITEX), South Luzon Expressway (SLEX) /Skyway, and the other major roads which leads to them. (DPWH, SLEX, CAVITEX, and PPA may be able to provide some more specific data in addition to those provided by the JICA Study Team in Table 3.2)

Note: Additional Data or Relevant Information can be appended as supporting tables for the Plan.

[15] Appropriate, any useful informations shall be to update or add. (For example: the amount, items and countries of trade)
[16] PEZA DDG Justo Porfirio Ll. Yusingco, 28 November 2014, ABCM Workshop at Crimson Hotel
[17] Yusingco, 28 November 2014

3.3 Infrastructures in the Area

■Traffic Infrastructures

Province of Cavite is connected to Metro Manila by the Cavite Expressway (CAVITEX) passing along the Coast of Manila Bay. The Province of Laguna is connected to Metro Manila via the South Luzon Expressway (SLEX) /Skyway running along Laguna Lake.

Manila Port is the major harbor that the industrial parks in Cavite and Laguna area are preominantly using. Batangas Port in the south is another major harbor in this area. The nearest airport is Ninoy Aquino Airport in Metro Manila with some smaller airports in Cavite and the Province of Batangas but are dedicated for military use .

■Lifeline Facilities

There are many electric power plants that use thermal, hydro, geothermal in this area. Many substations are located near the industrial parks. The ground water is pumped up in the site of park and supplied as industrial water in many industrial parks.

Table3-2 Summary of main infrastructure facilities

Facilities	Summary	Management
Cavite Expressway (CAVITEX)	Parañaque to Kawit Length: 14km	Public Estates Authority Tollway Corporation (PEATC)
South Luzon Expressway (SLEX) /Skyway	Makati to Santo Tomas, Batangas Length: 60km	Skyway Operation and Maintenance Corporation, Manila Toll Expressway Systems, Inc.
Manila Port	(North) 9 piers (South) 5 Piers (Manila International Container Terminal) 5 Berths, 10 Container cranes	Philippine Ports Authority (PPA) (North) Manila North Harbor Port Inc. (South) Asian Terminals Inc. (Manila International Container Terminal) Manila International Container Terminal Services Inc.
Batangas Port	1 Berth, 2 Gantry Cranes	Philippine Ports Authority (PPA) Asian Terminals Inc.
Ninoy Aquino Airport	Runway: 3,700m x 1, 2,300m x 1 Passenger Terminal: 4	Manila International Airport Authority (MIAA)
Electric Power Plant		MERALCO Private Company

Fig.3- 1 Infrastructure facilities in the area

3.4 Disaster Risks that Threaten the Local Industry

The once in 100 to 200 years probability was considered for the natural hazards to estimate the possible extent of the imagined catastrophe. The smaller but more frequent disasters can be studied in the future with DOST's PHIVOLCS and PAGASA and MGB (DENR) providing the expertise and technical support.

Among the several natural hazards, **earthquake** gives the largest impact to the local industries in Cavite and Laguna area in the period of 100 to 200 years. Flood is the second. The disaster risk by tsunami may be large but the probability is lower than earthquake and flood. The effect by volcanic eruption is smaller than earthquake and flood. The disaster risk posed by the earthquake is considered in this plan for the above reasons. (Referred Databases: EM-DAT18, PRCC19, GLIDEnumber20, NOAA21, Dartmouth22)

The distribution of seismic intensity that is supposed to be experienced once in 200 years is shown in Fig.3-3. The seismic intensity in most of Cavite and Laguna area is MMI 8 (lower 8 in PHIVOLCS intensity scale). Along the Manila Bay, from Metro Manila to Cavite and Taguig, Pasig, Marikina city in Metro Manila may suffer MMI 9 (upper 8 in PHIVOLCS intensity scale). The liquefaction phenomena may occur due to the strong ground motion in several places and cause damage to the facilities during the earthquake. The distribution of liquefaction potential by this type of earthquake motion is shown in Fig.3-4. The Manila Bay area from Manila Port to Cavite and Taguig city show high probability of liquefaction. The disaster risks to the local industries in Cavite and Laguna area by this earthquake motion and liquefaction are shown in Table3-3.

18 OFDA/CRED International Disaster Database, http://www.emdat.be/

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

20 GLobal IDEntifier Number, http://www.glidenumber.net/

21 National Ocean and Atmosphere Administration, National Geophysical Data Center, http://www.ngdc.noaa.gov/hazard/hazards.shtml

22 Dartmouth Flood Observatory, http://www.dartmouth.edu/~floods/Archives/

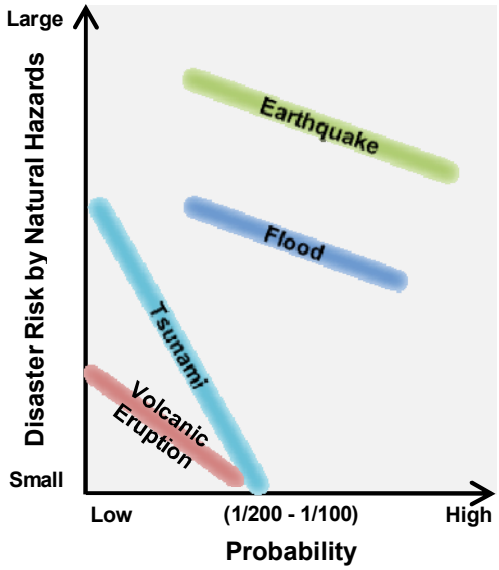


Fig.3-2 Comparison of the natural disaster risks to the local industry. The disaster risks are calculated on the basis of the number of dead people and amount of loss based on the existing disaster database.

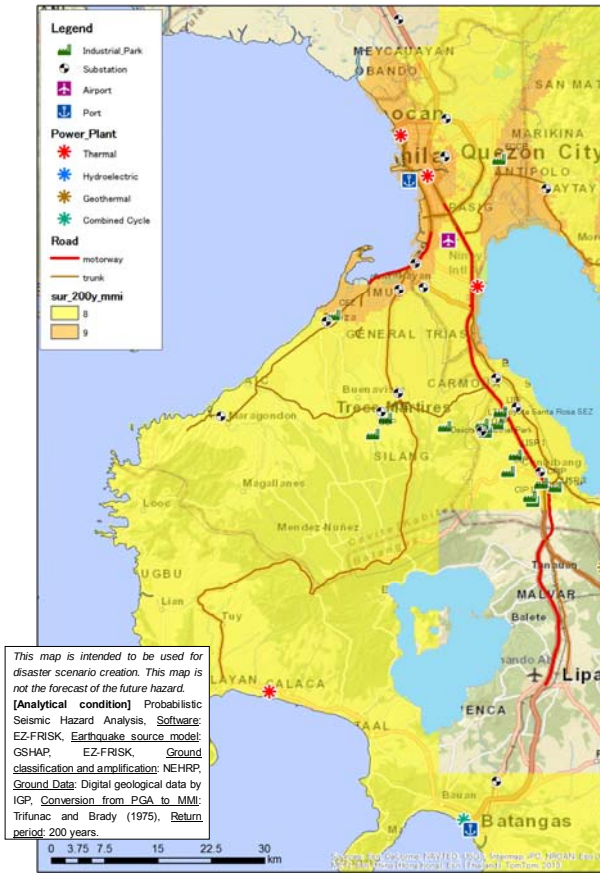


Fig.3-3 Distribution of seismic intensity

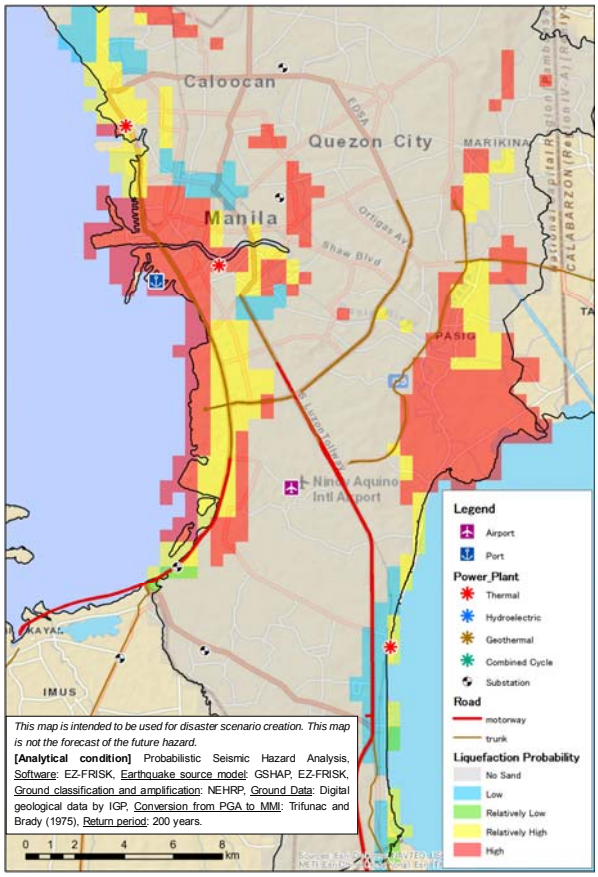


Fig.3-4 Distribution of liquefaction probability

Table 3-3 Earthquake Disaster Scenario

Category	Disaster Risks
Buildings in Industrial Park	・10% of the buildings suffer Moderate damage. Repair is necessary. ・Some of ceiling panels and illuminator fall down and parts rack may topple. ・Non- anchored machines may move. ・Transformers may topple.
Lifeline Facilities	・Electric Power Substations stop their operation for 1 week. The capacity recovers to 50% in 1 month after and takes 3 months for full recovery. ・Communication Landlines and mobile phones become congested because of the shortage of electric power. ・Wells and Water Tanks Stop the operation for several days. The capacity recovers to 50% in 1 week and takes 1 month for full recovery.
Traffic Infrastructures	・Expressway between Manila and Cavite is closed for 2 weeks because of the liquefaction. After temporary restoration work, limited traffic will become possible. ・Traffic capacity of the Expressway between Manila and Laguna is limited in some sections. It takes 1 week to 50% recovery and takes 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 temporary restoration work. ・In Container terminal, gantry cranes are severely damaged. It will take half year to recover 50% of the capacity of cargo handling.
Workers of Industrial Park	・Some of the employees will be absent because 10% of their houses are heavily damaged and 20% suffered moderate structural damage. ・The traffic condition becomes worse causing them to come late to the factory.

4 Impact Analysis of the Area

4.1 Impact to the Area by a Disaster

4.1.1 Impact to Critical Resources

For the local industry to continue its operations during or immediately after disasters, the facilities in industrial parks must be available so that the employees can work. In addition, the services of transportation infrastructure and lifeline (power and water) must also be available.

In the assumed disaster, the estimated impact of these critical resources is shown in Table3-3 and Fig.4-1.

It is estimated that almost all companies in the industrial park would be forced to stop their operations for a few weeks or even a few months because of the power failure, the reduction of water supply and transport function of major roads, and the loss of employees' houses or even injury or death of company staff. Thereafter, a decrease in productions may be expected to continue especially if the recovery of Manila port will entail a few months. The reduction of the port capacity becomes a serious bottleneck.

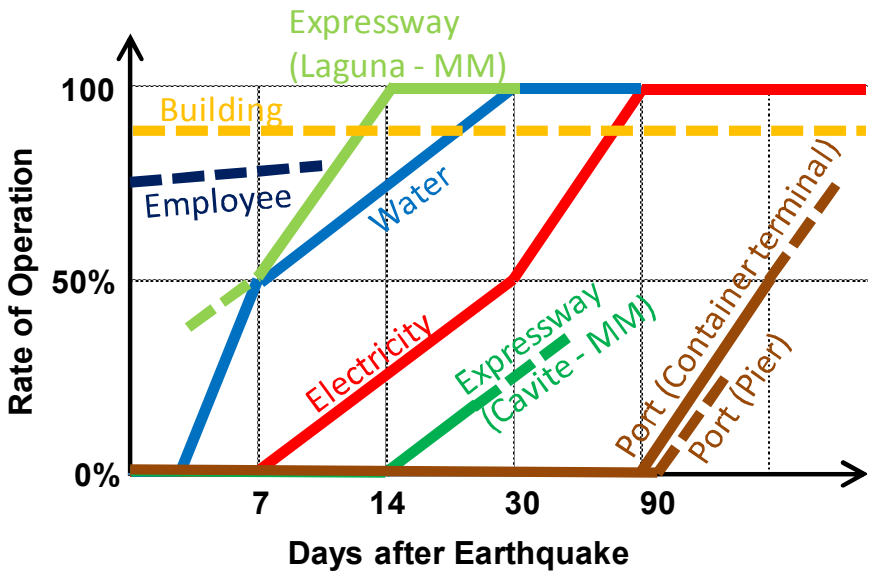


Fig.4-1 Recovery of Critical Resources for Industrial Parks Estimated in Assumed Earthquake[23]

[23] This figure shows the simulation results under the limited information obtained by the JICA study team. This information is not elaborate, but useful for understanding the impact of the disaster. Through Area BCM, this figure is expected to be revised continually.

4.1.2 Impact to the Local Communities and the Industry

Based on the Earthquake Disaster Scenario presented in the earlier section, the following impacts are anticpated to affect the local communities and the industries in the area. These are important issues to be considered and addressed in BCM Planning for the area in order to reduce the level of risks from the assumed earthquake strength.

- Many buildings would be destroyed or damaged in a wide range of the areas of Cavite, Laguna, and Metro Manila..
- Many people can die, get injured, rendered homeless, and lose their livelihood sources due to damage of workplaces.
- Due to the death and injury of people and destruction of facilities, it is anticipated that the security would be worse, and the shutdown of production plus the loss of employees would cause the closure or bankruptcy of companies. As a result, the local economy would decline.

Table4-1 Impact to the area (in the assumed Earthquake)[24]

Category	Item	Content
Assumed disaster		・Earthquake (About once in 200 years *1)
Direct damage		・Many buildings would be damaged in a wide range of the area. (heavy damage=10%, moderate structure damage=20%).*1 ・10% of the buildings in industrial park suffer Moderate damage.
Consequential Impact		・Productions of almost all local industries would be shut down for a few weeks – a few months *1 and thereafter low level of productions would continue. ・Many people would be casualties, become refugees or unemployed, thus, severely affect many communities to the point of widespread confusion.
Society	Population	・Many affected people (Ex: many evacuees) *2, casualties ・Diseases, Infections、Mental stress (especially children)
	Security	・Peace an Order and Security worsen especially in blighted areas
	Community	・Displaced families.
	Other	・Tax revenue decrease
Industry	Production	・Significant reduction in production (Ex:30%, 50% of companies) *2 ・Shutdown of production (Ex: 5%, 30% of companies) *2
	Company	・Many closure or bankruptcy including small companies

[24] This table shows the simulation results under the limited information by the JICA study team. This is not the information elaborate, but useful to understand the impact by the disaster. Though Area-BCM, this table will be expected to revise continually.

	Investment	・Reduction of investment ・New investment to zero*2
	Employment	・ Higher unemployment rate

*1：Simulation results under the limited information by JICA Study Team

*2：Examples of impact amount shown in discussion of the WS by stakeholders

Note: On the other hand, the effect of positive aspects is also expected in disaster, such as an actively help each other in the community and an investment demand to recover the damaged facilities.

4.2 Concerns for the Industry Continuity

Bottlenecks for the Industry Continuity are the critical resources that are heavily damaged and could not immediately be replaced or restored.

In the disaster scenario formulated for this Plan, the following issues can become the bottlenecks for industry continuity in the area.[25]

- ・In the Cavite, Laguna and Metro Manila Area, there is a high risk of earthquake damage. In the scenario , many buildings are expected to be damaged in a wide range of the area.
- ・The most critical concern is the reduction of transport function of major roads and Manila port, the power failure, and the reduction of water supply/sewage function.
- ・Another critical concern is the worsening of the living condition of people including employees, and the breakdown of communications (landline /mobile phones) due to power failure not to mention the security, peace, and order concerns.

Table4-2 Bottlenecks for industry continuity in the assumed EarthquakeCategory	Bottleneck	Impact to industry
Most critical concern	the reduction of transport function of major roads	・The transport of industrial parks is greatly dependent on Manila port, Cavite Expressway (CAVITEX), South Luzon Expressway (SLEX) /Skyway, and the other major roads which leads to them. These roads would not be available for 1 – 2 weeks due to liquefaction and the traffic jam on this road can continue over a long period. As a result, many

[25] In consideration of magnitude of the impact to industry continuity, the bottlenecks were classified as "the most critical concern" and " the critical concern ".

		companies in the industrial parks would be forced to stop or reduce their operations.
	the reduction of transport function of Manila port	・The transport of industrial parks is greatly dependent on Manila port. It would not be available for a few months due to liquefaction and many companies in the industrial parks would be forced to stop or reduce their operations.
	the power failure	・All companies need electric power to continue their business function. The power failure can occur for 1 week - 3 months and the companies which do not have any emergency generator or enough fuel would cease production. Almost all companies in the industrial parks would be forced to stop or reduce their operations.
	the reduction of water supply/ sewage function	・Most companies need water supply/ sewage in their business operations.. The reduction of water supply/sewage function for 1 month will cause most companies in the industrial parks to stop or reduce their operations.
Critical concern	the worsening living condition of people, including employees	・Until their houses are repaired or lifelines are restored, many employees could not be attend work Some employees would even stay on the road or other public facilities These can greatly affect the operation of the factories.
	the reduction of communications function (fixed-line phone and mobile phone)	・In industrial activity, mobile phone and fixed-line telephone is used frequently. In the assumed earthquake, these communication services would be limited due to the power failure.

5 Strategies for the Industry Continuity

5.1 Policy of Industry Continuity

The policy of the industry continuity in the area are the following.

Table 5-1 Policy to Ensure Industry Continuity

・Under the formulated earthquake disaster scenario, the production activities in the industrial agglomerated areas should continue and recover immediately and the scale and level of production and employment prior to the disaster event should be achieved within the least time possible.
・To achieve the above, there should be a concerted efforts within and around the agglomerated industrial areas in Cavite, Laguna, and Metro Manila to protect the lives, machineries and facilities, and vital infrastructures against the effects of very strong earthquakes. All mechanisms should be put in place to ensure safety of people through disaster prevention and preparedness programs, continued social and business functions through contingency planning, drills and evaluation of emergency plans, and structural mitigation measures, and instituting early recovery schemes including redundancy options for lifeline infrastructures and services.

5.2 Role of the Stakeholders

Consistent with the ABCM Plan Policy Statement for the Agglomerated Industrial Areas in Cavite, Laguna, and Metro Manila, all stakeholders shall perform their repective roles as enmerated in the following Table.

Tabele5-2 Role of Stakeholders in Area BCM

Stakeholder	Role
Local and National Government Units/Agencies	• Enhance their respective emergency response capacities to address the needs of communities and enterprises. • Undertake extensive hazards and disaster awareness campaigns and disaster preparedness programs especially at the community level. • Enhance Disaster Communications and Informatiom Systems • Provide useful information for Area BCM Plan Formulation (ex: Hazard maps, Risk assessment • Develop, rehearse, and Improve their Contingency Plans • Allocate resources for DRRM Programs • Promote BCP Practice to private establishments in their territorial jurisdiction • Strictly enforce building regulations, safety codes, land use and zoning regulations • Cooperate towards the update of the ABCM Plan • Others
Infrastructure Operators	• Develop their own BCPlan and Cooperate towards the Development of ABCM in identified and agreed upon areas • Provide useful information for Area BCM (ex: Risk assessment, Recovery objective) • recover operation within the least possible time • Institute and Integrate in their Infrastructure Designs Earthquake Resistive Technologies • Assist in the overall early recovery measure within selected ABCM Area
Lifeline Operators	• Adopt and Promote BCP Practice and support ABCM Activities • Contribute useful information for Area BCM (ex: Risk assessment, Recovery objective) • Institute Early Recovery Measures in their Sector and provide • Establish redundancy options for their services and products
Industrial park	• Strengthen their own facilities an establish redundant systems for

Administrators	their operations • Adopt and promote BCP Practice among their respective Locator Companies and Actively Participate in ABCM Activities • Provide useful information for Area BCM (ex: Activity of their own BCM) • Cooperate, Support and coordinate with locator companies in the industrial park regarding ABCM
Company (in industrial park)	• Formulate, Adopt, Rehearse and Improve their own BCP and promote BCP Practice to other companies • Strengthen their own facilities • Contribute information for Area BCM and support or participate in ABCM Activities (ex: Activity of their own BCM) • Put up redundancy systems for their operations • Promote Disaster Preparedness among their employees and their immediate family members

6 Improvement Activities for Capability of Industry Continuity

6.1 Category of Improvement Measures

The improvement measures to resolve the anticipated bottlenecks in continuity of operations during disasters should be carefully analyzed and studied. Once these are done, it is imperative for stakeholders to implement and practice these measures and monitor the progress of such endeavor.

For guidance and purpoe of this Plan, the following process shall be adopted initially:

- The measures for industry continuity shall be categorized into Prevention, Mitigation, Preparedness, Response.
- As for the progress, most of the proposed measures are now in the stage of idea. Through Area BCM, the stage will be scaled-up , Idea → Concept → Implement → Achieved.

Table 6-1 Category of Improvement Measures

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

Reference: The United Nations International Strategy for Disaster Reduction Secretariat (UNISDR) Terminology on Disaster Risk Reduction (2009)

Table 6-2 Stages of Improvement Measures

Stage	Content
Idea	Just an idea of stakeholders.
Concept	The official conceptual plan is agreed by administrator.
Implement	The budget is ensured and the schedule is planned.
Achieved	The measure is achieved

6.2 Progress Management of Improvement Measures

The following proposed measures are expected to be practiced by the stakeholders. Through Area BCM Process andas appropriate, the progress of the measures shall be updated and new proposed measures will be added in this table.

Table 6-3 Proposed Measures for Industry Continuity[26] 1/2

Severity	Bottleneck	Stakeholder	Category	Proposed measures	Stage
Most critical concern (Disaster Scenario)	the reduction of transport function of major roads	Administrator of Road (CAVITEX,SLEX, DPWH)	Mitigation	Implement measures such as the reinforcement of major roads and expansion of major roads/ development of bypass road	Idea
		Administrator of Road (CAVITEX, SLEX, DPWH, LGU, MMDA)	Recovery	Institute early restoration of damaged roads, and to carry out a traffic control	Idea
		Local Government + Administrator of Road	Mitigation/ Recovery	Designate priority roads, reinforce them in normal time, and restore them in disaster with a high priority	Idea
	the reduction of transport function of Manila port	Administrator of Port	Mitigation	Implement measures such as the reinforcement of major facilities	Idea
		Local Government + Administrator of Port (PPA, DOTC)	Mitigation	Designate Batangas port or Subic port as the alternative port, and promote the installation and the use expansion in normal time	
		Administrator of Port + other stakeholders	Response	Formulate a Port-BCP in advance and achieve a quick recovery of transport function during a disaster.	Idea
	the power failure	Power operator (MERALCO)	Mitigation	Promote the measures such as the reinforcement of substations and other	Idea

[26] This table (1st version) shows the simulation results under the limited information by the JICA study team and the discussion results of WS by the stakeholders.

Severity	Bottleneck	Stakeholder	Category	Proposed measures	Stage
				major facilities	
			Recovery	Restore as early as possible damaged facilities	Idea
		Company (Eco Zones/Parks Locators)	Mitigation	Procure emergency generator and fuel	Idea
	the reduction of water supply/ sewage function	water supply/ sewage operator	Mitigation	Implement measures such as the reinforcement of major facilities	Idea
			Recovery	Immediately restore damaged facilities	Idea
		Company	Mitigation	Prepare the alternative means like underground water or a water wagon.	

Table 6-3 Proposed Measures for Industry Continuity 2/2

Severity	Bottleneck	Stakeholder	Category	Proposed measures	Stage
Critical concern (Assumed disaster)	the worsening of living condition of people, including employees	Local Government	Response	Strengthen response measures (ex: Evacuation order, Medical care, shelter for victims, Relief supplies)	Idea
			Recovery	Strengthen recovery measures (ex: Relief for victims)	Idea
		Industrial park, Company	Mitigation	Build a dormitory for employees near industrial parks	Idea
			Recovery	Carry out early recovery and retain employment	Idea
	the reduction of communication function (fixed-line phone and mobile phone)	Tele-communication operator	Mitigation	Implement measures for service continuity during power failure (ex: Emergency generator and fuel)	Idea
		Company	Mitigation	Promote acquisition of alternative means of communication (ex: satellite phone)	Idea

7 Implementation of the Plan (Plan Implementation Process)

7.1 Area BCM

The Plan Formulation and Implementatio shall follow the Area BCM System, Process or Cycle:

- •Understanding the Area
- •Determining Area BCM Strategy
- •Formulate Area BCP
- •Exercising and Reviewing
- •Maintaining and Improving

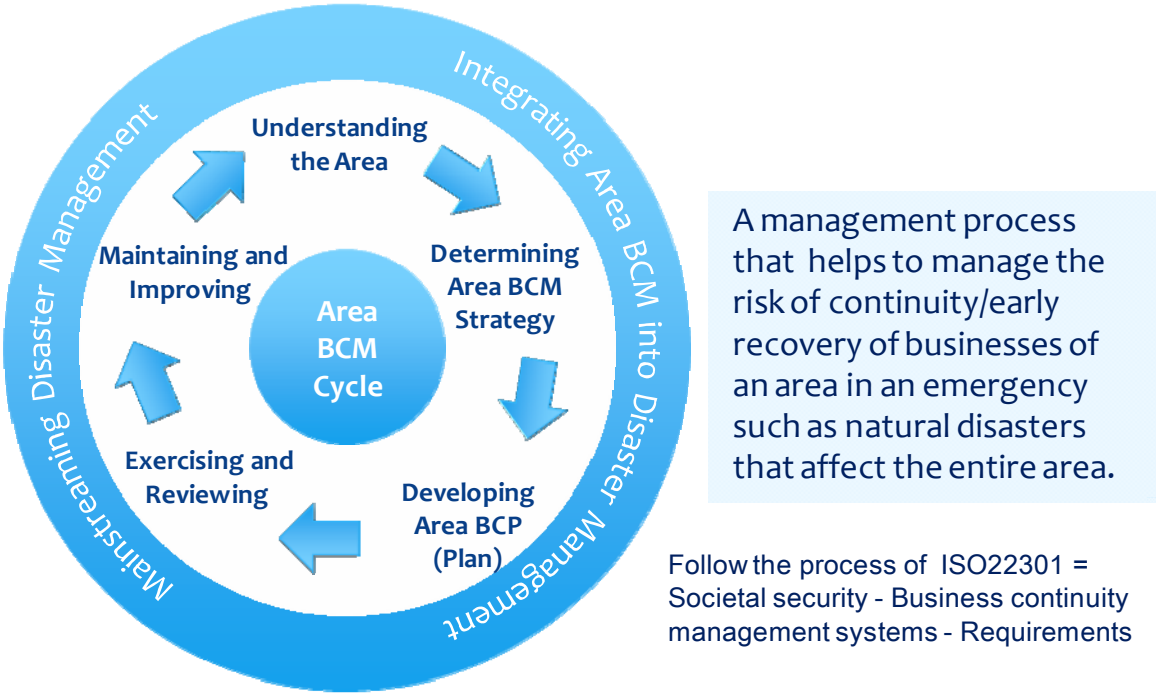


Figure 7-1 Area BCM System

Effective implementation of Area BCM requires active participation of stakeholders of the area, and a continuous approach and endeavor of the stakeholders of the area. Identifying key stakeholders and establishing a system for promoting and implementing Area BCM are important. Private and public coordination is also essential.

Understanding of the Area can be further deepened and the strategy of Area BCM can be improved through a continuous approach following the Area BCM process.

7.2 System of Implementing Area BCM

Area BCM is promoted and implemented under the following system framework.

•Roles and responsibilities of the leader, members and supporters are described in Table 3-1.

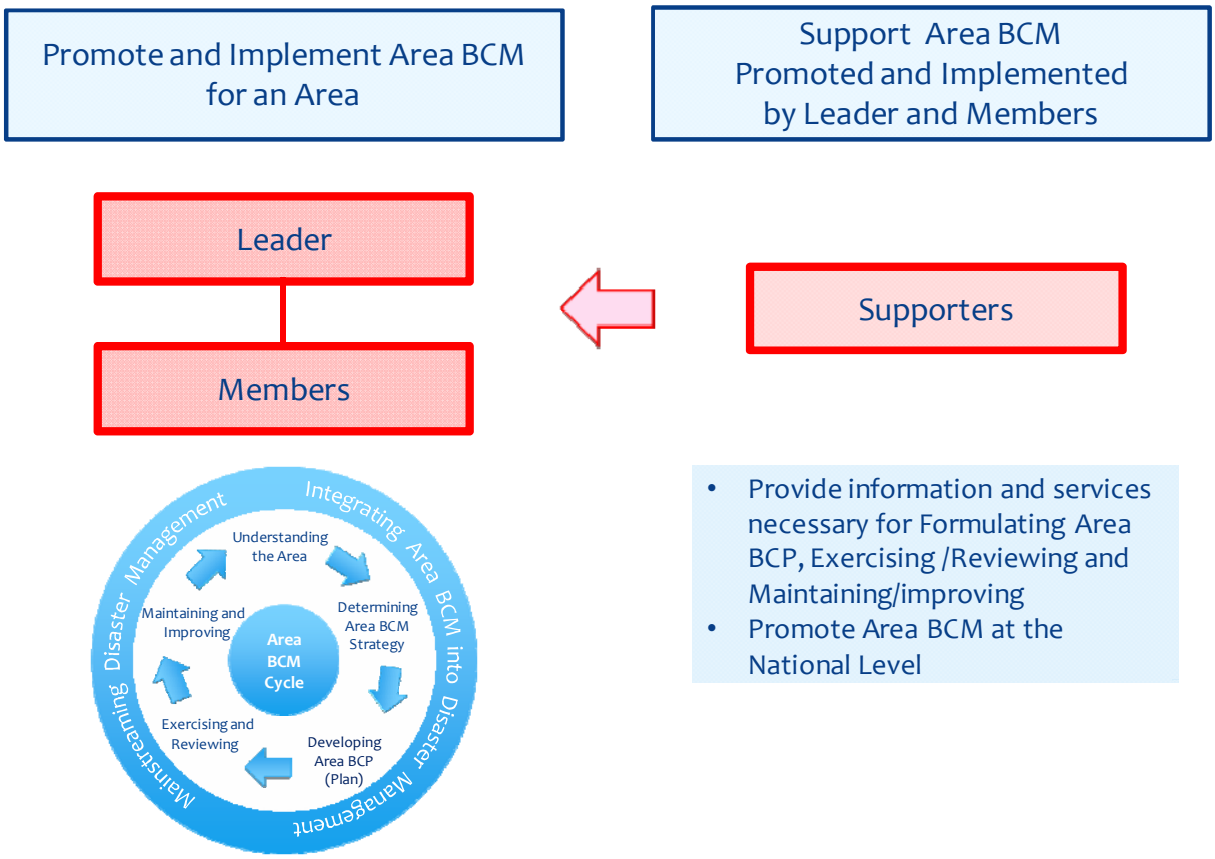


Figure 7-2 System of Implementation of Area BCM

7.3 Exercising and Reviewing

Through regular exercises and continuing review, the effective implementation of Area BCM system is validated. The plan is the confirmed (adopted) and kept up to date. Activities of exercising and reviewing, likewise involve 1) studying and improvement of the plan by the members, 2) reviewing the plan, 3) formulating a plan for another natural disaster scenario, 4) studying lessons from natural disasters that have occurred in the past in the area and surroundings, and 5) promotion or iemination and awareness rising.

Table7-1 Activities of Exercising and Reviewing

Activity	Details	Method	Output
Studying Conformity and Integrity with Disaster Management Plan and/or BCP of Members	● Members study conformity and integrity of Area BCP with their disaster management measures and/or BCP. ● Highlight issues and propose improvement of Area BCM/Area BCP ● Formulate and/or revise their disaster management measures and BCP by members	● Discussions within the organization of members ● Table-top exercises by using a scenario of the Area BCP	● Activity Report
Study Lessons from Natural Disasters Occurred in the Area and Surroundings	● Study lessons from natural disasters occurred in the area and surroundings	● Field Survey, Interview, and Questionnaires	● Lesson Learned Report
Promotion and Awareness Rising	● Utilize discussions within a member for improving the plan as dissemination and awareness rising activity; targeting executives and key staffs of related sections/department. ● Disseminate and promote Area BCM/BCP to other parties of local and national levels	● Discussions within the organization of a member ● Trainings ● Seminars	● Activity Report

○Studying Conformity and Integrity with Disaster management Measures and/or BCP of Members

・The members study conformity and integrity of Area BCP with their disaster management measures and/or BCP through discussions within their organizations. Executives and key staffs of related sections/departments are required to attend the meetings for discussion. Table-top exercises by using a scenario of the Area BCP can be useful.

・Items to be discussed and commented include impacts to the area, strategies for business continuation, actions for business continuity, roles and responsibilities of the member,

related plans, documents and others owned by the member, responsible person for Area BCM, and his/her contact details.

- The members summarize outcomes of the discussions, including issues and proposal for improvements of Area BCM/Area BCP, in an activity report.
- The members can also revise and/or formulate their own disaster management measures and BCP from the outcomes of the discussions.

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

- If natural hazards occur within the target area and its surroundings, a lesson learned report is prepared by conducting a field survey and/or interviews and questionnaires. The report includes outline of the hazard, outline of the damages, responses of the members, issues to consider and lessons.
- The lessons learned will be used to improve a plan of the next version.

○Promotion and Awareness Raising

- The discussions for conformity and integrity by the members should utilize as opportunities to disseminate and raise awareness of Area BCM/Area BCP to executives and key staffs of related sections/departments. If necessary, training programs are planned and implemented.
- Dissemination and promotion of Area BCM/Area BCP are planned and implemented for other parties of local and national levels.
- Outputs are recorded in an activity report.

7.4 Maintaining and Improving

After putting Area BCM system in place, the plan is required to be kept up to date in order to follow the changing conditions. A maintenance program is prepared that ensure the plans are up to date.

- if there are any changes of a composition of stakeholders
- if the target area of the plan is changed
- if a new natural disaster risk (s) emerged
- following lessons learned from exercising and reviewing
- following lessons learned from natural disasters in the area and other locations
- other necessary occasions

For updating the plan, if necessary, activities such as studies and risk assessments are again obtained to determine new upates. A maintenance program is Area BCM Strategizing where the Area BCM System (Processes) are carried out. An updated plan or a newly formed plan

is prepared through workshops organized by the leader and attended by the members and supporters and follows the template of the previous workshops.

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

The leader validates and approves the updated plan after receiving advice from experts and discussions inputs by the working group.

7.5 Reporting

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

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

7.6 Issues and Items for Improvement

Establishing the appropriate organization to sustain Area BCM activities and following it framework, system, and processes may be a valid concern among the stakeholders. It is therefore, essential to identify and build a consnsus as to which organization(s) should logically lead, participate, and support the promotion, formulation and adoption of Area Business Continuity Management in the Agglomerate Industrial Areas.

Logically, the proposed organization should take into consideration legal mandates, capacity (administrative and technical), and degree of influence or leverage over the other organizations.

Institutionalization is the right direction to sustain ABCM. To address the attendant challenges of institutionalizing, extensive capacity-building should take place.

It will be through the latter that the degree of success of promoting ABCM and its overall benefits can be realized.

7.7 Next Steps (Proposed)

～2014

・The leader prepare an updated plan (Version 2).

Table 7-2 Activities for Preparation of an Updated Plan (Version 2)

Activity	Details	Method	Output
Studying and Improvement of the Plan (Version 1) by the Members	● Members study and improve contents of the plan (Version 1) within their organization	● Discussions within the organization of members	● Activity Report
Reviewing the Plan	● Update the plan by the leader, members and supporters from outputs of the study of the members	● A workshop	● Updated Plan (Version 2)

○Studying and Improvement of the Plan (Version 1) by the Members

・Each member confirms and/or modifies contents of the current Area BCP (Version 1) through discussions within an organization attended by executives and key staffs of related sections/departments.

・Items to be confirmed and/or modified include impacts to the area, strategies for business continuity, actions for business continuity, roles and responsibilities of the member, related plans, documents and others owned by the member, responsible person for Area BCM, and his/her contact details.

・Each member summarizes outputs from the discussions and prepares an activity report.

○Reviewing the Plan

・The leader holds a workshop with the members and supporters, reviews the plan (Version 1) by using the outputs from the study of the members, and prepares an updated plan (Version 2).

For 2015, PEZA (together with the other Lead Organizations [OCD, MMDA, and NEDA]) shall initiate activities towards the improvement of this ABCM Version 2 and the work towards the adoption of the Cavite, Laguna, and Southern Metro Manila ABCM Plan.

・

- **PEZA** outlined the following activities or strategies (as part of role) that it intends to undertake consistent with this ABCM Plan:Mobilize Locator Companies in CEZ and LTI

1. Mobilization of Locator Companies
2. Orientation and Training Workshops on BCP
3. Design and Planning Workshops for Each Company to formulate its own BCP
4. Orientation and Training Workshops on ABCP/M
5. Design and Planning Workshops to Formulate ABCP at the Economic Zone Level
6. Design and Planning Workshops to Formulate ABC/M for CALABARZON-Wide (Regional Level and Metro Ports)

- Expand ABCM Planning Activities to other Economic Zones in CALABARZON
- Expand ABCP/M Planning to Mactan (Cebu) Economic Zone amd Visayas Economic Zones (Note: Mactan Economic Zone has 193 Locator Companies directly employing 61,014 and has an estimated Export Revenue of US$ 1.4 Billion)
- Replicate ABCP/M Planning Practice to Baguio City Economic Zone and Northern Luzon Economic Zone

e leader formulate a plan for an expanded Area, covering CALABARZON (Region IV-A) and National Capital Region (NCR).

・During the course of the formulating the plan, review a process and effectiveness of Area BCM system.

8 Definitions of Terms (Draft)

Term	Definition	Ref.
Business Continuity Management (BCM)	Holistic management process that identifies potential threats to an organization and the impacts to business operations those threats, if realized, might cause, and which provides a framework for building organizational resilience with the capability of an effective response that safeguards the interests of its key stakeholders, reputation, brand and value-creating activities	*1
Business Continuity Plan (BCP)	Documented procedures that guide organizations to respond, recover, resume, and restore to a pre-defined level of operation following disruption NOTE: Typically this covers resources, services and activities required to ensure the continuity of critical business functions.	*1
Area Business Continuity Management (Area BCM)	A management process that helps to manage the risk of continuity/early recovery of businesses of an area in emergency such as natural disasters that affect the entire area.	*3
Area Business Continuity Plan (Area BCP)	A documented set of procedures and information intended to promote continuity/early recovery of businesses of an area in emergency such as natural disasters that affect the entire area.	*3
Hazard	A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.	*2
Disaster Risk	The potential disaster losses, in lives, health status, livelihoods, assets and services, which could occur to a particular community or a society over some specified future time period.	*2

[Reference]

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

*2: UNISDR Terminology on Disaster Risk Reduction (2009)

*3: Original in this plan

Appendix A Activity of Workshop (version 2)

Item	Date	Location	Number of participants	Theme
1st WS	3 December, 2013	Manila	55	・The policy of Area-BCP ・Significant hazards for business continuity of each organization ・Serious problems for business continuity of each organization
2nd WS	20 February, 2014	Manila	66	・Impacts on the local society and Industries by Disaster ・Bottlenecks for Industry Continuity ・Measures for Industry Continuity
3rd WS	27 May, 2014	Manila	56	・Area-BCP 1st-version (draft) ・Next step of Area BCM
4th WS	28 November 2014	Manila	61	• Review of the 2nd Version as edited with inputs from WS3 • Presentation of Next Steps for the ABCM Activities in Cavite, Laguna, and Southern Metro Manila by selected stakeholders from PEZA, Private Locator Company, and Lifeline Service Provider • Update and Revise

Appendix B　List of Stakeholders (version 2)

○Leader

Philippine Economic Zone Authority (PEZA) – Lead
Office of Civil Defense (OCD) – Co-Lead for Areas outside Metro Manila
Metropolitan Manila Development Authority – for the National Capital Region (NCR)
Department of Interior and Local Government – for LGU involvement
NEDA (National Economic Development Authority),　Region IV-A

○Members (Local Governments and Local Offices of National Government) Cavite Provincial Government

Office of Public Safety, Province of Laguna
Fire Marshal, Province of Laguna
Provincial Disaster Risk Management Office
Santa Rosa city Disaster and Risk Reduction Management Office
LLDA (Laguna Lake Development Authority)
OCD (Office of Civil Defense),　Region IV-A
OCD (Office of Civil Defense),　National Capital Region
PEZA (Philippine Economic Zone Authority),　Region IV-A
DILG (Department of Interior and Local Government), National Capital Region
DPWH (Department of Public Works and Highways),　Region IV-A

○Members (Operators of Infrastructure and Lifeline)

PPA (Philippine Ports Authority)
Skyway
CAVITEX (Cavite Express Way)
Local Water Utilities Administration
Maynilad Water Services, Inc.
Manila Water Company, Inc.
MERALCO (Manila Electric Company)
National Grid Corporation of the Philippines
TRANSCO

○Members (Industrial Parks)

PEZA (Philippine Economic Zone Authority) – Cavite Economic Zone
PEZA (Philippine Economic Zone Authority) – Laguna Techno Park
Laguna Techno Park

○Members (Private Enterprises)

Terumo Corp (Philippines)
Yazaki-Torres Manufacturing, Incorporated
Nippon Express Phils Corp.
ROHM Electronics Phils, Incorporated
Philippine Chamber of Commerce and Industry
Laguna Chamber of Commerce and Industry

○Supporters (National Government, Governmental Research Institutions, Universities and Others)

OCD (Office of Civil defense)
PEZA (Philippines Economic Zone Authority)
DOE (Department of Energy)
DOTC (Department of Transportation and Communication)
DOST (Department of Science and Technology)
DSWD (Department of Social Welfare and Development)
PHIVOLCS (Philippine Institute of Volcanology and Seismology)
PAGASA (Philippines Atmospheric, Geophysical and Astronomical Services Administration)
MGB (Mines and Geosciences Bureau)

○Others

TABLE B1 List of Working Group Members Focal Persons of Cavite, Laguna and Southern Metro Manila Area ABCP/M

Organization	Responsibilities	Available Docs and How to Obtain
Leader and Co-Leader/s		
PEZA (Philippine Economic Zone Authority)	Lead Initiatives and Promotion of ABCM Activities in Areas where Ecozones are Located; Provide Support	Appropriate Data on Ecozones and Locators
OCD (Office of Civil Defense)	Support and Promote ABCM Activities through Mobilization of DRRM organizations	DRRM Plans, Policies and Protocols, Guidelines
DILG (Department of Interior and Local Government)	Promote and Support ABCM through Mobilization of LGUs	DRRM Protocols and Guidelines, Policies
MMDA (Metropolitan Manila Development Authority	Promote and Support ABCM among Metro Manila LGUs	DRRM Plans
NEDA (National Economic Development Authority)	Promote and Support Integration of ABCM in Regional Economic Planning among RDCCs	Social and Economic Data; Policies and Plans
Members (Local Government and National Agencies)		
Cavite Provincial Government	Support and Promote ABCM in Cavite	DRRM Plans and Policies; Socio- Economic Data
Laguna Provincial Government	Support and Promote ABCM in Laguna	DRRM Plans and Policies; Socio- Economic Data
Sta. Rosa City Government	Actively Participate in ABCM in the City	DRRM Plans and Policies
LLDA (Laguna Lake Development Authority)	Support and Promote ABCM covered by the Authority	Appropriate Plans and Data
OCD Region IV-A	Support and Promote ABCM integration among DRRM entities in Region IV-A	DRRM Plan and Policies; appropriate data
OCD National Capital Region	Support and Promote ABCM integration in DRRM among key role players in Metro Manila	Relevant DRRM Plans and Policies; appropriate
DPWH RIV-A (Department of Public Works and Highways)	Strengthen Road Infra through design and construction and plan early repair and restoration measures of vital thoroughfares	Infra Plans and Data
DOE (Department of Energy)	Ensure continuity of power and energy supplies through policies and plans; mobilize Energy Sector to support ABCM in identified areas	Energy Plans Plans and Policies; Contingen- cy Plans if available
DOTC (Department of Transportation and Communications)	Oversee DOTC-attached Agencies' ABCM functions to ensure transport service continuity and early restoration; Support and Promote ABCM Activities and its integration into transport function	Transport Plans, Policies and data; con- tangency measures
PPA (Philippine Ports Authority)	Actively participate in ABCM and ensure strengthening of Port Infrastructures as well as its early restoration right after a damaging hazard strikes	Plans and Policies; relevant Contingency measures
Members (Private Sector or GOCC)		
Skyway Toll Corp.	Strengthen South Luzon Toll System, Ensure continued operation and early repair or restoration, promote and actively participate in ABCM	BCP Plan and contingency measures; relevant data as needed

CAVITEX	Ensure strength of Cavite Expressway against destruction of strong earthquakes and institute early repair and restoration of it function after the hazard struck actively participate and promote ABCM	Appropriate Plans and Policies; other data such as as-built plans
LWUA (Local Water Utilities Administration)	Actively participate and Promote ABCM among Water Districts to ensure early restoration of water supply to areas they cover	Relevant Data as available
MWSI (Maynilad Water Services, Inc.)	Actively participate and Promote ABCM; Ensure continuity of water supply in their respective concessionaire area; share knowledge and information on BCP Practice	Emergency Preparedeness Plans; BCP and other data through written request
MWC (Manila Water Company)		BCP and other relevant data on request
MERALCO (Manila Electric Company)	Participate and Promote ABCM; Plan for implementing immediate restoration of power in their concessionaire area; share knowledge and practice on BCP	Un-restricted data as available
SMART Communications	Actively participate in ABCM activities; ensure continuity of telecom function for their subscribers	Un-restricted data but no BCP yet for RIV-A
PLDT (Philippine Long Distance Telephone Company)	Participate and Promote ABCM; ensure continuity or early restoration of landline communications	Un-restricted data if available
TRANSCO (National Transmission Corporation)	Participate in ABCM and its Promotion; ensure continuity of power transmission	
PEZA-CEZ (Cavite)	Support and Actively Promote and Participate in ABCM among the Locator Companies in their respective Areas of Jurisdictions	Zone Profile and other relevant data
PEZA-LTI (Laguna)		
TERUMO	Promote BCP Practice within Company and share knowledge with co-locators; Actively participate in ABCM	Non-sensitive data; BCP as available
YAZAKI-TORRES		
NIPPON EXPRESS (PHILS) Logistics		
ROHM ELECTRONICS (PHILS), INC		
PCCI (Phil. Chambers of Commerce and Industries)	Participate and Promote BC and ABCM Practice among Private Companies most especially for SMEs nation-wide specifically for those catering to Companies in Agglomerated Industrial Areas	Relevant Data if available
LCCI (Laguna Chamber of Commerce and Industry)		
PHIVOLCS	Actively Support, Participate and Promote ABCM through technical inputs on various types of hazards (hydro-meteo, seismic, geologic)	Hazards and Risks Maps, Assessments, Studies
PAGASA		
MGB		

Area-Business Continuity Plan（Area BCP）

Version 2

－Haiphong, Viet Nam－

December 2014

Hai Phong People's Committee

○This plan was promoted by Hai Phong People's Committee, and was formulated by JICA Study Team with the participation of the local government and the private sector in Hai Phong.

○The stakeholders in Hai Phong are expected to continue Area BCM activities and revise this plan.

Contents

1 Purpose of the Plan[27]

The Purpose of this Area-business continuity plan (Area BCP)is that for the sustainable development of Hai Phongarea,the continuity or rapid recovery of industry function should be achieved in emergency such as natural disasters that affect the entire area.

Area-business continuity is discussed based on the assumptions that local government, lifeline utility operators, investors and authoties of industrial zones (industrial infrastructure operators), tenant companies in industrial zones in the area will promote their own BCM or take disaster reduction measures under the cooperation of stakeholders.

This plan shows the important information to be share among stakeholders, the roles of stakeholders,the strategy and contents of activity for Area-business continuity, and the continual operation of this plan.

[27] The purpose of the plan (version 2) was rewritten from the draft of the JICA study team to reflect the discussion in the WS by the stakeholders.

2 Scope of the Plan

2.1 Organization

The stakeholders of this plan (aleader, members and supporters) are as follows. The role of stakeholders is shown in Chapter 7.

2.1.1 Line authority/ Lead role player

The line authority shall be responsible for promoting Area BCM. They shall take the lead role in Area BCM and Area BCP formulation and maintenance.

- Hai Phong People's Committee/ Hai Phong Steering Committee for Natural Disaster Prevention and Search and Rescue
- Dyke and Flood & Storm Control Department, Department of Agriculture and Rural Development (DARD)/ Standing Office of the Hai Phong Steering Committee for Natural Disaster Prevention and Search and Rescue

2.1.2Members

Membersshallparticipate in Area BCM to formulate Area BCP. Members shallprovide information necessary for Area BCMand promote disaster management measures and BCP of their own organization.

- Local governments, departments and agencies of the city governments, and local offices of the central government's agencies, lifeline utility companies, industrial parks (industrial infrastructure companies), tenant companies of industrial zones, private enterprises.

2.1.3 Supporters

Supportersshall support Area BCM implemented by a leader and members. As examples of the support, supporters shallencourage institutional or advise technically, including risk assessment.

- National Government, Governmental Research Institutions, Universities and Others

2.2 Area

This plan is directed to the following areas.

- Industrial agglomerated area in Hai Phong City
- Area that facilities of infrastructure and lifeline are distributed to utilize for industrial production

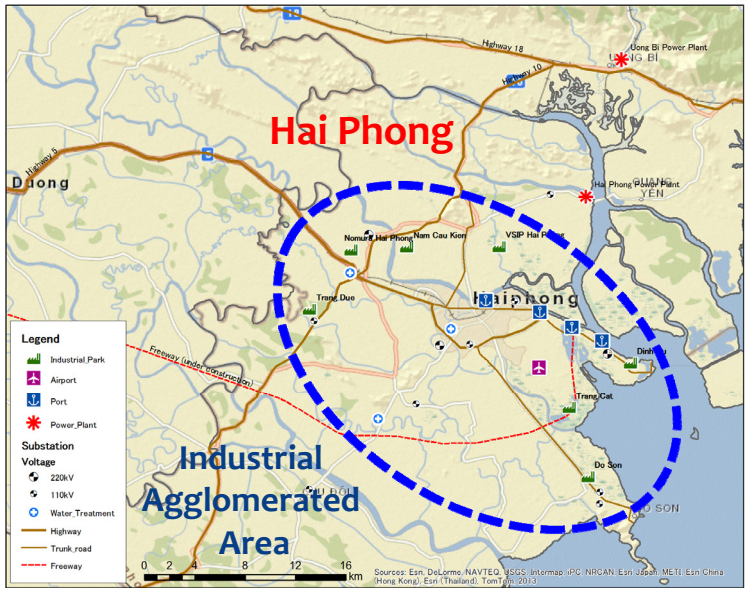


Fig.2-1 The area of this plan

2.3 Hazard

This plan is directed to a multi-hazard following.

- Natural disasters such as typhoon, inundation, storm surge, earthquake, tsunami and other natural disasters, and fire and explosion which affect on people's lives and cause production stagnation.

2.4 Formulation process and improvement

This plan will be revised and supplemented though Area BCM activities of stakeholders. The process to formulate version 1 is described below. After the –version 2, the improvement process will continue.

- This plan (2nd-edition) was undertaken as JICA project. With the support of JICA, preparation meetings (Jun 2013-August 2013, two times) and workshops (December 2013-June2014, three times) [28] were held, and the stakeholders discussed on Area-business continuity. This plan was formulated to compile theseefforts.

[28] The activity of WS is shown in Appendix A.

3 Understanding of the Area

This Chapter describes stakeholders who participate in Area BCM of the Area, and the infrastructure and disaster risks of the Area shall be evaluated in Area BCM.

3.1 Stakeholders of the Area

Stakeholders who participate in Area BCM include local government's departments and agencies, local offices of the central government's agencies, lifeline utility companies, industrial zones (industrial park infrastructure companies), tenant companies of industrial zones, private enterprises, research institues, universities and other organizations.

Stakeholders include line authorities/ lead role players, members and supporting agencies.

- Stakeholders of the Hai Phong Area, and their roles and responsibilities are listed in Table 3-1. The lead role player of Hai Phong Area is Hai Phong People's Committee and the Dyke and Flood & Storm Control Department under the Ministry of Agriculture and Rural Development） would act as a secretariat.
- The stakeholders in the table are those who attended workshops for formulation of the first version of Area BCP.
- A composition of the stakeholders can be modified by such as inviting other essential organizations.
- A list of the stakeholders is provided in Appendix B.

Table3-1 Stakeholders of the Hai Phong Area

Category	Organization	Role
Line authority/ lead role player	・Hai Phong People's Committee ・Dyke and Flood & Storm Control Department, Department of Agriculture and Rural Development	・Promote and manage Area BCM ・Formulate and maintain Area BCP ・In charge of studies, disaster risk assessment, workshops / seminars and others necessary for implementing Area BCM system ・The Dyke and Flood & Storm Control Department acts as a secretariat of the leader
Members	・Local Government; departments and agencies of local government ・Local offices of the central government's agencies ・Lifeline utility companies ・Industrial parks (industrial park infrastructure companies) ・Private enterprises, tenant companies in industrial zones	・Participate in Area BCM ・Formulate Area BCP ・Attendance of workshops and others ・Provide information and documents necessary for Area BCM ・Formulate, update and promote disaster management measures and BCP of her own organization
Supporting agencies	・The central government and relevant ministries and authorities ・Research Institutes ・Universities ・Other organizations	・Support Area BCM implemented by a leader and members ・Provide information, knowledge and technical advices necessary for Area BCM ・Provide services such as study and disaster risk assessment necessary for Area BCM ・Promote Area BCM in the national level ・Formulation of systems for Area BCM

3.2 Structure of the local industry

There is an industrial agglomerated area in Hai Phong City. Its characteristics are as follows:

- Many industrial zones are located along highway 5, highway 10, and other major roads which leads to the highways, many industrial zones situated nearby and along the coast.
- In these industrial zones, many large production plants are located and operationsuch as machinery and device financed by foreign capital partially (FDI).
- Employment and production of these industrial zones is a large-scale. Then Local economy is largely dependent on industrial zones.
- Transport of industrial zones is almost dependent on Hai Phng port, highway 5, highway 10, and the other major roads which leads to them.

Cargoes of which the destination is the Northern area are all transported through those highways.

3.3Infrastructures in the Area

■Traffic Infrastructures

Highway No. 5 is the most important road connecting Hai Phong to Hanoi. Highway No. 10 is also important that runs north to south in Hai Phong city. The expressway from Hanoi to Hai Phong is under construction and will be completed in 2015.

Hai Phong Port is the river port locates at the mouth of Red River, in the downstream of Cam river and composed by several terminals along the river. Hai Phong Port is the important harbor not only for Hai Phong city but for northern Vietnam. Cat Bi Airport locates in Hai Phong city but, at present, it serves regular domestic flights and irregular international flights only (new runways and passenger stations are being built to make it become an international airport).

Additionally, there are waterways and some other inter-regional traffic systems which also affect on Hai Phong.

■Lifeline Facilities

There are three major power plants in this area. Hai Phong thermal plant is in the city and two are in northern suburbs. Three 220kV transformer stations and 25 110kV transformer stations are in operation in the city. Water is supplied through 7 water purification plants.

Table3-2 Summary of main infrastructure facilities

Facilities	Summary	Management
Highway No.5	Hanoi to Hai Phong Length: 102km	Directorate for Roads of Vietnam, Ministry of Transport
Highway No.19	North suburb of Hai Phong City to Ninh Binh City Length: 157km	Directorate for Roads of Vietnam, Ministry of Transport
The system of Hai Phong sea ports	37 sea port operators with 42 berths locating from Dinh Vu to Cau Kien, Pha Rung and Song Gia	Vietnam National Maritime Bureau, Ministry of Transport
Cat Bi Airport	Runway: 2,400m x 1 3050 x 50 m	Airports Corporation of Vietnam, Ministry of Transport
Thermal Power Plant	Hai Phong Thermal Power Plant Designed capacity: 300MW x 4	Hai Phong Thermal Power Joint Stock Company

	9x6.2MW for Nomura Industrial Zone only	Nomura Industrial Zone
Transformer stations	110 KV stations 39 intermediary stations and 3528 dispatching stations	Hai Phong Power Company, Nothern Electricity Transmission Company
Fresh water treatment plant		Hai Phong Water Supply Company

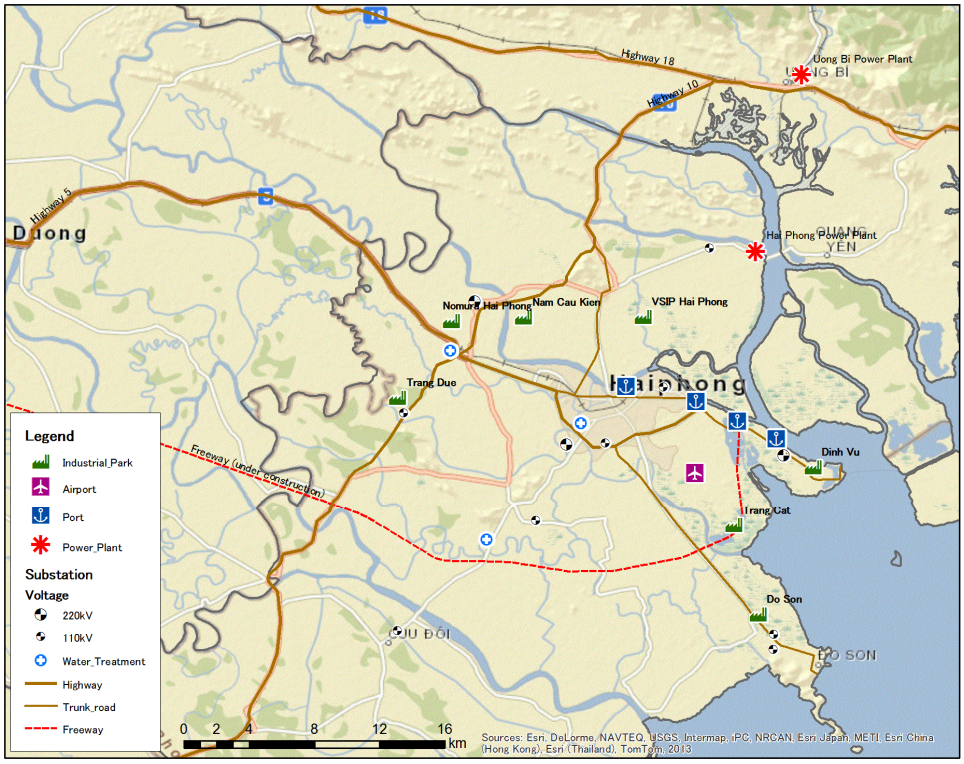


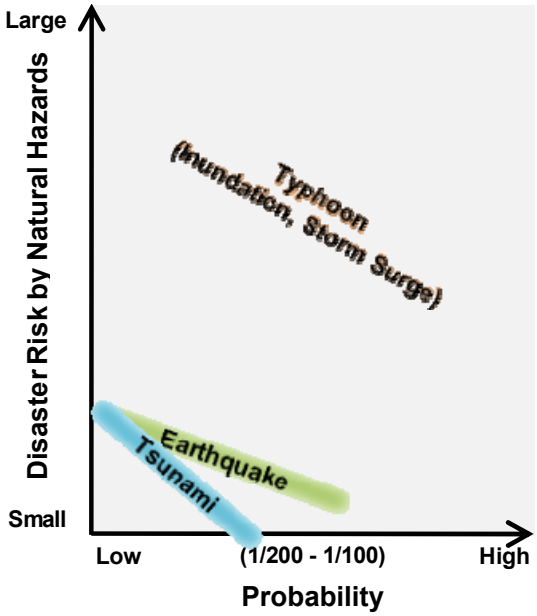
Fig.3-1 Infrastructure facilities in the area

3.4 Disaster Risks that threaten the local industry

The once in 100 to 200 years probability is considered for the natural hazards to work out the scenarios of possible disasters. The smaller but more frequent disasters are requested to be studied in the future.

Among the several natural hazards, typhoons, storm surge and inundation (inland flood) by typhoon give the largest impact to the local industries in Hai Phong city with the frequency of once every 100 to 200 years. The disaster risk by earthquake and tsunami is smaller. The disaster risk by the storm surge and inundation by typhoon is considered in this plan for the above reason. (Referred Databases: EM-DAT30, PRCC31, GLIDEnumber32, NOAA33, Dartmouth34)

The inundation depth by the storm surge that is supposed to occur due to the typhoon that may come once every 200 years is shown in Fig.3-3. The coastal area in Hai Phong city may be inundated by sea water widely. The inundation depth by the flood due to the heavy rain during the typhoon attack is shown in Fig.3-4. The many places in Hai Phong is inundated by heavy rain fall up to 1m and continue for several days. The disaster risks to the local industries in Hai Phong by storm surge and flood are shown inTable3-3.



[30] OFDA/CRED International Disaster Database, http://www.emdat.be/

[31] Pacific Rim Coordination Center Disaster Data, http://data.pacificrimnetwork.org/

[32] GLobalIDEntifier Number, http://www.glidenumber.net/

[33] National Ocean and Atmosphere Administration, National Geophysical Data Center, http://www.ngdc.noaa.gov/hazard/hazards.shtml

[34] Dartmouth Flood Observatory, http://www.dartmouth.edu/~floods/Archives/

Fig.3-2 Comparison of the natural disaster risks to the local industry. The disaster risks are evaluated by the number of dead people and amount of loss based on the existing disaster database.

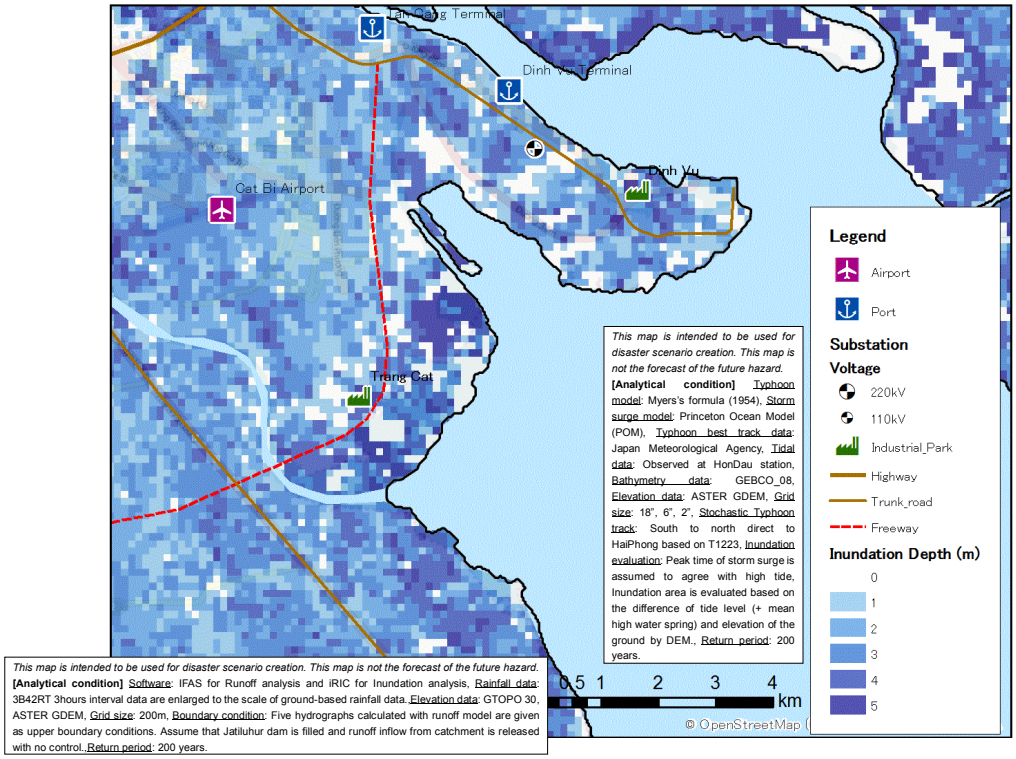


Fig.3-3 Distribution of the inundation depth by the storm surge

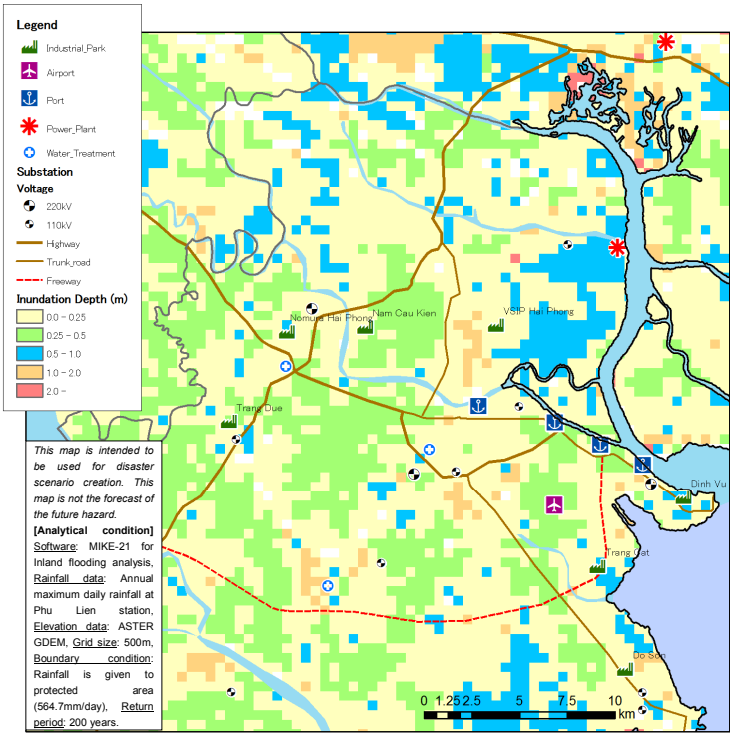


Fig.3-4 Distribution of the inundation depth by the flood

Table3-3 Disaster scenario by the flood

Category	Disaster Risks
Facilities in industrial zone	・Buildings of factories in industrial zones along the coast suffer inundation by storm surge.
Lifeline facilities	・Hai Phong Power Plant is inundated with 0.5 ～ 1m depth. Electric power to Hai Phong is limited. ・The 220kV transformer station in Dinh Vu is severely damaged by seawater. ・The 110kV transformer station near the coast suffer damage by seawater. ・Electric power supply to Hai Phong area is limited. ・Some of base stations of telephone/ mobile phone stop their operation because of the shortage of electric power. ・The supply of fresh water to the City is limited because the fresh water treatment plants are seriously flooded.
Traffic Infrastructures	・Highway 5 to Ports will be closed for several days. ・Some of the roads in the city will be closed for several days. ・Dinh Vu Port will be affected by storm surge. Cargo handling equipment is damaged by seawater. ・Container yard in Hai Phong, especially in Dinh Vu area will stop it's operation. ・Other ports will stop serving or be overloaded and the time for loading and unloading will be longer. ・Damages caused by the flooding at the warehouse systems.
Workers of Industrial Park	・Some of employee will be absent because of the inundation of their houses. ・The traffic condition becomes worse and come late for factory.

4 Impact Analysis of the Area

4.1 Impact to the Area by Disaster

4.1.1 Impact to Critical Resources

To continue the local industry in disaster, the facilities in industrial zones must be available and the employeescan work. In addition, the services of transportation infrastructure and lifeline must be available.

In the assumed disaster, the estimatedimpact of these critical resources is shownin Table3-3.

4.1.2 Impact to the Local Society and Industry

In the assumed flood, the following impact is estimated to local society and industry in the area. It is an important issue for the area to reduce the risk of the assumed flood.

- In the assumed storm surge/flood in Hai Phong City, it is estimated that a wide range of the city would be inundated for a few days.
- In this flood, it is estimated that many people would be casualties and evacuees to lost their houses, andmany facilities to support the society and industry would be damaged.
- Due to the damage of people and facilities, it is estimated that the security would be worse, and shutdown of production, loss of employment and bankruptcy of companies would be caused. As a result, thelocal economywould be led to decline.

Table4-1 Impact to the area (in the assumed Storm surge/Flood)[35]

Category	Item	Content
Assumed disaster		・Storm surge/Flood by Typhoon (About once in 200 years[*1])
Direct damage		・A wide range of the city would be inundated for a few days.[*1]
Outline of impact		・Almost productions of local industry would be shut down for a few days[*1] and thereafter low level of productions would be continued. ・Many people would be casualties, evacuees or unemployed, so local society would be confused.
Society	Population	・Many affected people (Ex: many evacuees)[*2], casualties ・Infection, epidemic diseases, mental stress（especially children, pregnants and old persons）
	Security	・Security worsen, Slum
	Community	・Discrete family
	Other	・Tax revenue decrease
Industry	Production	・Significant reduction in production (Ex:10%, 50%)[*2] ・Shutdown of production (Ex: 60-70% of companies[*2])
	Company	・Many bankruptcy including small companies
	Investment	・Reduction of investment ・New investment to zero[*2]
	Employment	・Many unemployment

*1：Simulation results under the limited information by JICA Study Team

*2：Examples of impact amount shown in discussion of the WS by stakeholders

Note: On the other hand, the effect of positive aspects is also expected in disaster, such as an actively help each other in the community and an investment demand to recover the damaged facilities.

[35] This table shows the simulation results under the limited information by the JICA study team. This is not the information elaborate, but useful to understand the impact by the disaster. Though Area-BCM, this table will be expected to revise continually.

4.2 Concerns of the Industry Continuity

Among resources on the local industry, the critical resources are bottlenecks that would be damaged greatly in disaster and could not be taken alternatives.

In the assumed disaster, the following issues will become the bottlenecks for industry continuity in the area.[36]

- In Hai Phong city, there is a high risk of flood. In the assumed flood, a wide range of the city would be inundated for a few days.
- The most critical concern is the reduction of transport function of major roads and the system of Hai Phong ports, the power failure, and the reduction of water supply/sewage function.
- The critical concern is the worsening of living condition of peopleincluding employees, and the restriction of fixed-line phone/mobile phone due to power failure.

Table4-2 Bottlenecks for industry continuity in the assumed typhoons, storm surge/flood

Category	Bottleneck	Impact to industry
Most critical concern	the reduction of transport function of major roads	・The transport of industrial zones is greatly dependent on Hai Phong port, highway 5, highway 10, and the other major roads which leads to those industrial zones. These roads would not be available for a few days by inundation and the traffic jam on this road would be continued for a long period. As a result, many companies in the industrial zones would be forced to stop or reduce their operations.
	the reduction of transport function of Hai Phong port	・The transport of industrial zones is greatly dependent on Hai Phong port. It would not be available for a few days by inundation or damages of facilities and infrastructure of the port; many companies in the industrial zones would be forced to stop or reduce their operations.
	thepower failure	・All companies need electric power in their business continuation. The power failure occurred in the companies which don’t have any emergency generator or enough fuel, and almost all companies in the industrial zoneswould be forced to stop or reduce theiroperations.
	the reduction of water supply/	・Most companies need water supply/ sewagein their business continuation. The reduction of water supply/ sewage

[36] In consideration of magnitude of the impact to industry continuity, the bottlenecks were classified as "the most critical concern" and " the critical concern ".

Category	Bottleneck	Impact to industry
	sewage function	function causes most companies in the industrial zones to stop or reduce their operations.
Critical concern	the worsening of living condition of people, including employees	・Many employees could not be attendance due to inundation of their houses or outage of lifeline, until their living condition would be recovered. Some evacuees would stay in road or other public facilities, and then the local industry would suffer trouble in operations. After the inundation for a few weeks, the evacuated living of people might be prolonged until the recovery of living condition would be finished.
	the reduction of communication function (fixed-line phone and mobile phone)	・In industrial activity, mobile phone and fixed-line telephone is used frequently. In the assumed flood, these communication services would be limited due to outage of power those facilities would be inundated.

5 Strategies for the Industry Continuity

5.1 Policy of Industry Continuity

The policy of the industry continuity in the area is as following.

Table 5-1 Policy of the industry continuity

・In the assumed flood, the production activities in the industrial agglomerations could be continued or recovered at an early stage, and the scale of production and employment would be kept as before the disaster.
・To achieve the above, the living conditions of people and infrastructure and life line services would be recovered as soon as possible (in time) with big efforts of all stakeholders and the entire society.

5.2 Role of the Stakeholders

According to the policy, all stakeholders shall act work to pay each role in Area BCM.

Table 5-2 Role of Stakeholders in Area BCM

Stakeholder	Role
Local Government	・To promote the flood control project and the land use planning for the strong city to flood ・To promote measures of active prevention, timely response and quick recovery of natural disaster consequences (e.g.: Disaster warning system, instruction and accommodation of evacuation, restoring the inundation area, relief of victims and preparation of resources) ・To provide useful information for Area BCM (ex: risk assessment, warning and information on natural disasters) ・To promote their own BCM
Infrastructure operator	・To promote their own BCM ・To provide useful information for Area BCM (e.g.: risk assessment, recovery objective) ・To quickly recovery the infrastructure which is damaged or has to stop servicing due to natural disasters to reduce effects on activities of industrial zones.
Lifeline facility operator	・To promote their own BCM ・To provide useful information for Area BCM (e.g.: risk assessment, recovery objective) ・To quickly recovery (resume) the necessary services to ensure the operation of industrial zones.
Industrial zone (industrial zone infrastructure company)	・To promote their own BCM and strengthen their own facilities ・To provide useful information for Area BCM (ex: Activity of their own BCM) ・To coordinate among BCM of companies in the industrial park
Tenant company (in industrial zone)	・To promote their own BCM; strengthen their own facilities and capabilities of prevention, response and recovery of natural disaster consequences. ・To provide useful information for Area BCM (e.g.: Activity of their own BCM) ・To ensure employment after disasters

6 Improvement Activities for Capability of Industry Continuity

6.1 Category of Improvement Measures

Through Area BCM, the improvement measures to resolve the bottleneck are studied and extracted, and stakeholders practice these measures and manage the progress.

- The measures for industry continuity are categorized into Prevention, Mitigation, Preparedness, Response.
- As for the progress, most of the proposed measures are now in the stage of idea. Through Area BCM, the stage will step up, Idea→Concept→Implement→Achieved.

Table 6-1 Category of Improvement Measures

Category	Content
Prevention	The absolute avoidance of adverse impacts of hazards and related disasters.
Mitigation	The lessening or limitation of the adverse impacts of hazards and related disasters.
Preparedness	The knowledge and capacities developed by organizations and individuals to forecast, warn, respond and recover natural disasters' consequences efficiently. Budgets; establishment and training on response plans. To organize professional training for a number of core staff working in disaster prevention and to implement business continuity plans in key agencies; Enhance implementation capacity of disaster management activities for business owners and government officials at all levels; ensure 100% of government personnel directly engaged in disaster management, 100% of the managers providing infrastructure services, and the majority of business owners to be trained on disaster management. Set early warning systems about natural disaster effectively. Make hazards map and vulnerability status as well as guidelines of the basic steps of preparation, response and recovery in disaster areas in each industrial zone.
Response	The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health

	impacts, ensure public safety and meet the basic subsistence needs of the people affected. Equip with facilities to serve disaster response (cars, rescue boats and other means) Install equipment, information systems, warning signals and information directing the disaster response and prevention
Recovery	The restoration, improvement and upgrading of facilities, livelihoods and living conditions of natural disaster-affected communities, including efforts to reduce disaster risk factors.

Reference: The United Nations International Strategy for Disaster Reduction Secretariat (UNISDR) Terminology on Disaster Risk Reduction (2009)

Table6-2 Stage of Improvement Measures

Stage	Content
Idea	Just an idea of stakeholders.
Concept	The official conceptual plan is agreed by administrator.
Implement	The budget is ensured and the schedule is planned.
Achieved	The measure is achieved

6.2 Progress Management of Improvement Measures

The proposed measures as following are expected to be practiced by the stakeholders. Through Area BCM, as appropriate, the progress of the measures will update and new proposed measures will be added in this table.

Table 6-3 Proposed Measures for Industry Continuity[37] 1/2

Severity	Bottleneck	Stakeholder	Category	Proposed measures	Stage
Most critical concern (Assumed disaster)	the reduction of transport function of major roads (natural roads)	Central / Local Government	Prevention	To promote flood control projects. (ex: River improvement, flood control, pumping facilities, tree planting, information system) Improvement of dikes and sea embankment	Idea
		Administrator of roads, sewage companies	Mitigation	To promote expansion of major roads, development of bypass road and inundation measures such as raising road. To apply appropriate solutions to coordinate road traffic and maritime transportation.	Idea
		Administrator of Road	Response	To carry out pumping measures of inundation and traffic control in disaster.	Idea
	the reduction of transport function of Hai Phong port	Administrator of Port	Mitigation	To promote inundation measures. (ex: Water proof or raising of major electrical devices or facilities)	Idea
		Administrator of Port + other stakeholders	Response	To formulate a Port-BCP in advance and achieve a quick recovery of transport function in disaster.	Idea
	the power failure	Central / Local Government	Prevention	To promote flood control projects.	Idea
		Power operator	Mitigation	To promote flood measures (ex: raising of power facilities)	Idea
			Recovery	To proceed with the early restoration of inundated power facilities	Idea
		Company	Mitigation	To prepare an emergency generator and fuel	Idea
	the reduction of water supply/ sewage function	Central / Local Government	Prevention	To promote flood control projects.	Idea
		water supply/ sewage operator	Mitigation	To promote flood measures (ex: raising of major devices or facilities)	Idea
			Recovery	To proceed with the early restoration of inundated major devices or facilities	Idea
		Company	Mitigation	To prepare the alternative means like underground water or a water wagon.	

[37] This table (1st edition) shows the simulation results under the limited information by the JICA study team and the discussion results of WS by the stakeholders.

Table 6-3 Proposed Measures for Industry Continuity 2/2

Severity	Bottleneck	Stakeholder	Category	Proposed measures	Stage
Critical concern (Assumed disaster)	the worsening of living condition of people, including employees	Central / Local Government	Prevention	To promote innundation control projects.	Idea
		Local Government	Prevention	To promote land use plan in consideration for flood (ex: Upland relocation of the city)	Idea
			Response	To strengthen response measures (ex: Evacuation order, Medical care, shelter for victims, Relief supplies, Pumping system)	Idea
			Recovery	To strengthen recovery measures(ex: Relief forvictims)	Idea
		Industrial park, Company	Mitigation	To build a dormitory for employees near industrial zones	Idea
			Recovery	To carry out early recover and to keep employment	Idea
	the reduction of communication function (fixed-line phone and mobile phone)	Central / Local Government	Prevention	To promote flood control projects.	Idea
		Tele-communication operator	Mitigation	To promote measures for service continuity in power failure (ex: Emergency generator and fuel)	Idea
		Company	Mitigation	To prepare alternative means of communication (ex: satellite phone)	Idea

7 Implementation of the Plan

7.1 Area BCM

The Plan is implemented by following Area BCM System.

- •Understanding the Area
- •Determining Area BCM Strategy
- •Formulate Area BCP
- •Exercising and Reviewing
- •Maintaining and Improving

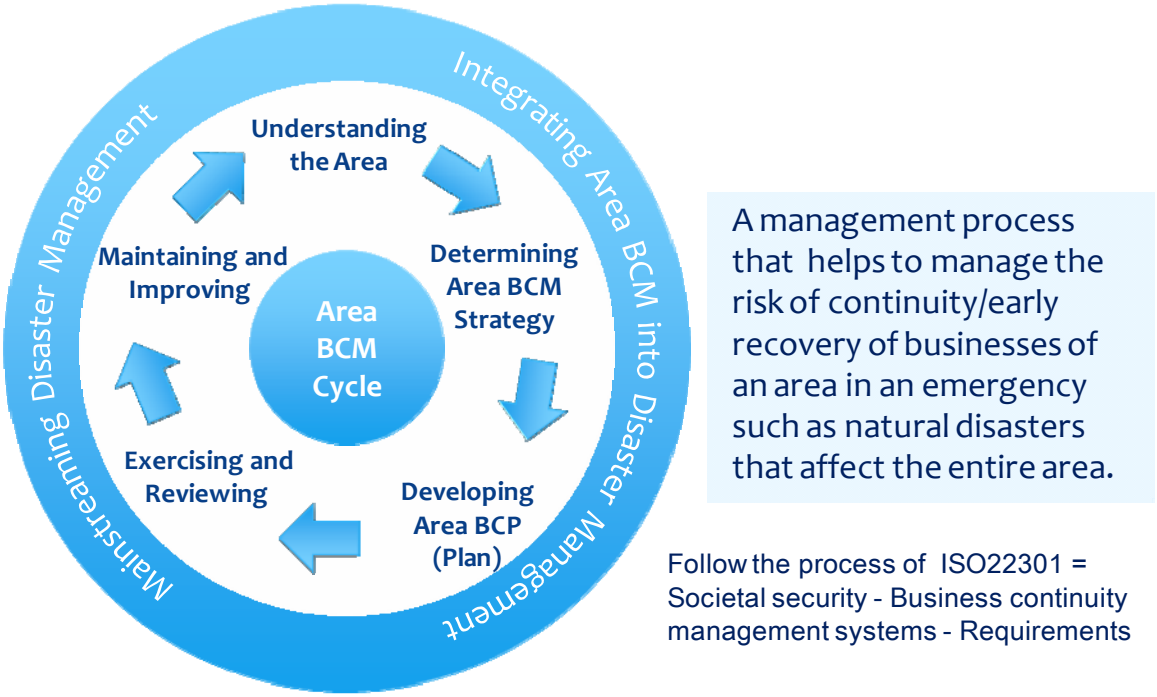


Figure 7-1 Area BCM System

Effective implementation of Area BCM requires active participation of stakeholders and a continuous approach and endeavor of the stakeholders of the area. Identify stakeholders and establish a system for promoting and implementing Area BCM are important. Private and public coordination is also essential.

Understanding of the area can be deepened and the strategy of Area BCM can be improved by a continuous approach for the Area BCM process.

7.2 System of Implementing Area BCM

Area BCM is promoted and implemented by the following system.

•Roles and responsibilities of the leader, members and supporters are described in Table 3-1.

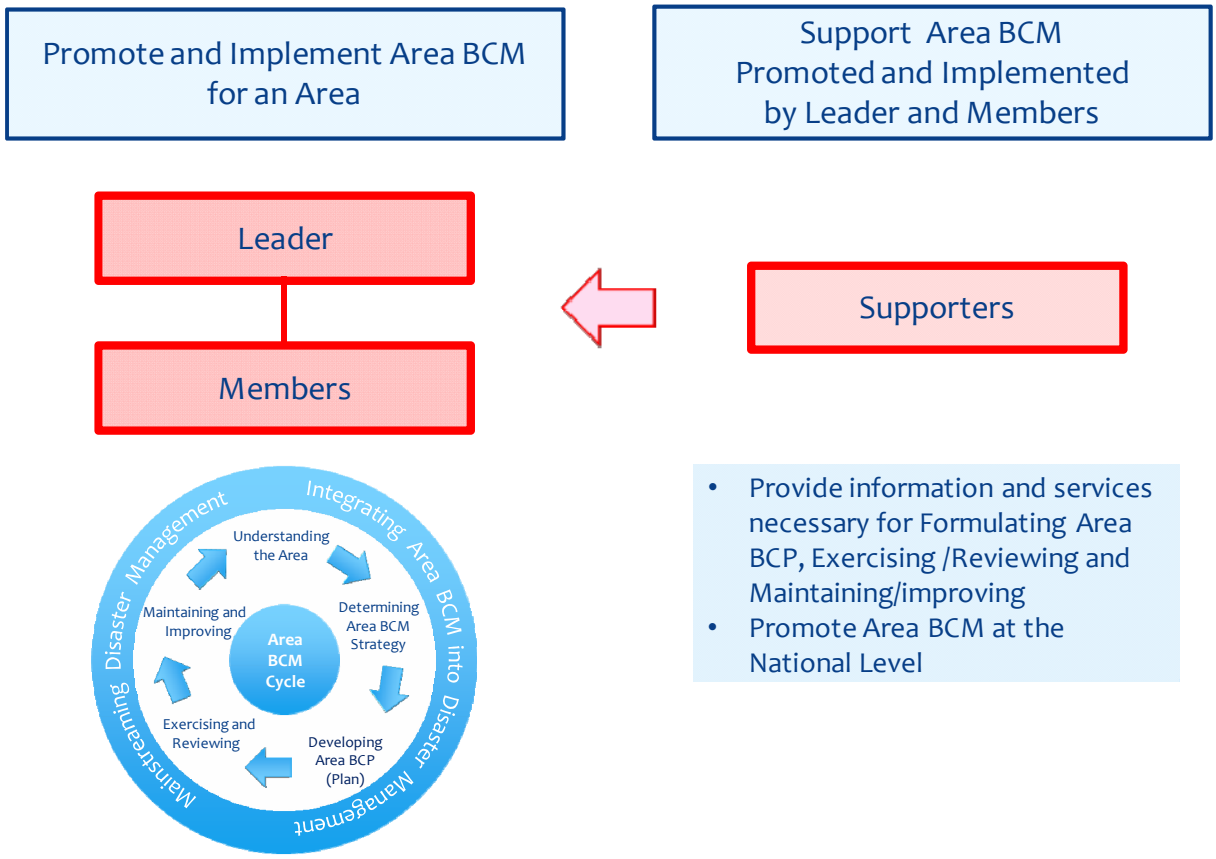


Figure 7-2 System of Implementation of Area BCM

- The activities of disaster management are to be informed to concerned people and public through the Internet, mass media and billboards, posters, leaflets ...
- Maintaining the annual report, review and supplementation of Area Business Continuity Plan

7.3 Exercising and Reviewing

Through exercising and reviewing, effective implementation of Area BCM system is validated, and the plan is confirmed that it is kept up to date. Activities of exercising and reviewing are studying and improvement of the plan by the members, reviewing the plan, formulating a plan for another natural disaster scenario, study lessons from natural disasters occurred in the area and surroundings, and promotion and awareness rising.

Table7-1 Activities of Exercising and Reviewing

Activity	Details	Method	Output
Studying Conformity and Integrity with Disaster Management Plan and/or BCP of Members	● Members study conformity and integrity of Area BCP with their disaster management measures and/or BCP. ● Highlight issues and propose improvement of Area BCM/Area BCP ● Formulate and/or revise their disaster management measures and BCP by members	● Discussions within the organization of members ● Table-top exercises by using a scenario of the Area BCP	● Activity Report
Study Lessons from Natural Disasters Occurred in the Area and Surroundings	● Study lessons from natural disasters occurred in the area and surroundings	● Field Survey, Interview, and Questionnaires	● Lesson Learned Report
Promotion and Awareness Rising	● Utilize discussions within a member for improving the plan as dissemination and awareness rising activity; targeting executives and key staffs of related sections/department. ● Disseminate and promote Area BCM/BCP to other parties of local and national levels	● Discussions within the organization of a member ● Trainings ● Seminars	● Activity Report

○Studying Conformity and Integrity with Disaster management Measures and/or BCP of Members

・The members study conformity and integrity of Area BCP with their disaster management measures and/or BCP through discussions within their organizations. Executives and key staffs of related sections/departments are required to attend the meetings for discussion. Table-top exercises by using a scenario of the Area BCP can be useful.

・Items to be discussed and commented include impacts to the area, strategies for business continuation, actions for business continuity, roles and responsibilities of the member,

related plans, documents and others owned by the member, responsible person for Area BCM, and his/her contact details.

- The members summarize outcomes of the discussions, including issues and proposal for improvements of Area BCM/Area BCP, in an activity report.
- The members can also revise and/or formulate their own disaster management measures and BCP from the outcomes of the discussions.

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

- If natural hazards occur within the target area and its surroundings, a lesson learned report is prepared by conducting a field survey and/or interviews and questionnaires. The report includes outline of the hazard, outline of the damages, responses of the members, issues to consider and lessons.
- The lessons learned will be used to improve a plan of the next version.

○Promotion and Awareness Rising

- The discussions for conformity and integrity by the members should utilize as opportunities to disseminate and rise awareness of Area BCM/Area BCP to executives and key staffs of related sections/departments. If necessary, training programs are planned and implemented.
- Dissemination and promotion of Area BCM/Area BCP are planned and implemented for other parties of local and national levels.
- Outputs are recorded in an activity report.

7.4 Maintaining and Improving

After putting Area BCM system in place, the plan is required to keep up to date in order to follow the changing conditions. A maintenance program is prepared that ensure the plans are up to date.

- if there are any changes of a composition of stakeholders
- if the target area of the plan is changed
- if a new natural disaster risk (s) emerged
- following lessons learned from exercising and reviewing
- following lessons learned from natural disasters in the area and other locations
- other necessary occasions

For updating the plan, if necessary, activities such as studies and risk assessments in "Understanding the Area" and "Determining Area BCM Strategy" of Area BCM System are carried out. An updated plan or a newly formed plan is prepared through workshops organized by the leader and attended by the members and supporters.

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

The leader validates and approves the updated plan after receiving advices from experts and discussions by the working group.

7.5Reporting

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

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

7.6 Issues and Items for Improvement

(To be filled after discussions at the 3rd workshop.)

7.7Next Steps (Proposed)

～2014

・The leader prepare an updated plan (Version 2).

Table 7-2 Activities for Preparation of an Updated Plan (Version 2)

Activity	Details	Method	Output
Studying and Improvement of the Plan (Version 1) by the Members	● Members study and improve contents of the plan (Version 1) within their organization	● Discussions within the organization of members	● Activity Report
Reviewing the Plan	● Update the plan by the leader, members and supporters from outputs of the study of the members	● A workshop	● Updated Plan (Version 2)

○Studying and Improvement of the Plan (Version 1) by the Members

・Each member confirms and/or modifies contents of the current Area BCP (Version 1) through discussions within an organization attended by executives and key staffs of related sections/departments.

・Items to be confirmed and/or modified include impacts to the area, strategies for business continuity, actions for business continuity, roles and responsibilities of the member, related plans, documents and others owned by the member, responsible person for Area BCM, and his/her contact details.

・Each member summarizes outputs from the discussions and prepares an activity report.

○Reviewing the Plan

・The leader holds a workshop with the members and supporters, reviews the plan (Version 1) by using the outputs from the study of the members, and prepares an updated plan (Version 2).

2015～

・The leader updates the plan (Version 2) with supports of the members and supporters.

・Through activities of promotion and awareness rising, collect information and opinions from a wider range of stakeholders, and prepare a more tangible plan. A natural hazard of different levels of impact may be used for the plan.

・If necessary, the leader carries out activities such as studies and risk assessments for formulating the plan.

・During the course of the formulating the plan, review a process and effectiveness of Area BCM system.

8 Definitions of Terms (Draft)

Term	Definition	Ref.
Business Continuity Management (BCM)	Holistic management process that identifies potential threats to an organization and the impacts to business operations those threats, if realized, might cause, and which provides a framework for building organizational resilience with the capability of an effective response that safeguards the interests of its key stakeholders, reputation, brand and value-creating activities	*1
Business Continuity Plan (BCP)	Documented procedures that guide organizations to respond, recover, resume, and restore to a pre-defined level of operation following disruption NOTE: Typically this covers resources, services and activities required to ensure the continuity of critical business functions.	*1
Area Business Continuity Management (Area BCM)	A management process that helps to manage the risk of continuity/early recovery of businesses of an area in emergency such as natural disasters that affect the entire area.	*3
Area Business Continuity Plan (Area BCP)	A documented set of procedures and information intended to promote continuity/early recovery of businesses of an area in emergency such as natural disasters that affect the entire area.	*3
Hazard	A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.	*2
Disaster Risk	The potential disaster losses, in lives, health status, livelihoods, assets and services, which could occur to a particular community or a society over some specified future time period.	*2

[Reference]

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

*2: UNISDR Terminology on Disaster Risk Reduction (2009)

*3: Original in this plan

Appendix A Activity of Workshop (version 2)

Item	Date	Location	Number of participants	Theme
1st WS	11December, 2013	Hai Phong	48	・The policy of Area-BCP ・Significant hazards for business continuity of each organization ・Serious problems for business continuity of each organization
2nd WS	27 February, 2014	Hai Phong	51	・Impacts on the local society and Industries by Disaster ・Bottlenecks for Industry Continuity ・Measures for Industry Continuity
3rd WS	3June, 2014	Hai Phong	48	・Area-BCP version 1(draft) ・Next step of Area BCM
4th WS	3 December, 2014	Hai Phong	49	・Reviewed Area BCP version 1 ・Roles and Responsibilities ・Next cycle of Area BCM

Appendix B List of Stakeholders (version 2)

○Line authorities/ lead role players

Hai Phong People's Committee

Dyke and Flood & Storm Control Department, Department of Agriculture and Rural Development (DARD)

○Members (related departments and agencies of the local government of Hai Phong)

Hai Phong Economic Zone Management Board

Industry and Trade Department

Information and Communication Department

Planning and Investment Department

Natural Resources and Environment Department

Department of Construction

Department of Transportation

Fire Fighter of Hai Phong

Management Board of Hai Phong Industrial Zone Infrastructure Project

Hai Phong Port Authority

Hai Phong Office of Vietnam Chamber of Commerce and Industry

○Members (Infrastructure and Lifeline Utility Companies)

Hai Phong Port Limited Liability Company

Cat Bi Air Port

Hai Phong Power One Member Limited Company

Hai Phong Water Supply Company

○Members (Industrial zones)

Nomura Hai Phong Industrial Zone

Nam Cau Kien Industrial Zone

Dinh Vu Industrial Zone

Do Son Industrial Zone

○Members (Private enterprises)

Yazaki HP VN Co., Ltd.

Tohoku Pioneer Co., Ltd.

Toyota GoseiHaiPhong Co., Ltd.

PVTEX

Dai Duong Building Ship Joint Stock Company
VIJA Group

○Supporting agencies (Central government's agencies, research institutes, universities and other organizations)

DMC (Disaster Management Centre), MARD (Ministry of Agriculture and Rural Development)
VAST (Vietnam Academy of Science and Technology)
Geoenvironmental and Technical Institute
Space Technology Institute
Hydro-Meteorological Forecasting (NCHMF)
Hanoi University of Science, Vietnam National University
Asia Foundation

○ Other organizations

Hai Phong Radio and Television
HaiPhong Security Newspaper
HaiPhong Newspaper
HaiPhong Electricity Newspaper

Table B-1 Roles and Responsibilities of Stakeholders of the Hai Phong Area

Stakeholders	Roles and Responsibilities	Related Plans, Documents and Others Owned by Stakeholder (Availability and How to Obtain)
Leader		
Hai Phong People's Committee	Leading the drafting and implementing	
Dyke and Flood & Storm Control Department, Agricultural and Rural Development Department	A secretariat of owner	
Members (Local Governments and Local Offices of National Government)		
Hai Phong Economic Zone Management Board	Contributing to drafting and implementing, especially regarding industrial zone	
Industry and Trade Department	Contributing to drafting and implementing, especially regarding industrial planning	
Management Board of the Project for Infrastructure Construction of Industrial Zone of Hai Phong	Contributing to drafting and implementing, especially regarding zone infrastructure	
Information and Communication Department	Contributing to drafting and implementing, especially regarding information and communication	
Planning and Investment Department	Contributing to drafting and implementing, especially regarding investment planning	
Natural Resources and Environment Department	Contributing to drafting and implementing, especially regarding environment protection	
Department of Construction	Contributing to drafting and implementing, especially regarding construction planning and standards	
Department of Transportation	Contributing to drafting and implementing, especially regarding transport planning and development	
Fire Station	Fire fighting	
Members (Operators of Infrastructure and Lifeline)		
Hai Phong Port Authority	Contributing to drafting and implementing, especially regarding maritime management	
Hai Phong Port Holding Limited Liabilities Company	Contributing to drafting and implementing, especially regarding provision of port services	

Cat Bi Air Port	Contributing to drafting and implementing, especially regarding provision of air services	
Hai Phong Electric One Member Limited Company	Contributing to drafting and implementing, especially regarding provision of power services	
Hai Phong Water Supply Company	Contributing to drafting and implementing, especially regarding provision of water supply services	
Members (Industrial Parks)		
Nomura Haiphong Industrial Zone		
Nam Cau Kien Industrial Zone		
Dinh Vu Industrial Zone		
Do Son Industrial Zone		
Members (Private Enterprises)		
Yazaki HP VN Co., Ltd.		
Tohoku Pioneer Co., Ltd.		
Toyota Gosei Hai Phong Co., Ltd.		
PVTEX		
Dai Duong Building Ship Joint Stock Company		
VIJA Group		
VCCI Hai Phong		
Supporters (National Government, Governmental Research Institutions, Universities and Others)		
DMC (Disaster Management Council), MARD (Ministry of Agriculture and Rural Development)		
VAST (Vietnam Academy of Science and Technology)		
Geoenvironmental and Technical Institute		
Space Technology Institute		
Hydro-Meteorological Forecasting (NCHMF)		
Hanoi University of Science, Vietnam National University		
Others		

Hai Phong Radio and Television		
Hai Phong Security Newspaper		
Hai Phong Newspaper (Hai Phong Portal)		
Hai Phong Electric Newspaper		
Asia Foundation		