CHAPTER 7 DISASTER MANAGEMENT INFORMATION, EARLY WARNING AND DISASTER EDUCATION

The HFA-3 mentions that stakeholders need to use knowledge, innovation and education to build a culture of safety and resilience at all levels. In order to achieve that, it is important to collect and integrate various types of information on disaster management to be able to share, and freely use it.

In this chapter, the JICA Study Team organized an overview of the current situation and challenges of each ASEAN country regarding Disaster Management Information System (DMIS) and education for disaster prevention and mitigation.

7.1 Brunei

7.1.1 Disaster Management Information System (DMIS)

Information system on disaster management in Brunei is summarized as below.

Table 7.1.1 Information System on Disaster Management (Brunei)

		Availability	Competent Agency
Disaster Management Information System		-	
Disaster Loss Database		-	
Early Warning System	Flood	○	PWD
	Flash Flood	-	
	Typhoon/Cyclone	○	DCA
	Landslide	-	
	Tsunami	-	
	Volcano		
	Severe Weather	○ (Heavy rain, strong wind)	DCA
	Rough Sea	○ (Strong wind, tropical storm)	DCA

Source: JICA Study Team (Legend: ○: available, -: not available)

(1) DMIS and Disaster Loss Database

Any DMIS and/or disaster loss database has not been established in Brunei. But even without DMIS or database, disaster losses are systematically reported, monitored and analyzed. These reports are then used in planning.

(2) Early Warning System (EWS)

Weather forecasts and early warnings are under the responsibility of the Department of Civil Aviation (DCA), which issues severe weather warnings and rough sea warnings in three stages; flood warnings are under the Public Works Department (PWD).

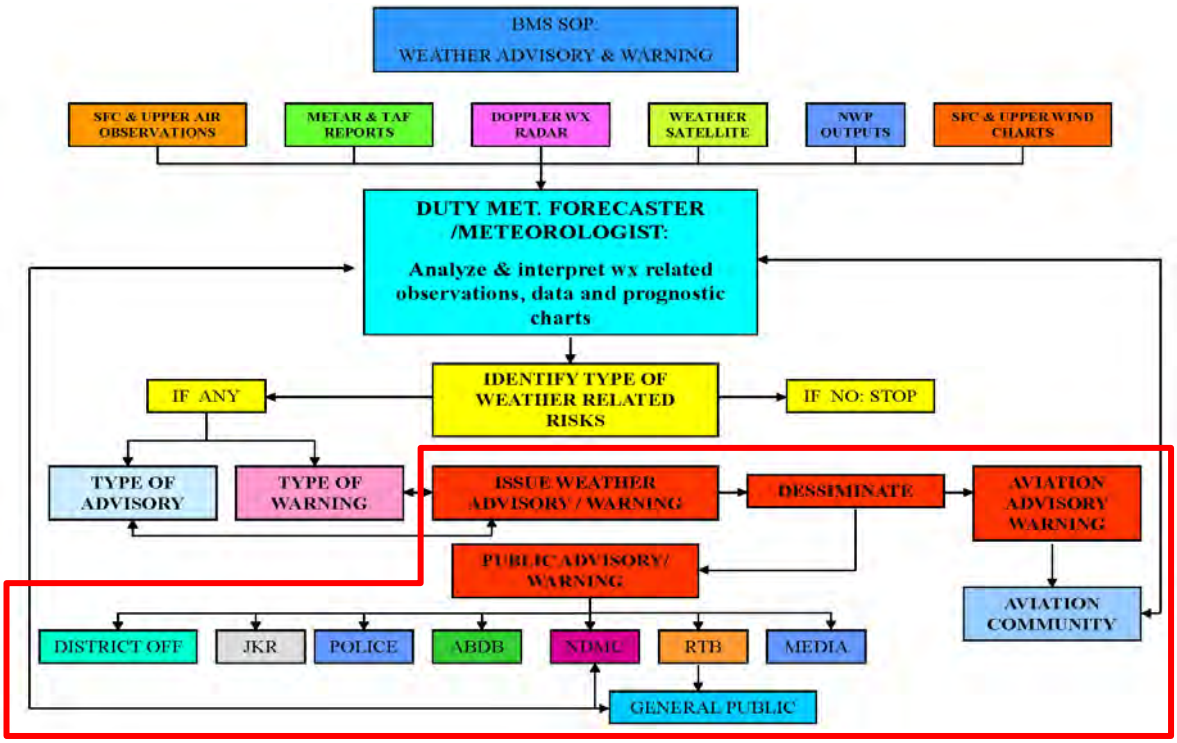
The NDMC plans to install a new tsunami warning system. Currently, Brunei does not have its own tsunami monitoring system and is dependent on the information observed by international institutions and/or other countries. As such, Brunei has limited human resources with technical

skills for natural disaster management, such as technical experts for floods, tsunami and others.

According to the interview survey for Tutong District, the district needs to establish a flood monitoring system, early warning system and tsunami early warning system.

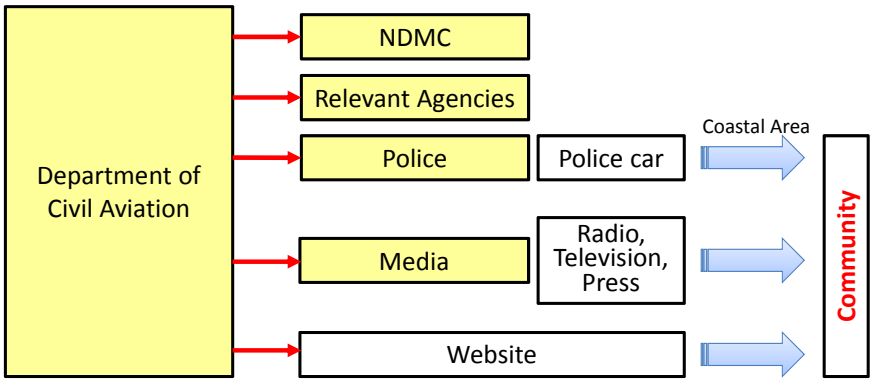
(3) Means of Dissemination of Early Warning

The usual means of dissemination of early warnings are mainly through television, radio and short messaging system (SMS). Speakers from mosques are utilized to disseminate information to the public. Risk-prone communities do not necessarily receive timely warnings of impending hazard events[1]. There are also issues that any means of dissemination of early warnings directly to fishermen in coastal areas are not available. When an impending hazard such as storm is coming, police cars with loudspeakers run around to disseminate warning information in coastal areas.



Source: DCA, Meteorological Service of Brunei (PowerPoint), the red frame line added by the JICA Study Team

[1] HFA Progress Report (2009-2011), Brunei Darussalam



Source: JICA Study Team based on the interview survey for Department of Civil Aviation

Figure 7.1.1 Dissemination Flow of Weather Warning

7.1.2 Education for Disaster Prevention and Mitigation

The Ministry of Education is in charge of educating the public regarding disaster prevention and mitigation.

Disaster risk reduction (DRR) has yet to be incorporated in school curricula. However, outreach programs have been taken up seriously through other means such as the ASEAN Regional Drawing Competition for students. These programs are held to promote awareness on disaster resilience among students, teachers and parents [2].

The Ministry of Education is going to implement a new education program (SPN-21) to the public that includes a systematic curriculum for disaster prevention and mitigation. Drills for the public are held once a year based on the program of NDMC and other relevant agencies. NDMC considers that more frequent training is necessary.

The NDMC is planning to promote the following four programs to enhance public awareness:

a) Community-based Disaster Risk Management (CBDRM)
b) Road-show on Disaster Management and Disaster Risk Management
c) National Drawing Competition/ Essay Competition
d) Safety-based Disaster Management Center

(Source: Power Point provided by NDMC)

[2] HFA Progress Report (2009-2011), Brunei Darussalam

7.1.3 Issues and Needs Identified - Brunei

The JICA Study Team identified the issues and needs as shown in Table 7.1.2

Table 7.1.2 Issues and Needs Identified by the Study Team (Brunei)

Issues and Needs	Bilateral cooperation
Development of Disaster Management Information System	- Development of disaster management information system based on GIS
Development of Disaster Loss Database	- Development of disaster loss database and sharing system.
Early Warning[3]	- Development of means of early warning (especially for flood and tsunami) - Implementation of CBDRM
Enhancement of Disaster Education for CBDRM	- Assistance of CBDRM (e.g. Evacuation drills, Community based hazard mapping, Building shelter management system and evacuation plans, Improvement of early warning system, Formulation of community disaster manual and awareness plan) - Development of guide lines how to conduct CBDRM. - Development for knowledge sharing mechanism among communities. - Capacity Building for implementing CBDRM

Source: JICA Study Team

7.2 Cambodia

7.2.1 Disaster Management Information System (DMIS)

Information system on disaster management in Cambodia is summarized as below.

Table 7.2.1 Information System on Disaster Management (Cambodia)

		Availability	Competent Agency
Disaster Management Information System		- (under construction)	NCDM
Disaster Loss Database		- (under construction)	NCDM
Early Warning System	Flood	○*	MOWRAM*
	Flash Flood	-	-
	Typhoon/Cyclone	-	-
	Landslide	-	-
	Tsunami	-	-

Source: The JICA Study Team, (*) HFA Progress Report (2007-2009) (Legend: ○: available, -: not available)

(1) DMIS and Disaster Loss Database

The NCDM is developing an information system for emergency management and early warning supported by the World Bank. The system will be installed to the Emergency Coordination Center, which is under construction. The system will be used to share disaster information among national and provincial agencies. NCDM will collect disaster-related information from various administrative and other agencies at all levels under their jurisdiction.

[3] According to interview survey to Tutong District Office by the JICA Study Team (2012)

Such agencies include the NCDM, PCDM, DCDM, CCDM and other organizations related to agriculture, health, rural development, the Cambodia Red Cross, etc.

The system will be used in normal situations for monitoring meteorological and hydrological information at provincial levels. During emergency situations when disasters occur in a province, the provincial staff shall use the system to report to NCDM the actual situation (damages, activities and/or so on) as well as requests for emergency relief.

Information is coordinated in the case of the monitoring, analysis and dissemination of disaster-related information as follows;

Table 7.2.2 How to coordinate disaster-related information in case of the monitoring, analysis and dissemination

DATA SOURCE	DESCRIPTION	CAVEATS/ LIMITATION
NCDM	**Affected and Displaced Households:** The NCDM compiled provincial level data regarding affected and displaced populations at irregular intervals during the flood response, based on reports from PCDMs.	**Affected Households:** The definition of affected for this data is households within the zone of disaster occurrence, which does not relate to specific needs.
PCDM/CRC Reports	**Affected and Displaced Households:** District - level data from DCDM compiled by PCDM. A full set of Provincial level reports were not available at the time this report was produced – however, at attempt has been made to gather together as many sources of district affected/displaced population data as possible in order to provide a rough indication of the differing impact of the floods at a district level. This is a combination of: - PCDM reports - Reports from the CRC (endorsed by PCDM).	**Correlation to NCDM Data:** Variation can be found between NCDM report and PCDM report, possibly as a result of differing reporting cycles. However, it provides a district breakdown of effected population which is necessary for effective targeting.
MAFF	**Damaged Transplanted Rice (ha):** Compiled at district level, indicating the extent of affected and damaged transplanted rice (in hectares).	**Damaged Rice:** It is sometimes difficult to assess the full impact of the damage until the full assessment to be conducted.
MRD /UNICEF	**Affected Wells and Latrines:** Compiled at the provincial level by Provincial Departments of Rural Development. The most comprehensive recording of these details has been for wells (information for damaged latrines and ponds has not been consistently compiled across all areas as yet).	**Affected Latrines:** Information is incomplete across different areas.
MOEYS/UNICEF	**Affected Schools, Furniture and Textbook Needs:** The Provincial Office of Education (POEs) along with technical support from UNICEF - field based staff, conducted assessments of the effect upon schools.	**Furniture and Textbook Needs:** It is possible that some of the identified needs were pre - existing prior to the disaster. Affected schools: Lack of engineers for technical

Source: NCDM, NCDM AIDE MEMOIR ON DMIS.

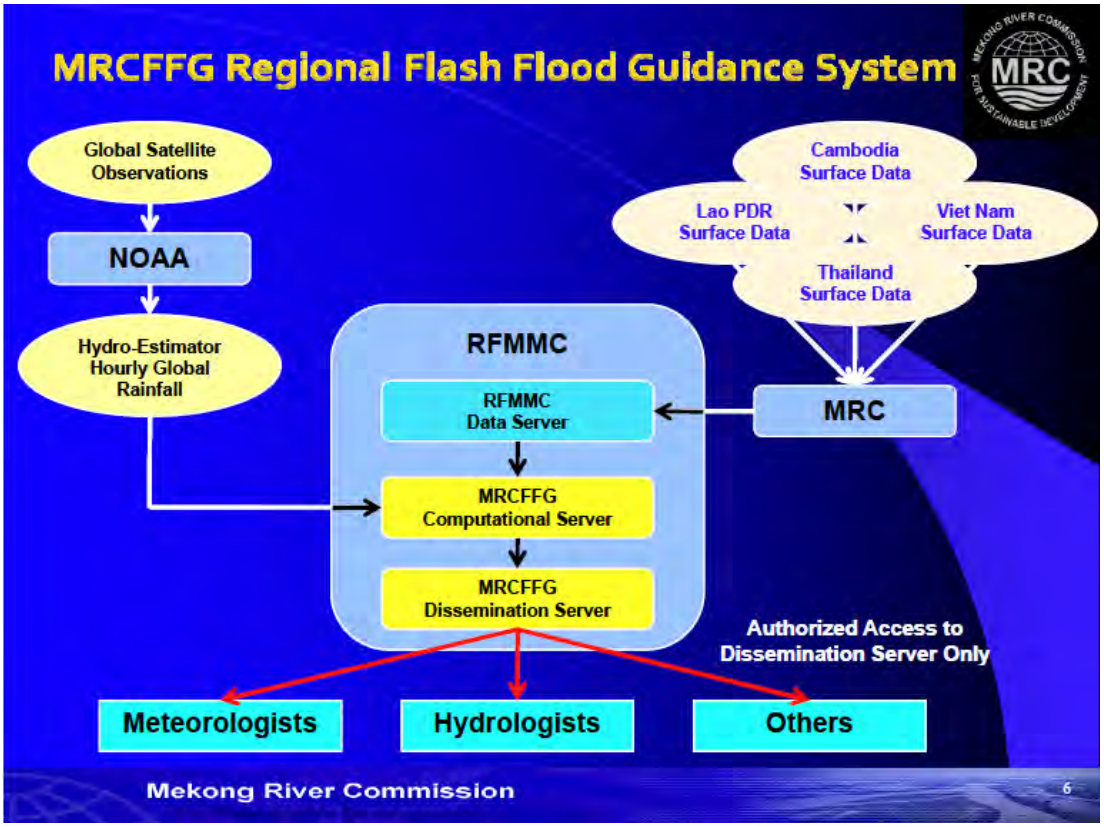
(To enrich this content, please refer and extract from the attached file:
25-09-12 NCDM-DMIS Aide Memoir)➔05-001 (03-001.2)

NCDM plans to install this system in eight out of 24 provincial offices as a pilot project. The system will include a disaster loss database.

(2) Early Warning System (EWS)

MOWRAM is in charge of weather forecasts. Weather information is then provided to NCDM. NCDM, being provided with information, is to determine whether the early warning is issued and/or delivered to relevant agencies according to transmission procedural flow.

As for flash floods, MOWRAM refers to the information provided by the Mekong River Commission (MRC) through the Mekong River Commission Flash Flood Guidance System (MRCFFGS). MRCFFG Regional Flash Flood Guidance System implements an end-to-end flash flood warning system to improve responses by governments, local governments, international organizations, NGOs, private sector, and public to occurrences of flash floods. The improvement of prediction accuracy of flash floods is one of the issues to be challenged.



Source: MRC, MRC Flash Flood Guidance System (MRCFFGS).

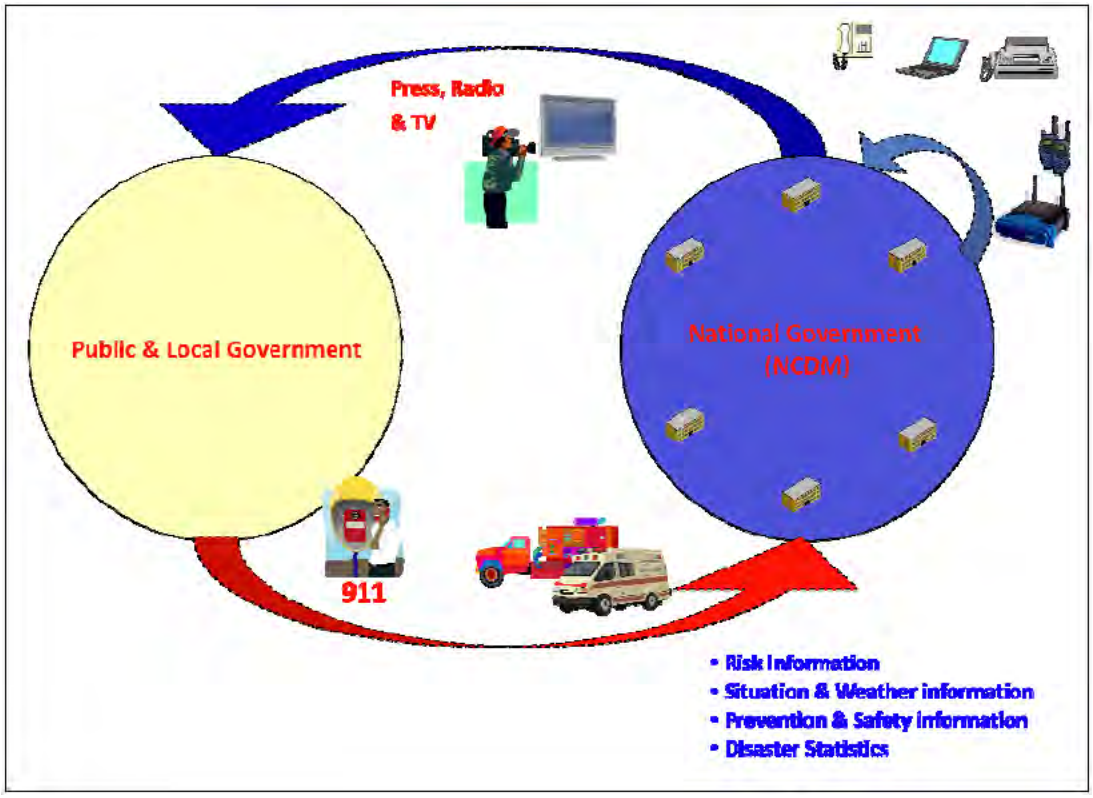
Figure 7.2.1 Outline of MRCFFG Regional Flash Flood Guidance System

(For your information, please refer to the attached file:
29-08-12 FLOOD SITUATION IN 2012 and ➔ 05-002
29-08-12 Regional-FFS-2011-2012)➔ 05-003

(3) Means of Dissemination of Early Warning

MOWRAM is in charge of the dissemination of weather forecast to public via television and/or radio. The weather forecast information is gradually utilized by the public.

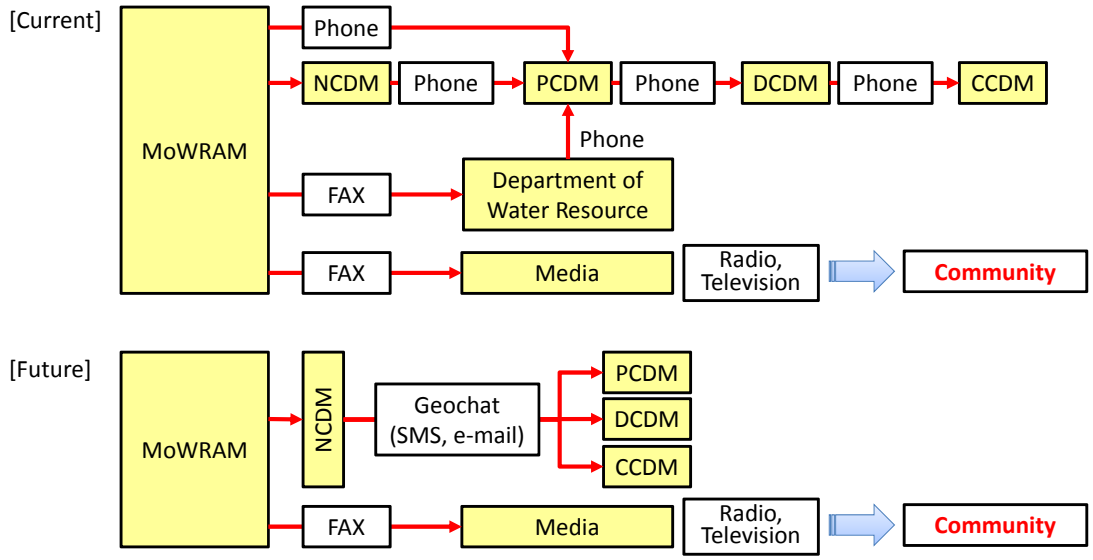
The forecast and early warning information is disseminated regularly during flood season (June to November) through existing communications facilities to the optimum extent for disaster purposes such as Internet-Email, facsimile, telephone, cellular phone, television, mass media, FM and AM radio channels, and local newspapers.



Source: NCDM, NCDM AIDE MEMOIR ON DMIS.

Figure 7.2.2 Communication channels and information flow between national government and public/local government

(To enrich this content, please refer and extract from the attached file: 25-09-12 NCDM-DMIS Aide Memoir)➔05-004 (03-001.2; 05-001003)



Source: JICA Study Team based on the interview survey for NCDM and MOWRAM

Figure 7.1.3 Dissemination Flow of Early Warning

7.2.2 Education for Disaster Prevention and Mitigation

One major natural disaster in Cambodia is due to flooding. While NCDM has created and distributed disaster-related posters with the support of GTZ and ADPC, the public usually understand how to evacuate from ordinary river floods rising slowly through their long experiences living with floods.

However, from the floods that occurred in 2011, a considerable number of village people suffered and were killed in Siam Reap, possibly due to flash floods and/or from exceptionally prolonged floods in the area. The people in Siam Reap did not have experiences of flash floods rising rapidly in a short time. Therefore, an impending need for public awareness, together with evacuation drills regarding possible flash floods particularly in hilly/mountainous areas of Cambodia is required.

7.2.3 Issues and Needs Identified - Cambodia

The JICA Study Team identified the issues and needs as shown in the Table 7.2.2

Table 7.2.3 Issues and Needs Identified by the Study Team (Cambodia)

Issues and Needs	Bilateral cooperation
Enhancement of School Education	- Development of teaching guide lines and teacher's training. - Development of teaching materials according to the grade. - Development of disaster simulator for earthquake, smoke and fire extinguish. - Regular disaster drill at school. - Development of education material databases.
Development of Disaster Management Information System	- Development of disaster management information system based on GIS.
Early Warning[4]	- Development of means of dissemination of early warning (procedural guidelines and/or facilities/equipment, mechanism) , from governmental agencies to communities; - Implementation of CBDRM
Enhancement of Disaster Education for CBDRM	- Assistance of CBDRM (e.g. Evacuation drills, Community based hazard mapping, Building shelter management system and evacuation plans, improvement of early warning system, Formulation of community disaster manual and awareness plan) - Development of guide lines how to conduct CBDRM. - Development for knowledge sharing mechanism among communities. - Capacity Building for implementing CBDRM

Source: JICA Study Team

7.3 Indonesia

7.3.1 Disaster Management Information System (DMIS)

Information system on disaster management in Indonesia is summarized as below.

Table 7.3.1 Information System on Disaster Management (Indonesia)

		Availability	Competent Agency
Disaster Management Information System		○ GEOSPASIAL	BNPB
Disaster Loss Database		○ DIBI	BNPB
Early Warning System	Weather warning	○ Indonesia Meteorological EWS, CEWS, C-waves	BMKG
	Flood	○ Flood Early Warning System	PU (w/BMKG)
	Flash Flood	-	-
	Typhoon/Cyclone	○ Early warning of Tropical Cyclone	BMKG
	Sediment disaster	-	-
	Tsunami	○ InaTEWS	BMKG
	Volcano	○ Early warning of volcanic eruption	PVMBG
	Others	○ Forest fire EWS*	LAPAN*
		(Plan to develop tornado EWS**)	BNPB, BMKG**

Source: JICA Study Team, (*) HFA Progress Report (2009-2011), (**) PreventionWeb (April 09, 2012) http://www.preventionweb.net/english/professional/news/v.php?id=26145
(○: available, -: not available)

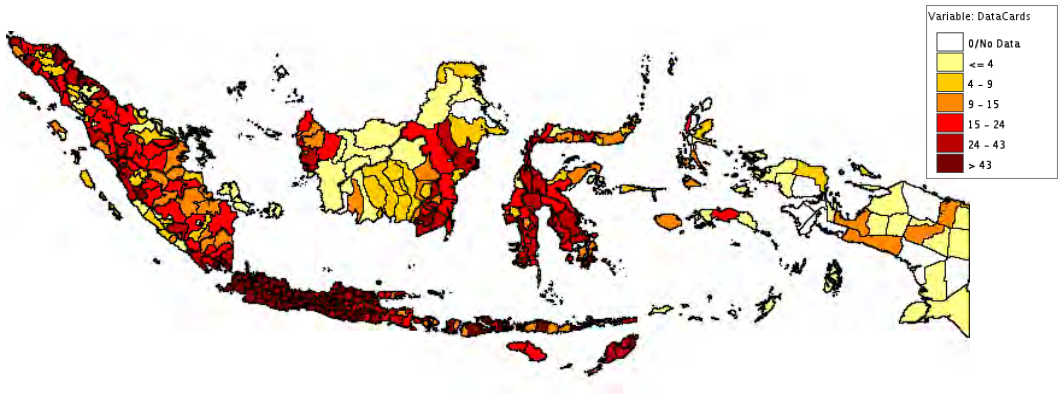
[4] According to interview survey to NCDM by the JICA Study Team (2012)

(1) DMIS and Disaster Loss Database

Two database systems have been put into operation in Indonesia within BNPB, namely: GEOSPASIAL[5] and DIBI[6].

GEOSPASIAL is a Web-GIS database system that displays; (1) disaster/damage information caused by disasters occurring within 30 days, (2) various types of hazard maps, and (3) administrative boundaries on maps.

DIBI is a database that stores information on historical disaster events in Indonesia. After a disaster has emerged, BNPB collects the disaster information from the national government, local governments, NGOs, universities, etc. After that, BNPB then enters the information into the database. The DIBI has accumulated disaster loss data since 1815.



Source: DIBI Website (http://dibi.bnpb.go.id/DesInventar/dashboard.jsp?lang=ID)

Figure 7.3.1 Distribution of Disaster Event per District (1815 - 2012)

(2) Early Warning System (EWS)

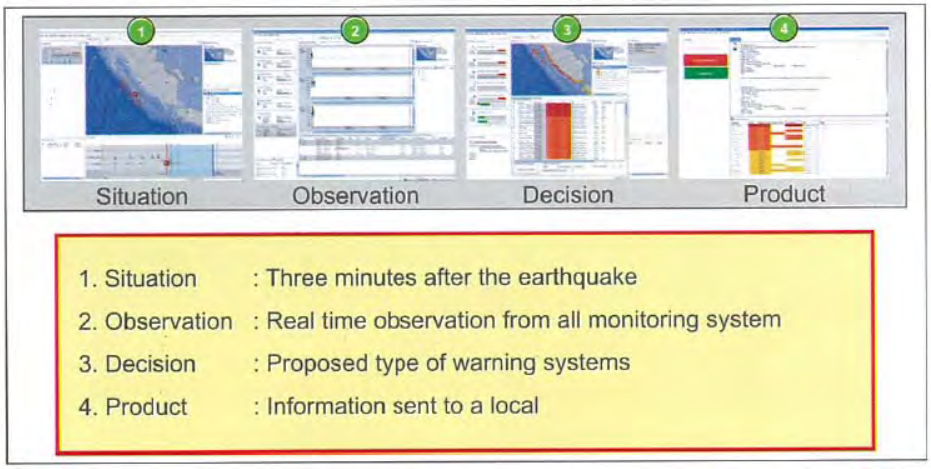
Early warning of weather and tsunami is under the responsibility of BMKG while flood warning is under PU.

BMKG has several warning systems which include: (1) Indonesia Tsunami EWS (InaTEWS), (2) Indonesia Meteorological EWS, (3) Climatological EWS (CEWS) and (4) C-wave (EWS for the ferry). Also, BMKG is equipped with a Tropical Cyclone Warning Center. The InaTEWS provides early warning on tsunami that may affect Indonesia within 5 minutes after an occurrence of an earthquake to BNPB, disaster management agencies, local governments, mass media, etc. with the following three standard criteria (red/orange/yellow):

- Red (Major Warning) : Tsunami height > 3 meter
- Orange (Warning) : Tsunami height 0.5-3 meter
- Yellow (Advisory) : Tsunami height < 0.5 meter

[5] http://geospasial.bnpb.go.id/

[6] http://dibi.bnpb.go.id/DesInventar/dashboard.jsp?lang=ID

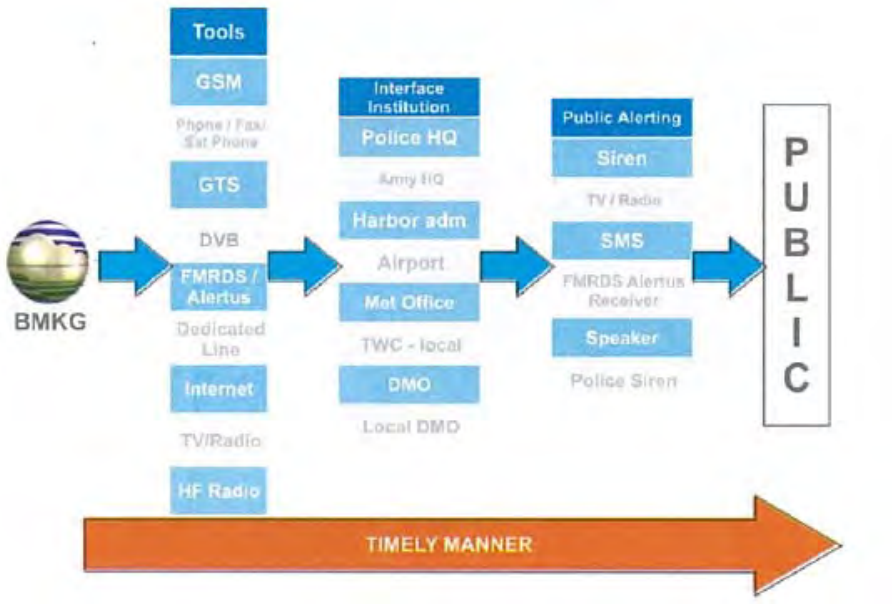


Source: Pamphlet of InaTEWS, BMKG

Figure 7.3.2 Decision Support System (DSS) Procedure of InaTEWS

(3) Means of Dissemination of Early Warning

Early warning to the public is disseminated through siren, television, radio, SMS, FM Radio Data System (FMRDS) alerts receiver, speaker, police siren, social media (Facebook, Twitter), etc [7].



Source: Pamphlet of InaTEWS, BMKG, interview with BMKG

Figure 7.3.3 Dissemination Flow of Tsunami Early Warning

[7] Pamphlet of InaTEWS, BMKG, interview with BMKG

7.3.2 Education for Disaster Prevention and Mitigation

School curriculum regarding disaster management is available for primary and secondary students.

The Ministry of National Education of Indonesia has issued a circular letter that encourages the mainstreaming of disaster risk reduction in schools through school curriculums. The curriculum contains preparedness education for elementary, junior high and senior high school students in six major hazards, namely: earthquake, tsunami, volcano, flood, landslide and typhoon/cyclone. Education materials will include disaster risk reduction as a local content, school program, or existing extra-curricular programs.

Many universities have developed their own disaster research centers which deal with disaster research and study as a major activity. Some universities, together with the BNPB, have developed DRR-based field exposure programs[8].

Some challenges were reported to the Study Team, as follows:

a) Insufficient public awareness and/or competent resources.
b) No legal or official networks available among disaster experts, managers and planners; information to be circulated with mailing lists, forum database, forum spatial data even when disasters.
c) No efficient coordination available among agency or institution relevant to disaster management.

These issues are pointed out by BNPB and relevant agencies.

For the item a), it is necessary to understand the present availability of human resources, to analyze the issues they now face, and to identify proper officers that are required at the local level. The item b) is an issue and need for creating mechanisms for effective utilization of human resources. For the item c), it is necessary to identify which agencies and/or organizations have to be coordinated based on the understanding of the mandates of agencies that are relevant to disaster management.

7.3.3 Issues and Needs Identified - Indonesia

The JICA Study Team identified the issues and needs as shown in the Table 7.3.2

Table 7.3.2 Issues and Needs Identified by the Study Team

Issues and Needs	Bilateral cooperation
Enhancement of Disaster Education for CBDRM	- Assistance of CBDRM (e.g. Evacuation drills, Community based hazard mapping, Building shelter management system and evacuation plans, improvement of early warning system, Formulation of community disaster manual and awareness plan) - Development of guide lines how to conduct CBDRM. - Development for knowledge sharing mechanism among communities. - Capacity Building for implementing CBDRM

Source: JICA Study Team

[8] HFA Progress Report (2009-2011), Indonesia

7.4 Lao PDR

7.4.1 Disaster Management Information System (DMIS)

Information system on disaster management in Lao PDR is summarized as below.

Table 7.4.1 Information System on Disaster Management (Lao PDR)

		Availability	Competent Agency
Disaster Management Information System		- (under construction)*	NDMO*
Disaster Loss Database		○ (under integration into EDIS)*	NDMO*
Early Warning System	Flood	○	DMH
	Flash Flood	○	DMH
	Typhoon/Cyclone	○	DMH
	Landslide	-	-
	Tsunami		
	Volcano		
	Severe Weather	○ (heavy rainfall, strong wind)	DMH

Source: JICA Study Team, (*) HFA Progress Report (2009-2011) (Legend: ○: available, -: not available)

(1) DMIS and Disaster Loss Database

The NDMO has been implementing two projects under the thematic area of risk assessment and disaster information management. These are:

a) Establishment of Disaster Information Management System (EDIS) Project of LANGOCA Program
b) Development of National Risk Profile Project under cooperation with UNDP.

The EDIS project is being implemented under the Laos Australia NGO Cooperation Agreement (LANGOCA) by NDMO, ADPC and Save the Children Australia. The project is built on a web-based system (DesInventar) previously tested in Sayaboury Province under a pilot project implemented in 2008-2009. This disaster information management system was proven effective in the province and its implementation was commenced at the national level in 2010[9].

(2) Early Warning System (EWS)

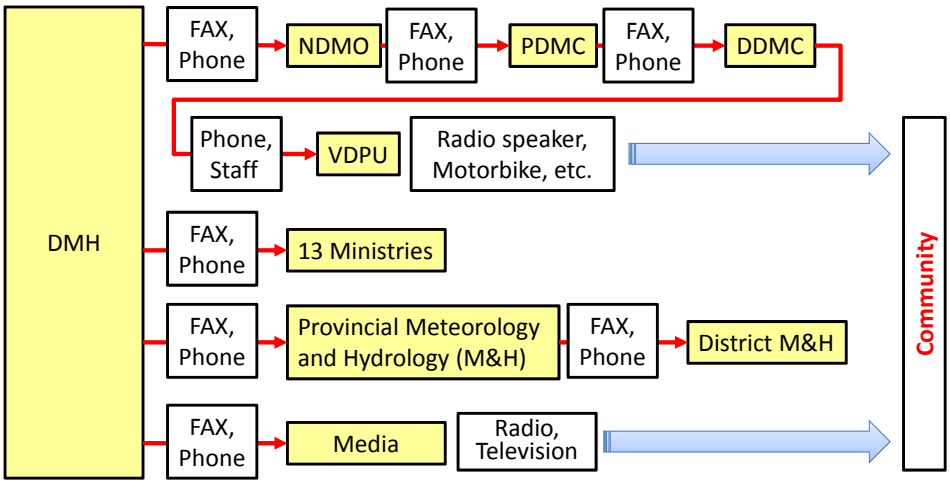
Meteorological and hydrological monitoring and early warning (severe weather, typhoon, heavy rainfall, very hot weather, flood, and flash flood) are under the responsibility of DMH. DMH issues early warnings to relevant organizations (PMO, NDMO, 13 government agencies, each provinces, and mass media). For flood warning, DMH issues warning information in three stages (flood advisory/flood warning/flood announcement) based on observed water levels and rainfall forecast using data from 20 hydrological stations along the Mekong River and its main tributaries.

[9] HFA Progress Report (2009-2011), Lao PDR

Early warning of flash floods (including landslides) is issued when rainfall is forecasted to exceed 100 mm in 12 hours. Observation networks to prepare for flash floods have not been developed yet. The criterion for issuing early warning of flash floods is not also available. DMH issues information of flash floods based on the MRC flash flood guidance.

(3) Means of Dissemination of Early Warning

DMH disseminates early warning information to NDMO, 13 agencies, and local meteorological observatories. Information is also sent to mass media (radio staff and/or newspapers) by fax, to TV staff by e-mail, to the public by websites and village staff. From the village staff to village people, various means of communication are used, such as hand-speakers, outdoor loudspeakers and so on.



VDPU: Village Disaster Protection Unit (140 units in the whole country)

Source: JICA Study Team based on the interview survey for DMH

Figure 7.4.1 Dissemination Flow of Early Warning

7.4.2 Education for Disaster Prevention and Mitigation

Education for disaster prevention and mitigation has been carried out to the communities mainly in NDMO, while receiving the support of the NGOs. The NDMO creates posters and booklets regarding disaster prevention for the residents to read.

Programs of education for disaster prevention and mitigation are under the responsibility of the Ministry of Education. There is a curriculum for elementary school students in 3rd, 4th and 5th grade regarding the matter. Textbooks that deal with fire, floods, droughts, landslides, a contagious disease have already been published. Evacuation drills are conducted on the day for disaster reduction during the second week of October. DMH also conducts open houses which is one of its education programs. More than 500 elementary and high school students visited DMH in 2011. Also, DMH made weather publications for students, school teachers and line agencies concerned.

Source: DMH, Floods 2011 affected by Tropical Cyclones Best Tracks over LAO PDR (PowerPoint)

Figure 7.4.2 Open House (left) and Example of Weather Publication (right)

NDMO has opened a website and is beginning to share information on a trial basis for knowledge share. The website is very necessary to accumulate the good practice in the future.

7.4.3 Issues and Needs Identified – Lao PDR

Issues and Needs Identified are as show in the table 7.4.2

Table 7.4.2 Issues and Needs Identified by the Study Team (Lao PDR)

Issues and Needs	Bilateral cooperation
Early Warning[10]	- Development of means of early warning (especially for flash flood) , from governmental agencies to communities; - Implementation of CBDRM
Enhancement of Disaster Education for CBDRM	- Assistance of CBDRM (e.g. Evacuation drills, Community based hazard mapping, Building shelter management system and evacuation plans, improvement of early warning system, Formulation of community disaster manual and awareness plan) - Development of guide lines how to conduct CBDRM. - Development for knowledge sharing mechanism among communities. - Capacity Building for implementing CBDRM

Source: JICA Study Team

7.5 Malaysia

7.5.1 Disaster Management Information System (DMIS)

Information system on disaster management in Malaysia is summarized as below.

[10] According to interview survey to NCDM by the JICA Study Team (2012)

Table 7.5.1 Information System on Disaster Management (Malaysia)

		Availability	Competent Agency
Disaster Management Information System		○ NADDI*	NSC, MACRES
Disaster Loss Database		-**	
Early Warning System	Flood	○ (Flood Forecasting and Warning System)	DID
	Flash Flood		
	Typhoon/Cyclone	○ (Malaysian Weather Forecasting and EWS)	MMD
	Landslide	-	PWD
	Tsunami	○ (MNTEWS)	NSC, MMD
	Volcano (Volcanic ash fallout)	○ (Malaysian Weather Forecasting and EWS)	MMD
	Drought	○ (Drought Information Website)	DID
	Haze	○ (Air Pollutant Index Management System (APIMS))	DOE

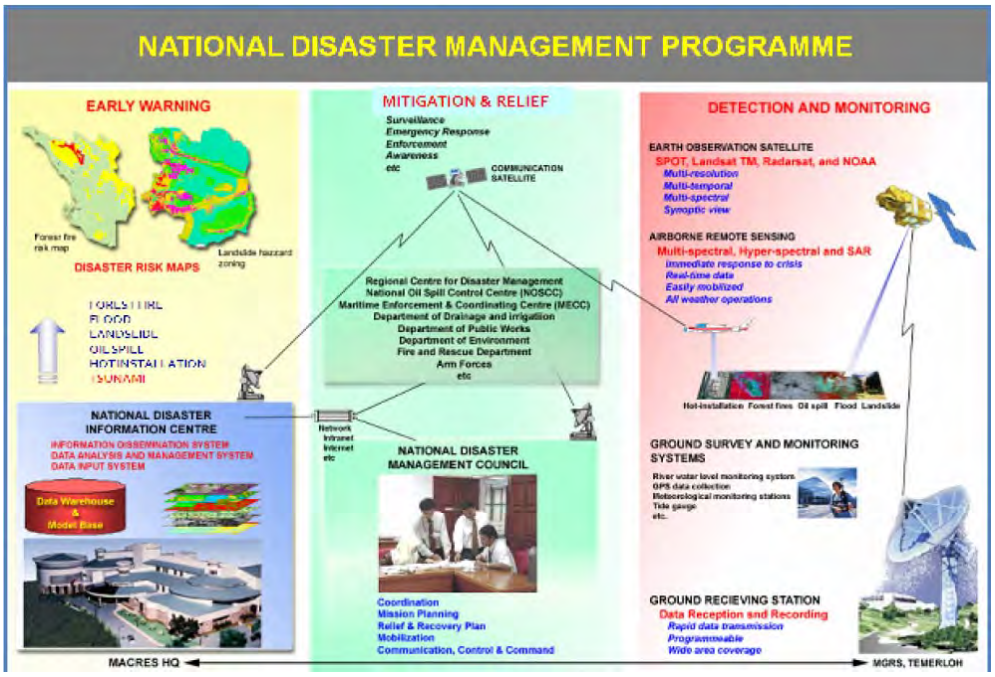
Source: JICA Study Team, (*) Malaysia Country Profile (2010), (**) HFA Progress Report (2009-2011)
(Legend: ○: available, -: not available)

(1) DMIS and Disaster Loss Database

The National Disaster Data and Information Management System (NADDI) are coordinated by NSC and MACRES. The objective of NADDI is to establish a central system for collecting, storing, processing, analyzing, and disseminating value-added data and information to support the relevant agencies in the mitigation and relief activities of disaster management in the country. NADDI emphasizes on the utilization of remote sensing, geographical information system (GIS) and global positioning system (GPS) technologies to provide an up-to-date and reliable data to support the three components of disaster management, which are:

- Early warning,
- Detection and monitoring, and
- Mitigation and relief for pre, during and post disaster management activities coordinated by NSC and implemented by relevant authorities. [11]

[11] ADRC, Country Report (2010)



Source: ADRC, Malaysia Country Profile (2010)

Figure 7.5.1 National Disaster Data and Information Management System (NADDI)

(2) Early Warning System (EWS)

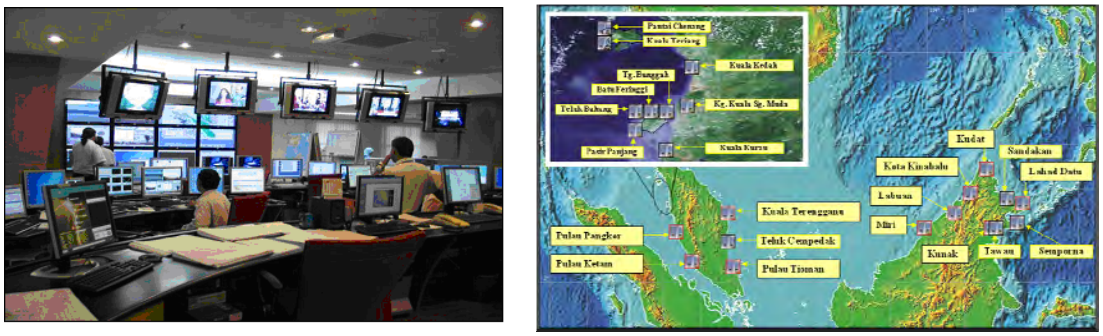
Weather forecast/warning and tsunami warning is under responsibility of MMD. MMD has various meteorological monitoring systems, and provides weather forecast and strong wind warning based on their systems (e.g. Figure 7.5.2).

Source: MMD, Ministry of Science, Technology and Innovation (PowerPoint)

Figure 7.5.2 Visual Strong Wind Warning System

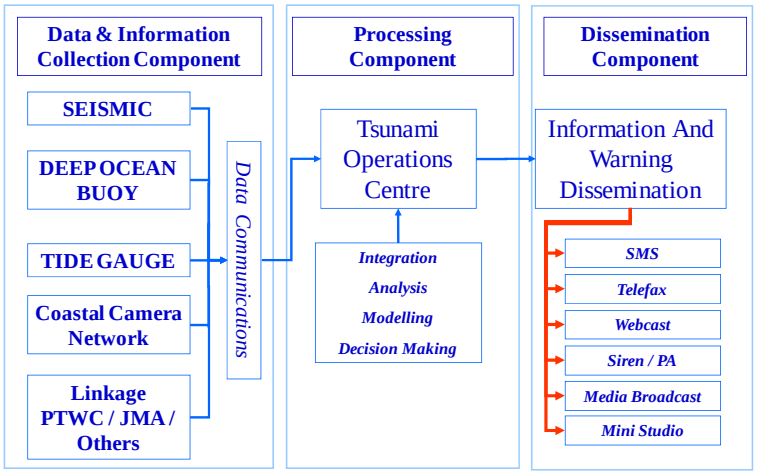
MMD also has developed the Malaysian National Tsunami Early Warning Center (MNTEWC). MNTEWC was established to ensure the efficient dissemination of earthquake information and tsunami warnings over the Indian Ocean, South China Sea or the Pacific Ocean (Figure 7.5.3, Figure 7.5.4).

MMD has developed a tsunami database. They have conducted seismic profiling and collected tsunami historical events around the Indian Ocean, South China Sea and the western Pacific Ocean. MMD also simulated tsunami based on numerous source points (about 1,800 source points), and made database of tsunami.



Source: MMD, Ministry of Science, Technology and Innovation (PowerPoint)

Figure 7.5.3 Malaysian National Tsunami Early Warning Center (MNTEWC) (left) and Tsunami Siren Network (right)



Source: MMD, Ministry of Science, Technology and Innovation (PowerPoint)

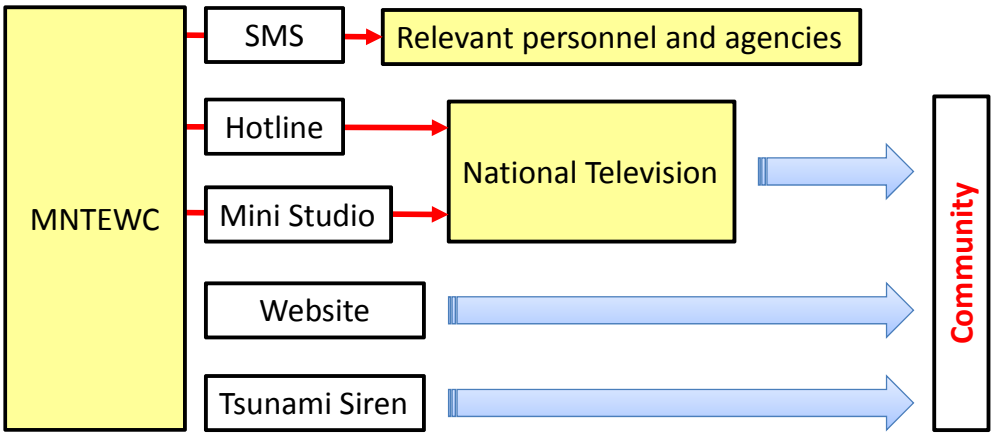
Figure 7.5.4 MNTEWS System Overview

Early flood warning is under the responsibility of DID. DID performs flood forecasting and early warning system which is formed using telemetry. Apart from that, local communities set up "flood warning boards (sign boards)" in rivers for water level monitoring to be able to make their own warning decisions from suggestions given in the board. There are four warning levels: (1) Normal, (2) Alert (DID flood center to operate 24-hours), (3) Warning (public to prepare for evacuation), and (4) Danger (public to evacuate). Local residents use their own judgement in identifying danger by observing the board and reports the situations to the DID district office.

As for landslide disasters, the National Slope Master Plan will be expanded in the long term, to provide early warning system in landslide prone areas[12].

(3) Means of Dissemination of Early Warning

Early warnings are disseminated through sirens, SMS, hotlines (between MNTEWC and national television), fixed lines (whenever necessary), telefax, websites, mass media broadcasting systems (mini studio at MNTEWC) and public announcements. The ICT is also utilized to promote awareness and disseminate early warnings to the public via Fixed-Line Disaster Alert System (FLAS). A separate system known as the Government Integrated Radio Network (GIRN) provides radio communication between responders during emergency or disaster. Disaster reporting is now more efficient with the centralized Malaysia Emergency Response System (MERS) emergency hotline[12].



Source: JICA Study Team based on the interview survey for MMD

Figure 7.5.5 Dissemination Flow of Early Warning

7.5.2 Education for Disaster Prevention and Mitigation

Several programs have been implemented to improve the resilience of schools and hospitals against disasters, but the education sector do not have primary and secondary school curriculum for disaster risk reduction.

In conjunction with the Disaster Awareness Day 2011, Malaysia launched the national level campaign on 'One Million Safe Schools and Hospitals' and organized the ASEAN Knowledge Sharing Workshop on Mainstreaming DRR in Education. The Workshop provided the platform for capacity building in mainstreaming DRR in the education sector, particularly in the primary and secondary school curriculum by, inter-alia, sharing sound practices and lessons acquired by ASEAN member states, assessing the state-of-the-art of mainstreaming DRR in education in the ASEAN region and determining performance areas of DRR mainstreaming in curriculum and standards that may be adaptable in the region[13].

[12] HFA Progress Report (2009-2011), Malaysia
[13] HFA Progress Report (2009-2011), Malaysia, modified by the JICA Study Team

Table 7.5.2 Activities for Enhancement of Public Awareness (Malaysia)

	Systems, Activities	Type of Disasters
Public awareness on disasters and disaster risks	Public awareness campaigns, tsunami drills (at selected high risk areas)	Tsunami (MMD)
	Pamphlet, website (http://www.met.gov.my/, http://typhooncommittee.org.com.my/)	Typhoon (MMD)
	Pamphlet, website (http://www.met.gov.my/)	Earthquake, Tsunami (MMD)
	Public education and awareness programs at landslide -prone areas	Landslide (PWD)
	Zero Burnings Campaign	Haze (DOE)
	Exhibition on space-based related to disaster activities	Multi-disasters (MRSA)

Source: HFA Implementation Review-Simplified Version for ACDR2010 (NSC), PowerPoint (MMD)

MMD has some issues and challenges, which include the following:

i) Budget constraints, difficulty in reaching out to the public in masses and campaigns only being done on a small-scale basis.

ii) Closer cooperation with national TV networks, the information and education ministries are very much needed for the outreach program to reach a greater mass of public and school children in order to build a greater awareness and response capability toward a reliance community.

(Source: Questionnaire responses from MMD)

7.5.3 Issues and Needs Identified - Malaysia

Though the disaster loss database is not presently available, the Team considers that Malaysia is capable to build it.

No particular issues and needs were identified in Malaysia.

7.6 Myanmar

7.6.1 Disaster Management Information System (DMIS)

Information system on disaster management in Myamar is summarized as below.

Table 7.6.1 Information System on Disaster Management (Myanmar)

		Availability	Competent Agency
Disaster Management Information System		-	
Disaster Loss Database		-*	
Early Warning System	Flood	○	DMH
	Flash Flood		
	Typhoon/Cyclone	○	DMH
	Landslide	-	-
	Tsunami	○	DMH (JMA, PTWS, ADPC)
	Volcano		
	Storm surge	○	DMH

Source: JICA Study Team, (*) HFA Progress Report (2009-2011) (Legend: ○: available, -: not available)

(1) DMIS and Disaster Loss Database

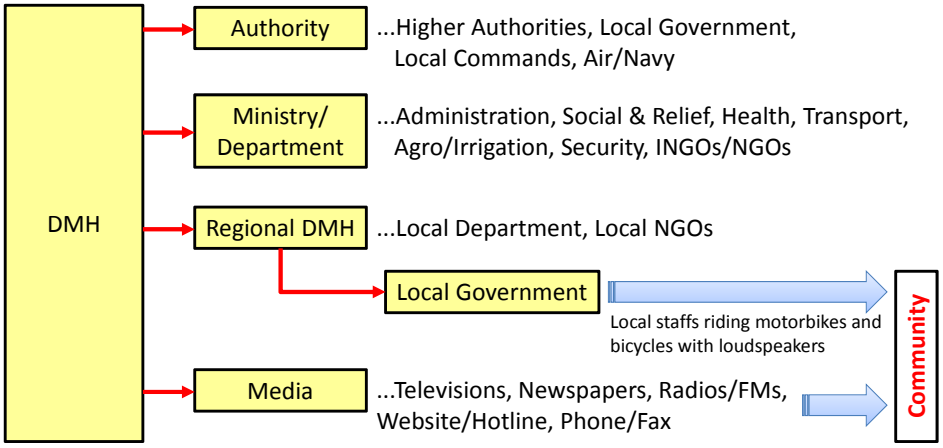
There is no comprehensive DMIS and disaster loss database in Myanmar, but hazard profiles are conducted (Title of report is “Hazard Profile of Myanmar”). The report includes historical data of natural disaster and results of the analysis of each natural hazard in Myanmar.

(2) Early Warning System (EWS)

Forecast of cyclone, flood, storm surge, and heavy rainfall are issued by DMH. The forecast information is issued from DMH to relevant agencies according to transmission flow by fax, phone and SSB (Single Side Band). DMH also delivers early warnings to mass media.

(3) Means of Dissemination of Early Warning

DMH disseminates to residents through television, radio, websites, and so on. The public also receives early warning from local staffs riding motorbikes and bicycles with loudspeakers. However, early warnings have not been effective because dissemination to risk-prone communities has not been systematically implemented.



Source: JICA Study Team based on the interview survey for DMH

Figure 7.6.1 Dissemination Flow of Early Warning

7.6.2 Education for Disaster Prevention and Mitigation

At the primary level, one of the five main areas of life skills subject is 'Environmental Education'. There is a chapter on DRR called 'Caution in Emergencies' that explains human-made and natural disasters. The Ministry of Education (MOE) has revised the General Science subject of the lower secondary school curriculum (Grades 6 to 9) and included the main area of study 'Earth and Space' with lessons on storms. The lower secondary life skills include floods, emergencies, earthquakes, tsunamis, landslides and fire. The revised upper secondary school subjects include a lesson titled 'Earthquake' in Grade 10 English and 'Earth Surface Process' in Grade 11 Geography.

A complementary reading material that contains information on eight disasters is available as a self-study booklet for Grade 5, 6 and 7 students. Reading cards, namely, 'earthquake', 'storms' and 'tsunami' and story books on how to 'Be prepared' are available for non-formal education. These materials cover what to do before, during and after a disaster. The Department of Educational Planning and Training (DEPT), with the support of the Disaster Preparedness and Response Education (DPRE) Working Group has developed a DRR in education training modules in accordance with the five priority areas of HFA, trained township education officers, principals, teachers of cyclone-affected areas and teacher educators of education colleges.

The DPRE Working Group comprise of representatives from DEPT, MOE, UN Agencies, INGOs and NGOs. It was formed in August 2008. The DPRE Working Group collects relevant DRR education materials from various agencies and distributes them as resource packs to schools and trains teachers use them. DRR trainings are provided to teachers and principals of schools in hazard-prone townships. The trainings cover risk assessment, formation of school disaster management committee and school disaster preparedness plan, mock drills and psycho-social support. In higher education, the Ministry of Science and Technology has initiated seminars and technical training on the topics of 'Utilization of Space-based

Technologies for Disaster Risk Management' and 'Quality Control Assessment for Cyclone Shelter Construction'.

Based on the information collected, the following should be carried out:

- More effective coordination among associated organizations,
- Use pay days as an opportunity to put DRR on the meeting agenda (Note: Township education officers and school principals usually have a meeting at the township education offices on pay days.)
- Conduct monitoring visits to foster the use of tools and mechanisms,
- Provide supervision and necessary support to schools,
- Incorporate DRR and recovery concepts and practices in the higher education curriculum and provide professional DRR education programs, and
- Develop degree, diploma and certificate courses on DRR.

(Source: HFA Progress Report (2009-2011), Myanmar)

7.6.3 Issues and Needs Identified - Myanmar

The JICA Study Team identified the issues and needs as shown in the Table 7.6.2

Table 7.6.2 Issues and Needs Identified by the Study Team (Myanmar)

Issues and Needs	Bilateral cooperation
Development of Disaster Management Information System	- Development of disaster management information system based on GIS.
Development of Disaster Loss Database	- Establishment of a mechanism for collecting and accumulating disaster loss data. - Development of disaster loss database and sharing system.
Early Warning [14]	- Development of means of early warning (procedural guidelines and/or facilities/equipment, mechanism) , from governmental agencies to communities; - Implementation of CBDRM
Enhancement of School Education	- Development of teaching guide lines and teacher's training. - Development of teaching materials according to the grade. - Development of disaster simulator for earthquake, smoke and fire extinguish. - Regular disaster drill at school. - Development of education material databases.

Source: JICA Study Team

[14] The views are attributed to the JICA Study Team (2012)

7.7 Philippines

7.7.1 Disaster Management Information System (DMIS)

Information system on disaster management in Philippines is summarized as below.

Table 7.7.1 Information System on Disaster Management (Philippines)

		Availability	Competent Agency
Disaster Management Information System		○	NDRRMC
Disaster Loss Database		○	OCD, PAGASA
Early Warning System	Flood	○	PAGASA
	Flash Flood	-	-
	Typhoon/Cyclone	○	PAGASA
	Landslide		
	Tsunami	○ (Network of earthquake monitoring stations and volcano observatories)	PHIVOLCS
	Volcano		

Source: JICA Study Team, (○: available, -: not available)

(1) DMIS and Disaster Loss Database

The National Disaster Risk Reduction Management Council (NDRRMC) has established an operations center. During emergencies, the NDRRMC Operations Center is activated into an NDRRMC Emergency Operations Center (EOC) and conducts the following:

- Alert and monitoring
- Multi-agency operational coordination
- Response resource mobilization
- Information management.

The operation center has installed a DMIS that is connected with relevant agencies and local governments. In emergency situations, the center collects and integrates information on damages and responses to the disaster to take advantage of the DMIS. However, OCD pointed out a common map format among relevant agencies has not been established. For this issue, it is necessary to further research and analysis, and needs to propose more specific.

There is also the Rapid Earthquake Damage Assessment System (REDAS) as another disaster management system which was developed by the Philippine Institute of Volcanology and Seismology (PHIVOLCS) in 2002-2004. When an earthquake occurs, REDAS determines automatically the earthquake's epicenter and magnitude, and conducts damage estimation. In addition, REDAS delivers the results of estimation to relevant agencies within 15 minutes. The results can aid rescue groups in the prompt deployment of rescue and relief operations, and other life-saving activities.

The Metro Manila Development Authority (MMDA) has established a Flood Control Information Center (FCIC) which is a state-of-the-art nerve center for Metro Manila's flood control and disaster-related operations. The FCIC has 16 LCD monitors connected to over 70

closed-circuit television cameras located in key Metro Manila intersections, flood-prone areas and pumping stations. The FCIC is also connected to the telemetry system which allows the monitoring of possible pumping station operations. The FCIC also monitors the weather conditions in the West Pacific Area by its link to the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) and the National Oceanic and Atmospheric Administration (NOAA) weather monitoring websites. The center is also utilizing an incident management and map navigation software which will collate information on flood and other disaster-related incidents for use during planning and operations[15].

(2) Early Warning System (EWS)

Issuance of early warning of flood and typhoon is under the responsibility of PAGASA, while the monitoring of tsunamis and volcanic activity is under PHIVOLCS. There are currently no mechanisms of forecast and early warning of flash floods.

PAGASA conducts meteorological and hydrological observation, weather forecasting and issuance of flood warning. The river basins where PAGASA conducts flood warning total to only four basins out of 45 strategic basins. In other basins, PAGASA issues heavy rain warning instead of flood warning. The Department of Science and Technology (DOST) has a medium- and long-term plan to increase the target rivers that implements flood forecasting and warning.

PHIVOLCS has a network of earthquake monitoring stations and volcano observatories. A tsunami warning and volcano alert is issued by PHIVOLCS based on observation data. However, the volcanoes with real-time monitoring systems totals to only six out of 23 active volcanoes. The other 17 volcanoes are observed only through their seismic activities. PHIVOLCS desires to prepare instruments for carrying out emergency observation for these 17 volcanoes if their activity went up.

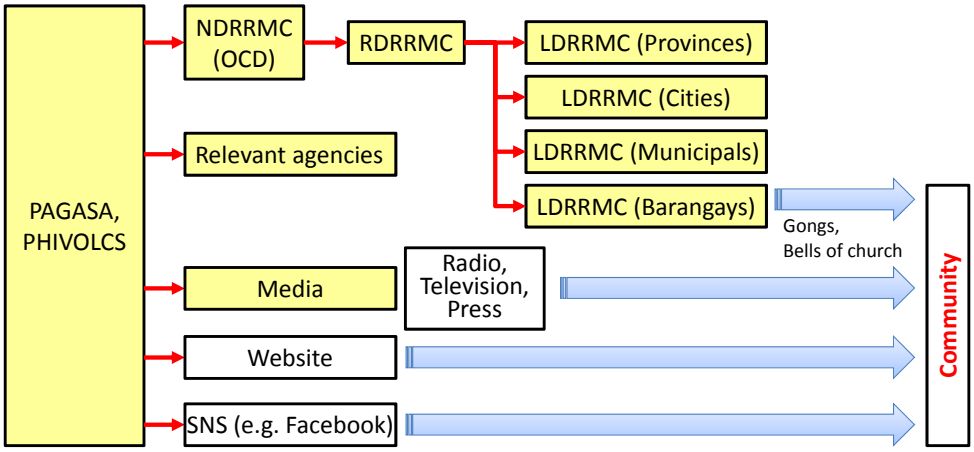
(3) Means of Dissemination of Early Warning

If a weather forecast has reached the criteria of early warning, PAGASA issues the forecast to relevant agencies immediately.

When OCD receives information of early warning from PAGASA, OCD disseminates the warning to residents through local governments (barangays). Barangay captains disseminate the warning to residents using gongs, bells of church. PAGASA disseminates warnings to the public through the PAGASA website, mass media, SNS (e.g. Facebook).

The mechanism of transmitting early warning to relevant agencies (include local governments like barangays) has already been established. The NDRRMC Operation Center receives weather information and flood-related information from PAGASA, as well as information of earthquake, tsunami, or volcanic activity from PHIVOLCS. The Operation Center issues early warning to relevant agencies based on these information.

[15] MMDA, Building a Disaster Resilient Metro Manila (PowerPoint)



Source: JICA Study Team based on the interview survey for OCD, PAGASA and PHIVOLCS

Figure 7.7.1 Dissemination Flow of Early Warning

According to the HFA Progress Report (2009-2011; interim), in terms of flood EWS, a community-based flood EWS and Information Dissemination Network have been implemented by PAGASA. A related program is the Enhancement of Flood Forecasting and Warning System (FFWS), which utilizes three types of flood bulletins:

- Flood Outlook - Possibility of flooding within the next 24 hours, Suggests awareness;
- Flood Alert - Threat of flooding within the next 24 hours, Suggests preparedness;
- Flood Warning - Flooding expected within the next 24 hours or flooding has occurred, Suggests response.

PAGASA implements the following programs:

- Establishment of early warning and monitoring system for disaster mitigation covering Metro Manila and Rizal Province (Pasig-Marikina River basin),
- Improvement of the flood forecasting and warning system in the Pampanga and Agno River basins which involves the construction, procurement and installation of FFWS,
- Strengthening of the flood forecasting and warning system for dam operation covering six dams in Luzon,
- Improvement of flood forecasting and warning system in Magat Dam and downstream communities,
- Strengthening of flood forecasting and warning system in the Bicol River basin.

For geophysical hazards, a community-based EWS for tsunami is being piloted by PHIVOLCS in several high-risk barangays all over the country[16].

[16] Source: HFA Progress Report (2009-2011)-interim, Philippines

7.7.2 Education for Disaster Prevention and Mitigation

There are primary and secondary school curricula on disaster prevention and mitigation. The Department of Education is in charge of school education. The Philippine Information Agency (PIA) is primarily responsible for public awareness and capacity building of local communities.

The Department of Education is continuing the implementation of the project on prioritizing the mainstreaming of DRR management in school and the implementation of programs and projects as mandated by Department Order No. 55 series of 2007. So far, public grade school and secondary school curricula have been updated to incorporate DRR. Lesson exemplars and other learning materials to guide both teachers and school children have been developed.

In addition, the Department of Education has also begun the integration of DRR and climate change adaptation, environment education, road safety and peace education in the basic education curriculum of public schools. The Department of Education has also prepared and distributed education, information and communication materials to schools in hazard-prone provinces on DRR and CCA[16].

Regarding the awareness of tsunami occurrence, people learn through pamphlets and related websites. Signboards are installed in evacuation sites. Evacuation drills are carried out in schools and communities nationwide.

PHIVOLCS has exhibits and learning materials regarding natural disaster. PHIVOLCS invites school students to their exhibits and teaches them on natural disaster.

Source: JICA Study Team

Figure 7.7.2 Exhibition of Learning Materials for Natural Disaster at PHIVOLCS

7.7.3 Issues and Needs Identified - Philippines

The JICA Study Team identified the issues and needs as shown in the Table 7.7.2

Table 7.7.2 Issues and Needs Identified by the Study Team (Philippines)

Issues and Needs	Bilateral cooperation
Development of Disaster Management Information System	- Development of disaster management information system based on GIS.
Enhancement of Disaster Education for CBDRM	- Assistance of CBDRM (e.g. Evacuation drills, Community based hazard mapping, Building shelter management system and evacuation plans, improvement of early warning system, Formulation of community disaster manual and awareness plan) - Development of guide lines how to conduct CBDRM. - Development for knowledge sharing mechanism among communities. - Capacity Building for implementing CBDRM

Source: JICA Study Team

7.8 Singapore

7.8.1 Disaster Management Information System (DMIS)

Information system on disaster management in Singapore is summarized as below.

Table 7.8.1 Information System on Disaster Management (Singapore)

		Availability	Competent Agency
Disaster Management Information System		○ Home Front Crisis MS	MHA
Disaster Loss Database		-	
Early Warning System	Flood	○	NEA (MSS)
	Flash Flood		
	Typhoon/Cyclone		
	Landslide		
	Tsunami	○ (TEWS)	NEA (MSS)
	Volcano	○ (Volcanic ash fallout)	NEA (MSS)
	Smoke Haze Advisory	○	NEA (MSS)

Source: JICA Study Team, (○: available, -: not available)

(1) DMIS and Disaster Loss Database

The SCDF does not need DMIS and disaster loss database for natural disaster because no large disaster has occurred so far.

The SCDF has established by EOC. During emergency situations, the SCDF manages the situation of disaster response.

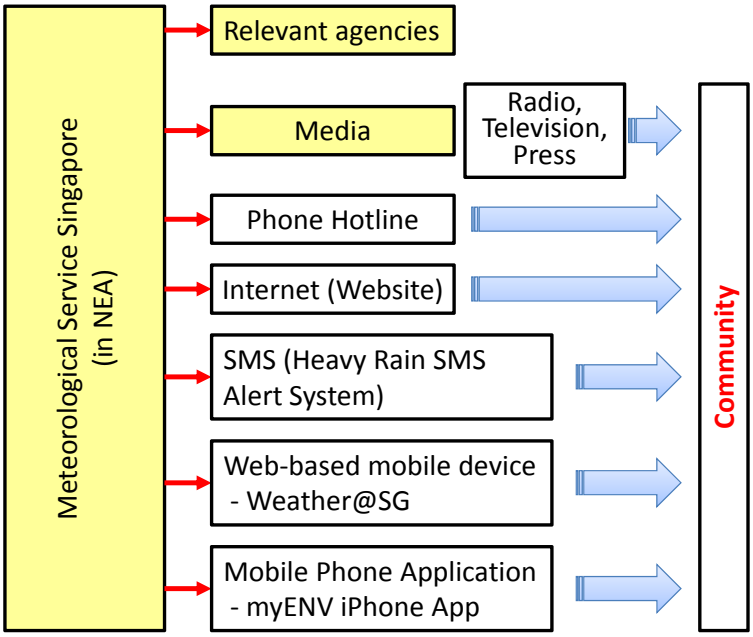
(2) Early Warning System (EWS)

The National Environment Agency (NEA) provides weather surveillance and multi-hazard warning services on a 24/7 basis to the public, industry and relevant agencies in Singapore.

NEA established the Meteorological Service Singapore (MSS). MSS provides the country's weather forecasts, heavy rain warnings, smoke haze advisories, and information of earthquake/tremor/tsunami.

(3) Means of Dissemination of Early Warning

According to the HFA Progress Report (2007-2009), the SCDF has a public warning system (PWS) to provide early warnings to the general population of any imminent threat that could endanger lives and property. In the event of an impending attack by a hostile element or the occurrence of a man-made or natural disaster, the PWS will be sounded to alert the public to seek refuge in communal or household shelters. In conjunction with the activation of the PWS, commercial radio and television stations will also broadcast any advisory messages from SCDF. The Meteorological Service has placed all SOPs for early warnings of heavy floods, prolonged rain, high temperature, strong winds, tremors due to earthquake and tsunami warning[17].

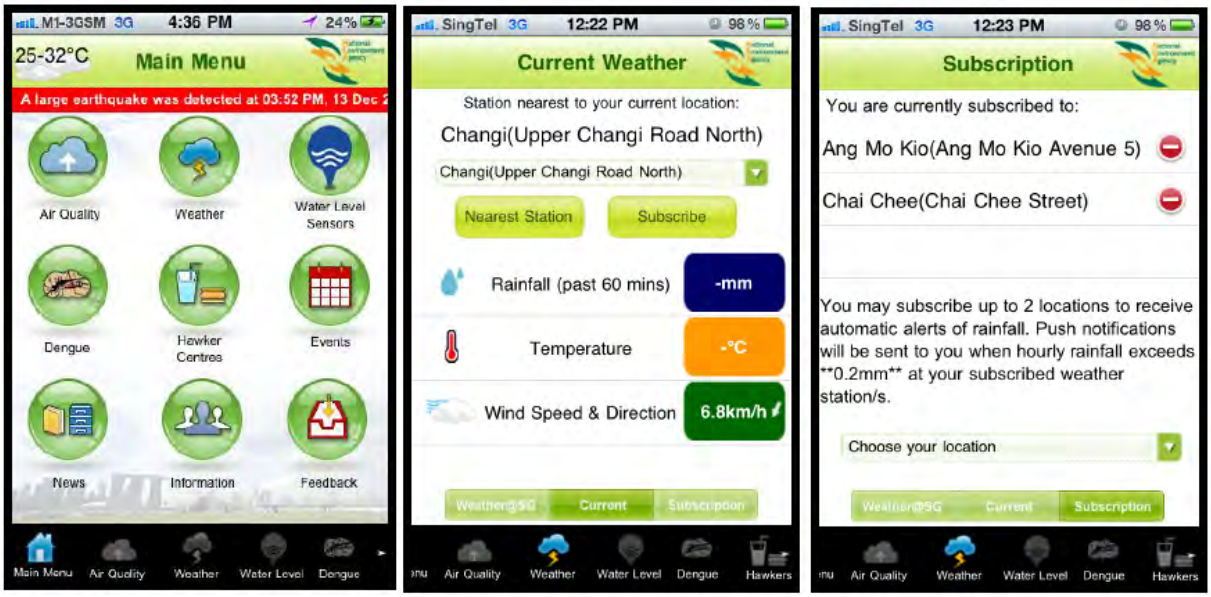


Source: JICA Study Team based on the interview survey for SCDF

Figure 7.8.1 Dissemination Flow of Early Warning

MSS has implemented the "myENV iPhone App" in July 2011 to provide environmental information (including weather information) to iPhone users. The Heavy Rain SMS Alert System is implemented in July 2011 in collaboration with the PUB (national water agency) to provide SMS alerts of heavy rain and high water levels in canals to the public. These systems are effective to disseminate timely and directly to each person in a risk prone area[18].

[17] HFA Progress Report (2007-2009), Singapore
[18] MSS, Overview of Meteorological Service Singapore (PowerPoint)



Source: MSS, Overview of Meteorological Service Singapore (PowerPoint)

Figure 7.8.2 myENV iPhone App

7.8.2 Education for Disaster Prevention and Mitigation

According to the HFA Progress Report (2007-2009), the SCDF works closely with the Ministry of Education (MOE) to incorporate emergency preparedness as a subject within the Civics and Moral Education syllabus for students in the primary and secondary levels. As part of emergency preparedness (EP), SCDF introduces short EP modules on essential skills and knowledge in surviving emergencies for schools to conduct during assembly periods.

Apart from residents and workers, SCDF recognizes that school students form an important niche group in public education efforts. Since 2005, the SCDF has reached out to the youths in secondary schools through the formation of the National Civil Defence Cadet Corps (NCDCC), a uniformed group in which students may participate in co-curricular activities. In 2007, SCDF started to reach out to primary school students through a Fire Station Engagement Program. Liaison officers from fire stations will be deployed to different schools to train students in preparing them to deal with emergencies and threats posed by the new security environment[19].

7.8.3 Issues and Needs Identified - Singapore

No particular issues and needs were identified in Singapore.

[19] HFA Progress Report (2007-2009), Singapore

7.9 Thailand

7.9.1 Disaster Management Information System (DMIS)

Information system on disaster management in Thailand is summarized as below.

Table 7.9.1 Information System on Disaster Management (Thailand)

		Availability	Competent Agency
Disaster Management Information System		-	-
Disaster Loss Database		-*	-
Early Warning System	Flood	○	TMD
	Flash Flood	-	-
	Typhoon/Cyclone	○	TMD
	Landslide	○*	DMR
	Tsunami	○	NDWC
	Volcano		
	Drought	○*	

Source: JICA Study Team, (*) HFA Progress Report (2009-2011) (Legend: ○: available, -: not available)

(1) DMIS and Disaster Loss Database

Various agencies responsible for monitoring meteorological, hydrological and earthquake information (e.g. NDWC, TMD, DWR and RID) collect sets of data (e.g. rainfall, water levels, and seismic data) using observation networks and manage data on database systems. However, some of the databases are isolated. There is a need to integrate their databases.

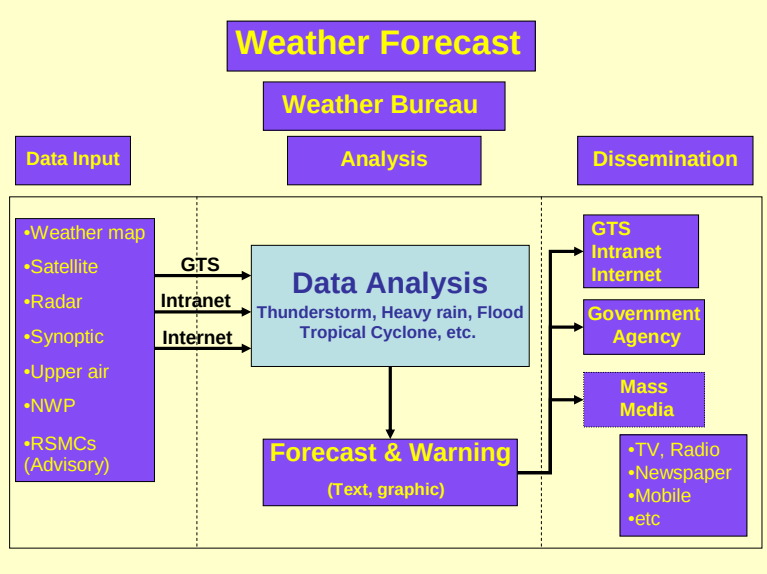
Whether DDPM has developed a DMIS and disaster loss database is yet unconfirmed.

(2) Early Warning System (EWS)

Flood warning and cyclone warning is under the responsibility of TMD, landslide warnings under DMR, and tsunami warnings under NDWC.

NDWC was established in the wake of the experience of the devastating tsunami disaster in 2004. NDWC is in charge of natural disasters only (e.g. geological disasters, hydrological disasters, meteorological disasters, and forest fires). Epidemic and chemical disasters are under the responsibility of DDPM.

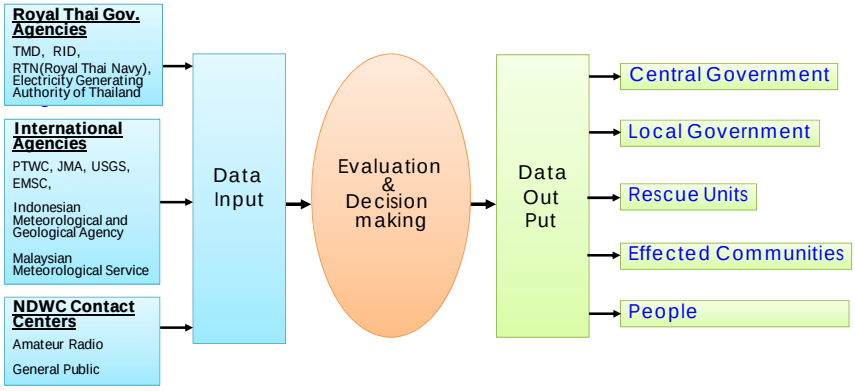
The TMD issues weather forecast and early warning based on meteorological observation data, weather maps, satellite images, weather radars, and so on. TMD delivers forecast and warning to the central government and relevant agencies, local governments, local meteorological observatories, and mass media (e.g. television, radio, newspaper).



Source: TMD, Presentation material (PowerPoint)

Figure 7.9.1 Weather Forecast and Warning Mechanism

The NDWC issues tsunami early warning based on input data from TMD, RID, Royal Thai Navy (RTN), international organizations (e.g. PTWC, JMA, USGS), and NDWC Contact Center (e.g. amateur radio, general public). NDWC then delivers the tsunami warning to the central government and local governments, rescue units, affected communities and people.

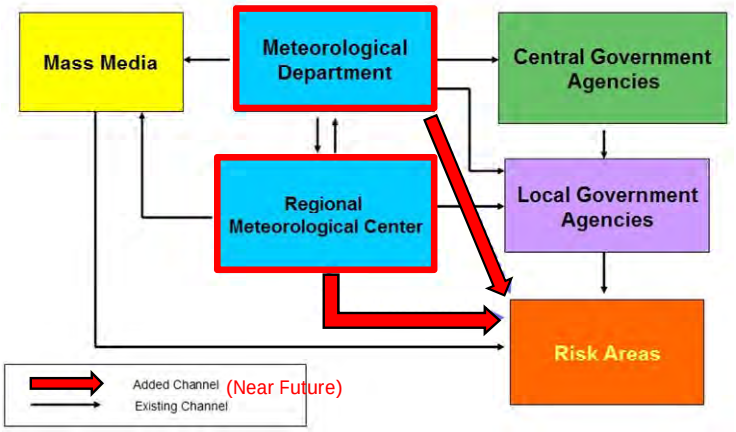


Source: NDWC, Thailand Activities on Disaster Warning at NDWC Operation Center (PowerPoint), simplified by the JICA Study Team

Figure 7.9.2 Tsunami Warning Mechanism

(3) Means of Dissemination of Early Warning

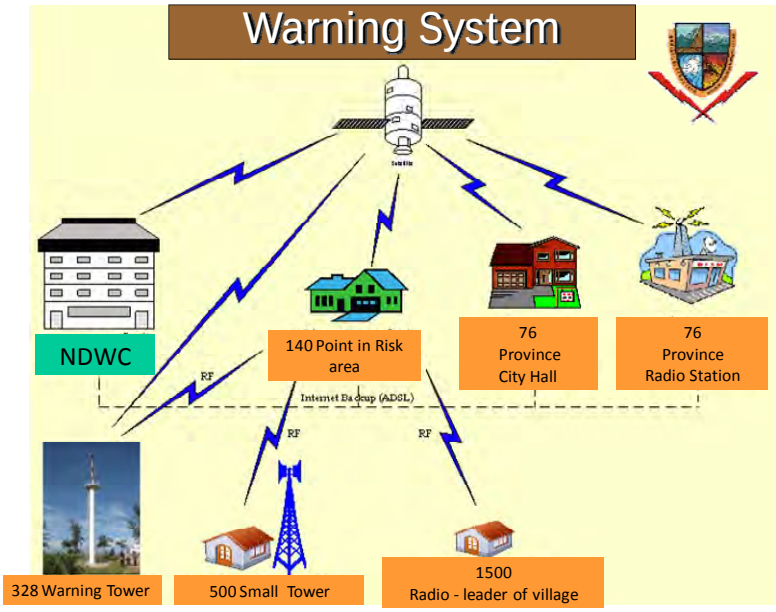
The TMD disseminates early warnings to the public through mass media (e.g. television, radio, newspaper) and local government agencies. TMD is planning to add a way to disseminate early warning directly from TMD and local meteorological observatories to risk areas.



Source: TMD, Presentation material (PowerPoint), red frames added by the JICA Study Team

Figure 7.9.3 Dissemination Flow of Weather Forecast and Warning

In case of NDMC, the means of dissemination are SMS (more than 20 million mobile phones), fax (16 ports), e-mail, mass media (television, radio), warning towers (328 towers, installed also inland), local dissemination network (500 small towers and 1,500 special radios for leaders of village), and so on. Warning towers are 25 m in height and can broadcast sirens and pre-recorded voice messages (in multiple languages). A single tower can cover up to 4 km radius.



Source: NDWC, Thailand Activities on Disaster Warning at NDWC Operation Center (PowerPoint)

Figure 7.9.4 Warning System of NDWC

7.9.2 Education for Disaster Prevention and Mitigation

According to the HFA Progress Report (2009-2011), there is no primary school or secondary disaster prevention and mitigation school curriculum, although various organizations are conducting disaster education at schools in each local government. For example, NDWC and

TMD has created and distributed educational materials such as booklets, posters, etc for students. Large-scale evacuation trainings were implemented three or more times since 2006. However, according to a report, school curricula, education material and trainings are not promoted widely.

For universities, disasters are included in many courses such as natural disasters, earthquakes, so as to enable university student to be aware of hazards in Thailand and on how to properly handle them. Thai universities, in collaboration with the government and private sectors, regularly conduct research and academic activities on disaster preparedness. [20]

From the experience of large-scale disasters caused by floods in November 2011, DDPM recognizes the importance that local governments and local communities understand sufficiently disaster risk in their area. It is necessary to create and announce hazard maps in high resolution to identify areas with high risk. High resolution maps help in considering options on how to avoid accidents in high risk areas. To do so, it is important to prepare and share information related to disaster prevention and mitigation among stakeholders in all levels.

7.9.3 Issues and Needs Identified - Thailand

The JICA Study Team identified the issues and needs as shown in the Table 7.9.2

Table 7.9.2 Issues and Needs Identified by the Study Team

Issues and Needs	Bilateral cooperation
Development of Disaster Management Information System	Development of disaster management information system based on GIS (Considered to be capable to make it).

Source: JICA Study Team

7.10 Vietnam

7.10.1 Disaster Management Information System (DMIS)

Information system on disaster management in Vietnam is summarized as below.

Table 7.10.1 Information System on Disaster Management (Vietnam)

		Available / Not Available	Competent Agency
Disaster Management Information System		-	-
Disaster Loss Database		○	CCFSC
Early Warning System	Flood	○	DMC
	Flash Flood	- (Pilot project)	
	Typhoon/Cyclone	○	NHMS
	Landslide	- (Pilot project)	MoNRE
	Tsunami	○ (Only in Da Nang)	Institute of Geophysics
	Volcano		

Source: JICA Study Team (○: available, -: not available)

[20] Source: HFA Progress Report (2009-2011)

(1) DMIS and Disaster Loss Database

At the national level, disaster monitoring systems installed in Disaster Management Centers (DMC) are placed to monitor, archive and disseminate data on key hazards and damages caused by disasters. In addition, when flood disaster occurs, the DDMFSC is supposed to receive disaster reports including damage information and needs (e.g. food, drinking water, seeds) from PCFSC&SR. The CCFSC monitors the monitoring system and generates damage inventory reports after each disaster and consolidates into one annual national report. According to the HFA Progress Report (2009-2011)-interim, the CCFSC website[21] displays information on main disasters and damage inventory reports since 1989. The CCFSC maintains records for much longer but only on hard-copies.

DDMFSC has prepared some flood hazard maps. In order to make effective use of hazard maps, it is desirable to integrate these maps on GIS to be able to browse the maps freely among disaster management agencies.

(2) Early Warning System (EWS)

Weather forecast and early warning is under the responsibility of the National Hydro-Meteorological Service (NHMS). The NHMS consists of nine regional hydro-metrological centers and 54 provincial hydro-metrological forecasting centers and has observation station networks nationwide. The NHMS collects and archives hydro-meteorological data observed in a considerable number of stations:

- Meteorological stations, hydrological stations
- Aero-meteorological observation stations (e.g. weather radars, radiosonde)
- High-resolution satellite receiving stations (e.g. MTSAT, NOAA)
- Marine hydro-meteorological observation stations.

NHMS issues and disseminates weather forecast and early warning based on those data.

Flood and storm early warning is in DMC's charge. DMC monitors, archives and disseminates data of river monitoring data. DMC performs weather forecast and early warning based on those data. Flood forecast and early warning is provided to relevant national agencies and local governments (province/district/commune). However, reasons for the occurrence of river flood are not only from extreme weather but also from dam discharges. To prevent flood damage induced by dam discharge, regulation of integrated flood control measures, irrigation measures and hydroelectric power is required.

Tsunami early warning is under the charge of the Institute of Geophysics. The Institute of Geophysics has established the operations center for Earthquake Information and Tsunami Warning and has installed ten siren towers in Da Nang. The operations center monitors whether there is possible occurrence of tsunami impact in Vietnam. If a tsunami occurs, early warning is issued and the operations center disseminates the warning to Da Nang directly. The operations center also delivers the warning to relevant agencies/organizations. However, a

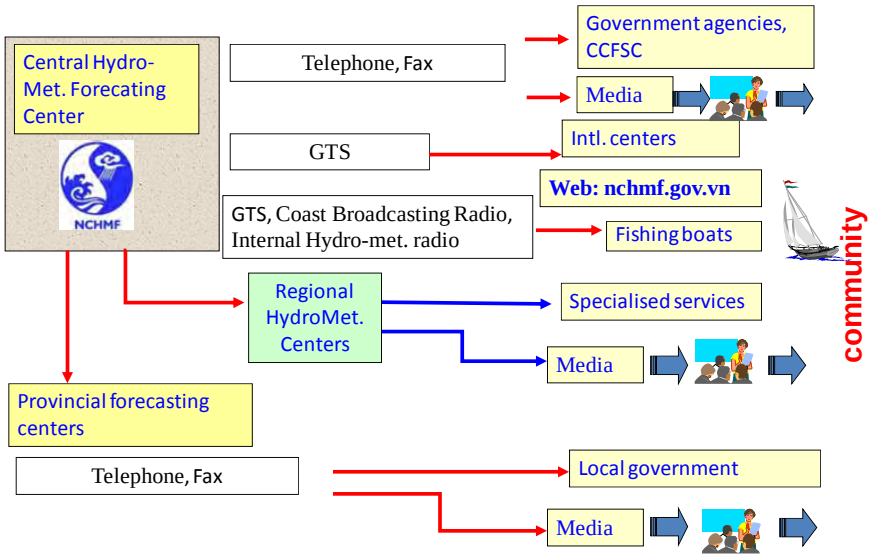
[21] http://www.ccfsc.gov.vn/KW6F2B34/Disaster-Database.aspx#

tsunami is likely to come to coastal areas of Vietnam nationwide, but the means of dissemination is installed in Da Nang only. Therefore, it is necessary to install tsunami observation networks off the coast of Vietnam to establish an early warning system nationwide.

According to the HFA Progress Report (2009-2011)-interim, in recent years, some pilot projects were implemented to monitor and warn residents about landslides and flash floods in few mountainous province using early warning systems installed but the capacity was not very effective and well-functioned[22].

(3) Means of Dissemination of Early Warning

In case of weather forecast and early warning, NHMS disseminates to communities through mass media (e.g. television, radio), the NHMS website and local governments.



Source: NHMS, Brief introduction of the National Hydro-Meteorological Service's activities (PowerPoint)

Figure 7.10.1 Dissemination Flow of Hydro-Meteorological Forecast and Warning

In case of tsunami, if a possible tsunami impact is about to occur in Vietnam, early warning is issued and the operations center disseminates the warning to Da Nang directly using siren networks. The operations center also delivers the warning to relevant agencies/organizations by e-mail, SMS and fax.

[22] Source: HFA Progress Report (2009-2011 interim)

7.10.2 Education for Disaster Prevention and Mitigation

According to the HFA Progress Report (2009-2011)-interim, there is no primary or secondary school curriculum regarding disaster prevention and mitigation. However, there have been numerous educational projects led by the Vietnam National Red Cross (VNRC), donor countries and INGOs. One specific example is the successful program to provide swimming lessons for children in flood-prone areas (Mekong Delta and other central provinces).

In Vietnam, JICA is supporting the project for "Building Disaster-Resilient Societies in the Central Region in Vietnam (DRSC)". In pilot project sites, residents have created an evacuation route map and a rule of information transmission by hand, which has been utilized by them in the region. It is necessary to incorporate certain mechanisms into the national and local government. Mechanisms mean good practices such as the example above are expanded to the communities around and nationwide. For example, to share a list of human resources (e.g. project leaders, communities, professional staffs), tools and guidelines developed in those projects, establishment of sharing system are considered.

7.10.3 Issues and Needs Identified - Vietnam

The JICA Study Team identified the issues and needs as shown in the Table 7.10.2

Table 7.10.2 Issues and Needs Identified by the Study Team (Vietnam)

Issues and Needs	Bilateral cooperation
Development of Disaster Management Information System	- Development of disaster management information system based on GIS.
Development of Disaster Loss Database	- Establishment of a mechanism for collecting and accumulating disaster loss data. - Development of disaster loss database and sharing system.
Early Warning [23]	- Development of means of early warning (procedural guidelines and/or facilities/equipment, mechanism) , from governmental agencies to communities; - Implementation of CBDRM
Enhancement of School Education	- Development of teaching guide lines and teacher's training. - Development of teaching materials according to the grade. - Development of disaster simulator for earthquake, smoke and fire extinguish. - Regular disaster drill at school. Development of education material databases.
Enhancement of Disaster Education for CBDRM	- Assistance of CBDRM (e.g. Evacuation drills, Community based hazard mapping, Building shelter management system and evacuation plans, improvement of early warning system, Formulation of community disaster manual and awareness plan) - Development of guide lines how to conduct CBDRM. - Development for knowledge sharing mechanism among communities. - Capacity Building for implementing CBDRM

Source: JICA Study Team

[23] The views are attributed to the JICA Study Team (2012)

CHAPTER 8 PREPAREDNESS FOR EFFECTIVE RESPONSE

8.1 Brunei

8.1.1 Current Situation of Preparedness for Emergency Response

A national standard operating procedure (NASOP) is a living document which can be reviewed and updated when necessary. The NASOP of Brunei Darussalam is up-to-date as of April 2012. NASOP is one of the two components of the Brunei National Disaster Management Plan and is the basis for local governments in preparing their local level disaster management plans.

The Disaster Command Center (DCC) is the nerve for disaster operations at the national level. It is housed at the NDMC and will be the central place for operation, planning and logistic support for national level disasters. In addition, the District Emergency Operation Center (DEOC) has been established under the District Disaster Management Center at the district level. Respective district offices of every district are responsible to set up DEOCs as the implementing organization for disaster management in the district level.

In the onset of a disaster, an incident command post (ICP) is established. Training has been provided to those who are in charge of ICP and contingency funds are allocated to several ministries.

8.1.2 Issues and Needs of Assistance for Emergency Response

(1) Issues[1]

a) To enhance expertise to manage certain disaster such as Tsunami

(2) Needs[2]

a) Capacity development for disaster management staffs

8.2 Cambodia

8.2.1 Current Situation of Preparedness for Emergency Response

NCDM has drafted the National Emergency Management Policy since 1997, while the Cambodia Red Cross prepares its own response policy. The question remains if the former policy is practiced as indicated, under the condition of less political authority over the policy.

NCDM, on the other hand, is expanding its emergency response function by establishing an Emergency Coordination Center.

NCDM has prepared a National Contingency Plan, which is still subject for approval by issuing a decree, since 2011. It is expected that this national plan will be used as a guideline

[1] The view in a) is identified by NDMC in the interview with the JICA Study Team.
[2] The view in a) is identified by NDMC in the interview with the JICA Study Team.

for provinces for the preparation and implementation of the provincial contingency plan. Local approaches for emergency response are observed, such as disaster preparedness plans formulated at Svay Rieng Province and flood emergency management strengthening programs that were implemented in three provinces. There are other plans to deal with disasters that were derived from epidemic diseases.

In a disaster situation, NCDM is supposed to establish a command system for rescue operation. The prime minister, his designated senior minister (who is posted to lead NCDM) or the secretary general of NCDM will command other related ministries or government agencies to implement responsive operations by organizing multi-sectoral working groups for emergency situations.

NCDM, in collaboration with PCDM and/or MCDM, is supposed to prepare special operation plans for areas affected by disaster strikes.

Emergency response and rescue operation costs are budgeted annually.

8.2.2 Issues and Needs of Assistance for Emergency Response

(1) Issues[3]

a) To formulate disaster preparedness and contingency plans in every province, district and commune (only a few projects have focused on such plans at the local level)

b) To mobilize sufficient contingency fund for NCDM

c) To introduce an appropriate mechanism for using finance service to implement policy and plans especially at sub-national levels

(2) Needs[4]

a) Preparation of contingency plans at all local levels; establishing its systematic mechanisms through capacity development and institutionalization

b) Establishment of the mechanism for financial service to mobilize its resources for the use of available funds at sub-national levels

8.3 Indonesia

8.3.1 Current Situation of Preparedness for Emergency Response

There have been several preparedness as well as contingency plans formulated at National level. Contingency plans are also supposed to be formulated by a few provinces and regencies/cities. BNPB prepares the guideline for planning and provides training for all 33 provinces. BNPB leads and coordinates to organize regular stakeholders' meeting among central agencies and BPBDs for local contingency planning.

[3] The views in a) and b) are identified by NCDM in the interview with the JICA Study Team. The view c) is identified in Cambodia (2009) *Progress Report on the Implementation of the Hyogo Framework for Action (2007-2009)*

[4] The view in a) is identified by the JICA Study Team, while the view in b) is identified in Cambodia (2009) *National progress Report on the Implementation of the Hyogo Framework for Action (2007-2009)*

According to Regulation No. 22, Indonesia's disaster management budget is consists of i) Disaster management reserve fund, ii) BNPB budget iii) BPBD budget, iv) donation/grant and foreign loan, and v) Pre- and Post disaster activities allocation in departments/agencies. While National Coordinating Board for Disaster Management could only manage limited amount on-call budget, BNPB is able to manage the reserve fund for emergency response and post-disaster stages.. The budget allocation to BNPB was increased by 400%, amounting to 800 million Rupiah during the years 2010-2011[5]. The direct budget allocation from the central to the local governments amounted to 108 million Rupiah during the same period. It is planned that in 2012 rehabilitation and reconstruction budgets may be used at the district/city level

In a disaster situation recognized as one at local level, BPBD is responsible for the coordination in utilizing emergency funds from its province, NGO assistance, and resources from communities. BPBD has a "quick response team" to conduct needs assessment when a disaster strikes. In the case of DKI Jakarta, though it is still recognized as local disaster, BNPB rescue resources will also be provided because it is a special capital territory.

BNPB Head Regulation No. 10 defines the command structure for emergency response. BNPB executes during national level disaster while BPBD does for local levels. Nevertheless there are distinctions of national and local levels of disasters, while the criteria of the levels are still ambiguous.

There are emergency items stored in every local site. Villages, for example, have a day's worth of stock of such emergency items. If the emergency situation continues more than three days, the provincial social unit will provide support items. As for evacuation sites, the case of DKI Jakarta has identified areas against flood disasters at least.

8.3.2 Issues and Needs of Assistance for Emergency Response

(1) Issues[6]

a) To promote awareness among both government and communities for disaster contingency needs and preparedness plans

b) To monitor and evaluate local disaster management as well as contingency plans to be planned, budgeted and implemented

c) To clarify the regulation and mechanism to govern disaster budget with smoother bureaucratic process

(2) Needs[7]

a) Awareness-building by establishment and publication of accessible information concerning disaster risks as well as emergency response plans at each local level

[5] Indonesia (2011) *National Progress report on the implementation of the Hyogo Framework for Action (2009-2011)*, p.26.

[6] The views a), c) and d) are identified in the answer sheet of the Survey questionnaire and in Indonesia (2011) *National Progress report on the implementation of the Hyogo Framework for Action (2009-2011)*, while the view in b) is identified by the JICA Study Team.

[7] The views a) b) and d) are identified by the JICA Study Team, while the view in c) is identified in Indonesia (2011) *National Progress report on the implementation of the Hyogo Framework for Action (2009-2011)*.

b) Inclusion of monitoring and evaluation mechanism for implementation of local disaster management plans

c) Establishment of a firmer and more transparent regulation and mechanism of disaster budget management

8.4 Lao PDR

8.4.1 Current Situation of Preparedness for Emergency Response

Preparedness and contingency plans have been prepared for certain disasters (mainly flood). The current contingency plan is being reviewed to be revised. This will include the preparation of SOPs. The emergency response is supposed to be headed by local level disaster management organizations for mobilizing assistance resources from the government, the army and local communities.

Some resources for emergency are allocated to the national as well as provincial levels. Ministries such as Health, Public Works and Transportation, Agriculture and Forestry, and Defense have some financial reserves for emergencies, respectively. The Ministry of Labor and Social Welfare, of which NDMO is part as a division, has allocated stocks such as shelter materials and food for emergency assistance at various administrative levels.

In case of a disaster, the Ministry of Foreign Affairs will ask for international/local NGOs to mobilize assistance. The NDMO, with its Disaster Assessment Committee, collects pre- and post-disaster information with its partners' assistance. Although the Emergency Task Force is set-up within NDMC to disseminate information from the national to the community level, there are still challenges in coordination and further exchange of information. This issue is taken up in the draft National Disaster Management Plan as a proposal for the establishment of a Disaster Response Coordination Center. The center is to be operational in the onset of a disaster. NDMO on the other hand is in need of an Emergency Operation Center as its internal function.

8.4.2 Issues and Needs of Assistance for Emergency Response

(1) Issues[8]

a) To formulate well-designed standard operating procedures (SOP)

b) To mobilize adequate manpower and budget for NDMO

c) To improve inter-agency coordination for emergency response arrangement

d) To improve horizontal information exchange between national and multilateral stakeholders

(2) Needs[9]

a) Preparation of SOP

[8] The views in a) b) and d) are identified by NDMO in the interview with JICA, while the view in c) is identified by the JICA Study Team.

[9] All the views are identified by NDMO in the interview with the JICA Study Team.

b) Establishment of a Disaster Response Coordination Center to resolve information coordination failure at the onset of disasters.

c) Establishment of an Emergency Operation Center within NDMO

8.5 Malaysia

8.5.1 Current Situation of Preparedness for Emergency Response

Malaysia has prepared SOPs in seven different disasters, namely, i) flood, ii) forest fire/open burning and haze, iii) industrial disasters, iv) bencana industry petroleum, gas dan petrochemicals, v) earthquake, vi) tsunami, and, vii) drought. The Safety Guidelines for Facing Crisis and Disasters have also been prepared.

In case of a disaster, an On Scene Command Post (OSCP) is established as a command structure and control base. The Royal Malaysia Police appoints an officer to head the OSCP. The OSCP mobilizes its communication items to create a communication network and coordinates with the Disaster Operations Control Center (DOCC) at each management level. DOCCs are set up according to the level of disaster. Below are the disaster levels and DOCC locations:

a) Level 1 disaster (a disaster struck within a district managed by DDMRC) - District Office;

b) Level 2 disaster (a disaster struck in wider areas than a district managed by SDMRC) - State NSC Operations Room;

c) Level 3 disaster (a disaster struck in wider areas than a state managed by CDMRC) - NSC Operations Room.

The NSC has formed the Special Malaysia Disaster Assistance and Rescue Team (SMART) since 1995. SMART has approximately 90 staffs as secondments from various ministries for a period of three years or more. They are called when a disaster level is more than what the local disaster management level can handle and when a request comes nationwide especially during the monsoon season.

8.5.2 Issues and Needs of Assistance for Emergency Response

(1) Issues

a) Not specifically identified

(2) Needs[10]

Malaysia is rather in a position to address the needs of other member countries of ASEAN in the following areas.

a) Provision of training for extended joint exercise of rescue teams among ASEAN countries

[10] The view is identified by the JICA Study Team.

8.6 Myanmar

8.6.1 Current Situation of Preparedness for Emergency Response

The Standing Order has been the principal document for preparedness in Myanmar. The document served as a contingency plan since it was prepared in 2009. It describes what institutional and organizational structures are arranged in the form of committees and ministerial management for the different disasters in various stages (normal times, alert and warning stage, during natural disasters, relief and rehabilitation stage). The inter-agency contingency plan is in place with budget arrangement. Individual contingency plans are also prepared and updated at various government levels. Contingency plans are also prepared by local NGOs.

A presidential decree for the formation of the MDPA and National Search and Rescue Committee (issued on April 22, 2011) stipulates the responsibility of MSWRR for responsive activities. RRD under MSWRR plays a central role for the provision of relief items and reception of foreign aid. Emergency medical services are provided by the health department and military medical team. Corpse management is handled by the National Search and Rescue Committee established by the Presidential Decree in 2011.

Emergency fund is prepared at the presidential office for the event of an emergency. Non-food items for 55,000 households have been stocked nationally. In some disaster-prone areas, safe shelters have been constructed.

Search and rescue drills are provided at township levels by the fire services department. There are 30 participants that are benefited for each drill.

8.6.2 Issues and Needs of Assistance for Emergency Response

(1) Issues[11]

a) To enhance human resources and expertise among government agencies, including RRD

b) To increase non-food items and hygiene kits for emergency aid

c) To mobilize contingency funds

d) To strategize and institutionalize capacity-building activities for disaster response (as drills, simulation exercises are conducted in an ad-hoc manner)

(2) Needs[12]

a) Institutionalization of capacity development programs for government officers to obtain necessary expertise

b) Planning and establishment of resource mobilizing mechanism, through possible legal modification, for raising contingency fund together with increment of relief items and stocks

[11] The views in a), b) and c) are identified by RRD and in Myanmar (2010) *National Progress Report on the Implementation of the Hyogo Framework for Action (2009-2011)- interim*, while the view in d) is identified by the JICA Study Team.

[12] All the views are identified by the JICA Study Team.

8.7 Philippines

8.7.1 Current Situation of Preparedness for Emergency Response

It is planned to prepare a National Disaster Response Plan, which is a scenario-based disaster preparedness plan including the system of search, rescue and recovery in each rescue area.

With the support of UNHCR since 2003, the manual by the title of Contingency Planning for Emergency has been produced and distributed to local government units to develop their contingency plans. Most cities/municipalities have prepared contingency plans for flood hazard. Nevertheless, results of a disaster preparedness audit that was conducted to survey local government units found that 33% of provinces, 34% of cities and 60% of municipalities are not prepared in terms of the functionality of the Local Disaster Risk Reduction and Management Council (LDRRMC), availability of evacuation centers, appropriate equipage, and quality of the disaster risk management plan[13].

Financial reserves for emergencies are secured under the Disaster Risk Reduction and Management Fund". Both the national and local government levels have prepared quick response funds or stand-by funds for relief and recovery programs.

During response and relief operations, OCD operates and maintains the NDRRMC Operation Center (it becomes Emergency Operations Center in a disaster).

Drills are regularly conducted in schools and hospitals by the Departments of Education and Department of Health. Every year, a National Disaster Consciousness Month is set where earthquake drills and search and rescue exercises are conducted. In the case of Metro Manila, a flood disaster preparedness program, called the Metro Manila Inclement Weather Emergency Preparedness and Response Plan has been prepared. Alliances like community-based preparedness and response groups are created with participants coming from local communities and the private sector. Through the program as an example of public-private partnership, flood boats are designed and fabricated for use, not only during flood disaster, but during normal circumstances for clean-up operations.

It is observed that rescue items and stockpiles are reserved within containers under the bridges or spaces as such.

8.7.2 Issues and Needs of Assistance for Emergency Response

(1) Issues[14]

a) To include a contingency plan into the local level disaster risk reduction plans

b) To revise contingency plans as the national disaster response plan, making it responsive to multi-hazards

c) To mobilize local disaster risk reduction and management fund as Act 101211 requires

[13] The Philippines (2011) *National Progress Report on the Implementation of the Hyogo Framework for Action (2009-2011)-Interim*, p.29.

[14] The views in a) b) and c) are identified by OCD, while the view in d) is identified by the JICA Study Team.

d) To increase relief items for all local administration level (to identify local units where relief items are inadequate)

(2) Needs[15]

a) Preparation of multi-hazard type of contingency plan together with SOPs

b) Preparation of local disaster risk reduction plan containing local contingency plan, when necessary

c) Standardizing local disaster risk reduction plan by strengthening knowledge management of good practices for planning and preparedness

d) Assessment of the status of stockpiles and its distribution system

8.8 Singapore

8.8.1 Current Situation of Preparedness for Emergency Response

The Operations Civil Emergency (Ops CE) Plan is Singapore's national contingency plan. The communities are provided with Community Emergency Preparedness Program (CEPP) by SCDF. Community exercises are conducted and the public is provided with civil emergency handbooks.

SCDF conducts community exercises annually. There are 87 communities divided into four areas according to SCDF Division Headquarters. Exercises are conducted in 48 communities each year, also known as the Emergency Preparedness Day (EP Day). It serves as a platform for grassroots volunteers and residents to practice how to mobilize their resources and deal with large-scale emergencies within their neighborhood[16].

Singapore has a Disaster Assistance and Rescue Team (DART) for emergency operations.

8.8.2 Issues and Needs of Assistance for Emergency Response

(1) Issues

a) Not specifically identified

(2) Needs[17]

Singapore is rather in a position to address the needs of other member countries of ASEAN in the following areas.

a) Provision of training for extended joint exercise of rescue teams among established countries

b) Technical assistance, especially for urban disaster response planning and provision of training programs through Civil Defense Academy

[15] The views in a) and b) are identified by OCD and Metro Manila Development Authority, while the views in c) and d) are identified by the JICA Study Team.

[16] http://www.scdf.gov.sg/content/scdf_internet/en/community-and-volunteers/community-preparedness/community-programmes/community-driven-exercises.html [Accessed: May 25, 2012]

[17] The view in a) is identified by the JICA Study Team as the extension of SCDF's actual performance, while the view in b) is identified both by SCDF and the JICA Study Team in the interview.

8.9 Thailand

8.9.1 Current Situation of Preparedness for Emergency Response

Emergency relief system together with other arrangements for disaster management is a part of Thailand's National Economic and Social Development Plan (both the 10th and the 11th plans).

The National Disaster Prevention and Mitigation Plan B.E. 2553-2557 (2010-2014) contain the strategies on "preparedness arrangement" and "disaster emergency management". Also contained are "standing orders on disaster" which instruct the different ministries with additional duties in emergency situations and "disaster countermeasure procedures". The procedures are taken by the national command headquarters, local command centers of all levels and agencies for each stage (i.e., pre-disaster, during-disaster and post-disaster stages) of 14 defined disasters. In accordance with the national plan, all provinces are supposed to prepare their respective plans.

The emergency center with eight divisions consisting of various agencies is put in place during disaster.

In response to the flood disaster in 2011, DDPM will prepare more practical emergency response plan. Also, a disaster-by-disaster master plan is supposed to be prepared for effective response.

Thailand is legally required to test the plan, monitor and evaluate the efficiency of the process. The simulated exercises are conducted every year by assuming a specific type of disaster, which is also aimed for enhancing the capacity and skills of the emergency response teams for real situations. These exercises are implemented at the national, cluster provincial, provincial and district levels. These also help people to be well-prepared for the onset of disasters.

As for financial arrangements, there are victim compensation and recovery budgets for flood-affected provinces additionally approved for recent disasters.

8.9.2 Issues and Needs of Assistance for Emergency Response

(1) Issues[18]

a) To formulate master plans for various disasters.
b) To improve information sharing among government agencies on disasters
c) To improve the compensation mechanism
d) To share the victims' database prepared at local level with the central government for verification

(2) Needs[19]

a) Preparation of disaster-by-disaster master plans

[18] The view in a) is identified by the JICA Study Team, while the views in b), c) and d) are identified in Thailand (2011) *National Progress Report on the Implementation of the Hyogo Framework for Action (2009-2011).*
[19] All the views are identified by the JICA Study Team.

b) Re-arrangement and integration of disaster management information system

c) Reformation of compensation mechanism by integrating victims' database

8.10 Vietnam

8.10.1 Current Situation of Preparedness for Emergency Response

100% of local entities from commune levels conduct the planning of disaster preparedness and response by reviewing past lessons in order to reflect for new and upcoming ones. Local entities also strengthen their organizational structures. The same applies to the national level conducted by CCFSC and to the sector level by relevant ministries. Nevertheless, such planning is conducted chiefly by the Ministry of Agriculture and Rural Development (MARD) and its branches with less effective coordination and participation.

Due to the reporting failure revealed by eight provinces in disaster situations, it was instructed to craft the standard manual for disaster assessment. It is expected to prepare the SOP as well in the process of preparing the manual.

About 2% to 5% of the national and provincial budget for the Ministry of Planning and Investment and the Ministry of Finance is set aside as the budget for emergency response. The use of emergency funds for these two ministries is a subject for consultation together with MARD.

The requirement of the ordinance is that every government agency and individual should stockpile sufficient material reserves such as i) rock, sand bag, stone, bamboo for rescuing infrastructure failure, ii) life vest, lifebuoy, boat for rescuing people, and iii) foods, fuel medicines for surviving. CCFSC instructs provinces and relevant ministries to stockpile and reserve funds as well as basic equipments such as medicines (by Health Department), seeds (by DARD), school supplies (by Education and Training Department), rock, cement and machinery (by Transport Department)[20].

Under the Fatherland Front, mass organizations are networked strongly for response activities. This makes Vietnam's response capacity for evacuation, search and rescue strong, while preparedness and planning for rehabilitation and risk reduction is still weak.

8.10.2 Issues and Needs of Assistance for Emergency Response

(1) Issues[21]

a) To improve technical and institutional capacity

b) To shift to a multi-sectoral approach, involving other sectors and civil societies, from agriculture sector-centered responsive measures

c) To promote and conduct simulations/rehearsals for various disasters in every communes

d) To prepare and preserve adequate recovery and rehabilitation resource

[20] Vietnam (2010) *National Progress Report on the Implementation of the Hyogo Framework for Action (2009-2011)-Interim*, p.35.

[21] All the views are identified by the JICA Study Team.

e) To develop SOPs by building awareness of it

(2) Needs[22]

a) Preparation of multi-hazard preparedness and response plans for all levels together with the introduction of participatory mechanism.

b) Preparation of SOPs

[22] All the views are identified by the JICA Study Team.

CHAPTER 9 COOPERATION TO ASEAN

The projects that have been implemented with various funds are categorized in accordance to AADMER WP, i.e. (a) Strategic component, (b) Building blocks of AADMER WP. The strategic component consists of: (1) Risk Assessment, Early Warning and Monitoring, (2) Prevention and Mitigation, (3) Preparedness and Response, and (4) Recovery. Among the above four, only Component 3: Preparedness and Response shows a systematic implementation in accordance to AADMER WP. It is judged that projects/programs need to be formulated and implemented in accordance with the AADMER WP so that the original concepts are systematically realized. Project/program information provided by ADCM was summarized in Appendix-3. A summary of the progress is as follows:

9.1 Strategic Component

- Three major projects are in the pipeline under the strategic component Risk Assessment, Early Warning and Monitoring (RAEWM):
  1. ASEAN-wide Disaster Risk Assessment
  2. Satellite-based Disaster Monitoring System
  3. GIS-based Disaster Information –Sharing Platform for early warning

  All three are ICT-related. In April 2012, the PDC with US-Aid launched a project to develop and deploy a Disaster Monitoring and Response System (DMRS) for the AHA Centre. JAIF is identified as a potential fund for item 2 and item 3 above. Further efforts need to be given to RAEWM due to 'paradigm shift' from response to preparedness made during the World Conference on Disaster Reduction in 2005.
- One project is completed. Four projects are on-going and one in the pipeline under the strategic component "Prevention and Mitigation" with funding from WB-GFDRR. Much emphasis has been given to AADMER WP "2.1 Implementing National Action Plans on Disaster Risk Reduction and Strengthening Legal and Institutional Frameworks", and "2.3 Mainstreaming Disaster Risk Reduction in Education and Health Sectors".
- Nine on-going projects and one in the pipeline under the category of Preparedness and Response. Much attention has been given to Preparedness and Response for emergency response with funding from AusAid-AIFDR, USTATF, USFS, etc. JAIF is available for the fund to the ASEAN-Japan stockpile. It is noted that JAIF has contributed to a fully operational AHA Centre.
- One project is in the pipeline under the category of Recovery

9.2 Building Blocks of AADMER WP

- Six major projects/programs are ongoing under Building Blocks of AADMER WP, with funding from EU-DIPECHO, WB-GFDRR, AusAid-AIFDR and so on. JAIF is being utilized for information management and communication technology to strengthen the operation of the AHA Centre.

Appendix-1

List of Organization and Persons the Study Team Visited

List of Persons who met with JICA Study Team during the Survey

Persons the Study Team met during the Survey are listed below. The information is limited to names, positions and organizations; telephones numbers, e-mail address or other personal information are not included.

1. Brunei

Organization	Position	Name
National Disaster Management Center	Director, National Disaster Management Center,	Col. Dato Paduka Haji Rosli bin Chuchu,
	Special Duties Officer, NDMC,	Abdul Rahim HS Ismail
	Special Duties Officer, NDMC,	Rina Nurhafizah Rezza Binti Abdul Rani,
	Special Duties Officer, NDMC,	Mohd Adib Mataki,
	Senior Superintendent, Fires & Rescue, NDMC,	PG Hj Sabli Pg Damit,
	Senior Superintendent, Fires & Rescue, Tel:	Sallehuddin HJ Ibrahim,
	Senior Superintendent, Fires & Rescue, NDMC,	Haji Ahmad Haji Mohd Daud,
	Assistant Superintendent, Fires & Rescue, NDMC,	PG. HJ Shaharliddin Bin PG HJ Metali,
Kemuncak Bersinar Company	Diretor, Kemuncak Bersinar Company (KBC Chemical company),	HJ Mohd Haslin B. HJ Abd Karim,
	Assistant technical staff, KBC/NDMC	Nushi Nakamura
Tutong District Office	Acting Tutong District Officer	Hj. Muhd Suffion Hj Bungsu,
	Acting Assistant Tutong District Officer,	Hj Haizul Rizal Hj Yahya,
	CTA,	Marjubi Hj Abd Salam,
	STA,	Rasu Helen bin Sikal,
	Acting STA,	Md Shahrul Nizam Bin Hj Metassim,
Survey Department	Deputy Surveyor General	Ali Bakar Kasim
	Acting Surveyor General	Arefin Jaya
	Acting Surveyor General	Dr. Hjh. Mas Suriawati
	Senior Surveyor	Murni Abd. Rohim
	Aq. Senior Surveyor	Abd. Aziz D.H. Abdullah
	Senior Surveyor (Cadastre)	Pg Hjh. Hasnaliati PHA Momin
	Senior Surveyor (Geodetic)	Mahadi Tahir
	Senior Surveyor (KT)	Dr. Hj. Norzamni Salleh
	Senior Surveyor	Zakaria Ama
Department of Civil Aviation	Meteorological Officer	Dr. Hj. Sidup
	SMO I	Pg Zakiah Pg Hj. Yussof
	SMO I	Hjh. Timbang Zakaria
	Meteorological Supervisor	Hj. Rosli Hj. Buntar
	SMO I	Hjh. Saidah Hj. Mirasan

2. **Cambodia**

Organization	Position	Name
National Committee for Disaster Management	Deputy Director General, National Committee for Disaster Management	H.E. Ross Savann,
	Head of Technical Operation Division, NCDM	Mr. Ros Chanborith,
	Training Officer, NCDM	Mr. Khoun Phanna,
	Administration Office, NCDM	Mr. Seang Monith
Ministry of Land-use Management Urban Planning and Construction (MoLMUPC)	- Deputy Secretary General, Board of Cambodia Architects - Member of Cambodian Hyman Rights Committee (Government), - Director of Urban Planning Department Law (Ph.D) Architect and Town Planner (MA)	Mr. Pen Sophal, Ph.D
	Deputy Chief Urban Planning Office	Ly Chanphakdey
Department of Hydrology and River Works, Ministry of Water Resources and Meteorology	DDG (Deputy Director General) of Technical Affaire and Director;	MAO Hak
Ministry of Industry, Mine and Energy	Advisor to MIME	Mr. Much Chhun Horun
	Labor Office, Department of Geology, MINE;	Mr. Cheng Ngak
	Deputy Director, Department of Energy Technique	Mr. Heang Bora
	Advisor for Improving Mineral Resources Sector, General Department of Mineral Resources	Naoaki NAKAMURA Dr. Eng
Ministry of Post and Telecom (MoPT)	Deputy Director General, Administration and Finance	Mr. Chhy Sokha,
	Deputy Director General, Department of Frequency;	Mr. Phelk Mao,
	Deputy Director;	Mr. Sambath Narith
Siem Reap Province	Deputy Director of Social affair,	Chhun Sao,
	Director of Social affair,	Or Mao,
	Deputy Director,	Kang Chantra,
	Deputy Director,	Soeur Seyharith,
	Deputy Director,	Ngoun Somet,
	Director PDOWRAM,	Nuon Kresns,
	Director POEYS,	Ung Sireidy,
	Deputy Mayor of Siem Reap city,	So Platong,
	Deputy Director of Land management	Uth Sam Oeng
Public Works, Ministry of Public works and Transport;	Director General, Public Works, Ministry of Public works and Transport;	Mr. KEM BOREY, DG
	Director, MOPWT;	Mr. CHHIM PHALLA, Director
	Director, MOPWT;	Mr. KOUNBUN THOEUN, Director

	Chief Advisor	Tadao KUWANO,
Japan External Trade Organization (JETRO), Cambodia	Representative	DOHO Kiyotaka

3. **Indonesia**

Organization	Position	Name
Embassy of Japan in Indonesia Mission of Japan to ASEAN	First Secretary	Yasuhiro NGASAKA
JICA ASEAN	Principal Representative for ASEAN Coordination	MATSUDA Norio
JICA Indonesia	Representative	OKITA Yosuke
	JICA Expert on Integrated Water Resources Management	SAWANO Hisaya
	JICA Expert, Chief Advisor of the Project for Capacity Development of Jakarta Comprehensive Flood Management	TANAKA Takaya
	JICA Senior Advisor	BABA Hitoshi
Center For Disaster Mitigation, Institute of Technology, Bandon	Dr. Eng Hamzah Latief, Head of CCMD (CCMD: Center for Coastal and Marine Development)	Dr. Eng Hamzah Latief, Head of CCMD
	Researcher	Dr. Krishna S. Pribadi,
	Structural Planner	Mr. Suarjana,
Ministry of National Development Planning/National Development Planning Agency (BAPPENAS)	Deputy Director for Multi-lateral IV, Directorate for Multi-lateral Foreign Funding	Mr. Agustin Arry Yanna, SS,MA
	Directorate for Multi-lateral Foreign Funding	Mr. Theresia Nusantara
Ministry of National Development Planning/National Development Planning Agency (BAPPENAS)	Director for Special Area and Disadvantaged Region	Jr. R. Ayawan Soetiarso Poetro, MSi
	Sub-director for Disadvantaged Region	Mr. Kuswiyanto
BMKG	Deputy Director of Geophysics, BMKG,	Mr. Prih Harjadi,
	Head of Center for Earthquake and Tsunami,	Mr. Suhardjono,
	IT Support, InaTEWS,	Mr. Karyono,
	Division of Seismological Engineering,	Mr. Bambang S.Prayitno,
	Seismologist, Division of Seismological Engineering,	Mr. I Nyoman Sukanta,
	Division of Seismological Engineering,	Mr. Sigit Pramono,
	Geotechnical Engineer, Division of Seismological Engineering	Mr. Rakhindro Pandhu
BMPB	Deputy Chief for Prevention and Preparedness	Mr. Sugen Triutomo
	Director of Disaster Risk Reduction	Dr. Ir. Teddy W. Sudinda, M.

		Eng
	Director, Emergency Response, BNPB,	Ir. Tri Budiarto, M.Si,
	Director, Disaster Relief, BNPB,	Harmensyah,
	Deputy Director, Emergency Response, BNPB,	Yolak Salimnthe,
	JICA Expert,	Mr. Tokunaga,
	Mr. Tokunaga's assistant	Ms. Noviyanti Erfien Kaparang
DKI Jakarta, BPBD	Head, Jakarta Regional Disaster Management Office (BPBD, DKI-Jakarta),	Samusul Arfan Akilie,
	Head of Information Section (BPBD, DKI-Jakarta),	Bambang Surya Putra,
	Head of Implementation,	S. Afran Akilie,
	Corporate Secretary,	Manni Jurnip,
	Head, Rehabilitation and Reconstruction Section,	Juwada Raya,
	Head, Emergency Section,	Endang Achadeat,
	Staff, Information Section	Ayat
Center of Volcanology and Geological Hazard Mitigation (CVGHM)	Researcher (volcanic disaster division),	Ms. Estu Kriswati,
	Staff (Landslide division),	Mr. Sumaryono,
	Staff on EQ/TS mitigation,	Mr.Cipta Athanasius,
	Head of landslide division,	Mr.Wawan Irawan,
	Staff , Pusat Survei Geologi (GRDC:Geology Research Development Center)	(Mr. Yunara D Triana,
	Staff,	Mr. Edy Slameto,
	Staff	Mr.Asep Mulyana
Agency for the Assessment and Application of Technology, Technology Center (BPPT)	Oceanography / Ocean Engineer、Oceanography / Ocean Engineer	Dr. Wahyu W Pandoe
	Electronics System Division, Information and Communication Technology	Sasono Rahardjo
ACEH	Kepala Pelaksana (Chief Executive)	Mr. Asmadi Syam
Syiah Kuala Universit	Vice Rector for Academic Affair	Prof. Dr. Ir. Samsul Riza, M. Eng.
Tsunami an Disaster Mitigation Research Center (TDMRC), Syiah Kuala Universit	Director	Dr. Ir. M. Dirhamsyah
	Vice Director	Dr. M. Ridha
	—-	Dr. Khairul Munadi
	Head, Professional Services Division	Teu Alvisyahrin, Ph. D
	Lecturer, Deparetment of Electrical ngineering Faculty of Engineering	Dr. Nasaruddin
	Secretary	Sri Adelila Sari, M.Si, Ph.D
Minster of Research and Technology, (RISTEK: Kementerian Riset dan Teknlogi)	Director for Empowering Science and Technology for Government Institutions, Head of Information Center for Research on Natural Disaster (PIRBA)	Dr. Ir. Pariatmono
Ministry of Public Works (PU)	Chef of Subdit. Of Disaster Management, Directorate of Operation and	Mr. Sudarsome

	Maintenance, Lantai-5 DGWR	
Indonesian Institute of Sciences (Limbaga Ilmu Pengetahuan Indonesia: LIPI)	Researcher, Research Center for Geo-technology	Mr. Hery Hardjono
Ministry of Marine and Fishery	Chief of Subdit. of Supervision of Aquatic Ecosystem and conservation area	Mr. Djoko Suprianto

4. Lao PDR

Organization	Position	Name
National Disaster Management Office, Ministry of Labor and Social Welfare	Deputy Director,	Mr. Vilayphong Sisomvang,
	Technical Staff, Information Management Unit	Mr. Sombath Douangsavanh
Department of Meteorology and Hydrology: DMH	Deputy Director General,	Mr. Singthong Pathoummady,
	Deputy Director General	Ms. Souvanny Phonevilay,
	Deputy Chief of Climate Division,	Mr. Nikhom,
	Deputy Chief of Climate Division,	Mr. Surink,
	Deputy head of Weather Forecasting Division,	Mr. Bounteum Sysouphathauong,
	Technical stuff,	Mr. Senoyduargduan,
	Chief Division,	Mr. Bounseuk Inthapatha,
	Head of Weather Forecasting and Aeronautical Division,	Mr. Vanhdy Doceangmala,
	JICA Senior Volunteer (Radar Expert)	Masaru Wakabayashi
Department of Water Resources, Ministry of Natural Resources and Environment,	Acting Director,	Mr. Chanthanet Boualapha,
	Technical Officer, DWR, MoNRE,	Mr. Phousavanh Fongkhamdeng,
	Technical Officer, DWR, MoNRE,	Mr. Thanongxay Douanguoulak
Ministry of Agriculture and Forestry	Deputy Director General; Department of Planning ,	Mr. Savanh HANEPHOM
Ministry of Public Works and Transport (MPWT)	Deputy Director General (DDG), Department of Transport,	Mr. Thongvanh PHETTHAVISENG (DGD),
	Division of Road Administration, Department of Waterways	Mr. Kham Seng (DDP)

5. **Malaysia**

Organization	Position	Name
National Security Council (NSC)	Principal Assistant Secretary, Disaster Management Division,	Mr. Norhisham Bin Kamarudin,
	Principal Assistant Secretary, Disaster Management Division,	Ms. Munirah Binti Zulkaple,
	Principal Assistant Secretary, Disaster Management Division,	Mr. Mohamad Husni Ab Aziz,
	Assistant Secretary, Secretary, Disaster Management Division,	Ms. Siti Mariam Aby,

	Assistant Secretary, Secretary, Disaster Management Division,	Mr. Wan Hohd Fadli Bin Ab Rahman
Public Works Department (PWD/JKR) (Road Facility Maintenance Division - BSFJ)	Director, BSFJ	Mr. Hamizan Bin Inzan,
	Senior Principal Assistant Director, BSFJ	Mr. Shamsuddin Bin Sabri,
	Senior Principal Assistant Director, BSFJ	Mr. Shabri Bin Shaharom,
	Senior Assistant Director, BSFJ	Zailan Bin Ab. Rahman,
	Principal Assistant Director, BSFJ	Mr. Leow Choon Heng,
	Assistant Director, BSFJ	Mr. Jaafar Bin Ahmad,
	Senior Assistant Director, BSFJ	Mdm. Badariah Binti Mohd Saufi,
	Senior Electrical Engineering, BSFJ	Mr. Marahakim Bin Manap,
	Senior Mechanical Engineering, BSFJ	Mr. Md Nsair Bin Md Isa,
	Civil Engineer, BSFJ	Mdm. Safinas Binti Saroji,
	Senior Assistant Director, BSFJ	Mr. Roslan Bin Majid,
	Civil Engineer, BSFJ	Mr. Mohammad Arif Bin Abdullah,
	Asst. Director, BSFJ	Mr. Lee Jian Huei,
	Civil Engineer, BSFJ	Ms. Nor Hazlinda Binti Md. Roduan,
	Technician, BSFJ	Mdm. Nor Safura Binti Nor Azhan
JPS: Department of Irrigation and Drainage, Ministry of Natural Resource and Environment	Deputy Director,	Azmi Jafrri,
	Principal Assistant Director,	Mohamad Radai,
	Engineer, Mobile:	Mond Zaharifudin,
	Engineer,	Abdul Hafiz Mohammad,
	Engineer,	Asmadi Ahmad,
	Engineer,	Wong Phei Yean
Survey and Mapping Department of Malaysia (JUPEM)	Principal Assistant Director,	Mohd Yusof B. Abu Bakar,
	Director,	Mazlan B. Asha'ari,
	Cartography,	Isumail Mohd Yusof,
	Geodesy,	Powzy B. Mohd Som,
	Geodesy,	Irwan Khushaini B. Mohd Jan,
	Geodesy,	Dr. Azhari Mohamed,
	Director of Mapping Services,	Ng Eng Guan,
	Director of Mapping Data Acquisition	Kamali Adimin
Minerals and Geoscience Department (JKR), Ministry of Natural Resources and Environment	Director,	Dato' Zakaria Mohamad,
	Geologist,	Azuhar Ahamad Nazri,
	Geologist,	Mohamad Shukri Bin Ramlan,
	Geologist,	Mazlan Moamad Zain,
	Geologist,	Nurzaibi Abdullah,
	Geologist,	Zaidi Bi. Dawe

6. **Myanmar**

Organization	Position	Name
Ministry of Agriculture and Irrigation (MAI),	Deputy Director General (DDG),	Mr. Aung Win (DDG),
	Deputy Director (DD),	Mr. Kyaw Lwin (DD),
	Director (D) of Hydrology Branch,	Ms. Khon Ra (D),
		Mr. Htay Aung Tint (SF, Civil),

	General Manager (GM) of Myanmar Agriculture Service (MAS),	Mr. U Than Kyaing (GM, MAS),
	Agricultural Extension Service (AED) of MAS	Ms. Tin Ohnmar Win Phd (MAS, AED)
Department of Relief and resettlement (DRR), Ministry of Social Welfare, Relief and Resettlement (MSWRR)	Director General (DG),	Mr. Soe Aung (DG),
	Directors,	Mr. Chun Hre (Director),
	Other 2 directors	
	Assistant Director (AD); International Relation Division	Ms. Nwet Yin Aye (AD,),
RRD, MSWRR	Head of Office, Deputy Director General, RRD	Soe Htwe,
	Director	Wim Htut U,
	Deputy Director	W Myo Myint Oo,
	Deputy Director	Daw Myint Myint Aye,
	Assistant Director	Nwet Yin Aye,
	Staff Officer (ICT)	Thiri Maung,
	Staff Officer	Su Su Tcen,
	Staff	Staff
Department of Meteorology and Hydrology	JICA Expert (Meteorology) Adviser to DMH,	Mr. Akatsu Kunio,
	Director, Lower Myanmar Division, DMH,	Mr. Tint Aung,
	Deputy Director, Hydrological Division,	Ms. Jaw Khin Cho Cho Thein,
	Assistant Director, Agro-meteorology Station,	Ms. May Khin Chan,
	Deputy Superintendent, Record Section,	Ms. Han Sune,
	Staff Officer, Seismological Division,	Mr. H Thein Htay,
	Staff Officer, Hydrological Division	Mr. U Tin Tun
Myanmar Geosciences Society (MGS) and Myanmar Engineering Society （MES）	President of Myanmar Geosciences Society, Vice President of Myanmar Earthquake Committee	Dr. Win Swe
	Past President of MES, Chairman, MES	U Than Myint
	Executive member, Myanmar Academy of Tenonolgy, Past President of MGS	Prof. Maung Thein
	Research Assistant/Secretary, MES	Soe Thura Tun
DMH, Patein	Assistant Director	Mr. U. Miang Miang Win
	Stuff Officer	Mr. Aug Myi Tkyi
	Deputy Stuff Officer	Mr. Miang Miang Sam
Yangon City Development Committee	Committee Member	Soe Si,
	Head of Department of Water & Sanitation	Soe Myaing,
	Head of Department of Pollution & Cleansing	Thandwin Ou,
	Head of Department	Lin Tun Myint,
	Head of Department	Myo Thein,
	Asst. Head PCCD,	Kyaw Thar Sein,

7. **Philippines**

Organization	Position	Name
Office of Civil Defence (OCD)	Chief of Planning Division,	Mrs. Cristiana B. Abat,
	Information Officer,	Marlon Henson B. Obligado,
	Civil Defense Officer 1,	Oscar Lizardo,
	Planning Officer,	Elvis Cruz,
	Training Specialist,	Susana Qui Ambao,
	Planning Officer,	Leahlove Soriano
Philippines Institute of Volcanology and Seismology (PHIVOLCA)	Science Research Specialist,	Esfeca T. Delmundo,
	Science Research Specialist,	Joan C. Salcedo,
	Planning Officer	Richel B. De Mesa,
	Planning Officer,	Narciso Diongzon,
	Planning Officer IV, and Office in Charge, Finance and Administrative Division	Delfin C. Garcia
National Mapping and Resource Information Authority (NAMRIA)	Chief, Photogrammetry Division,	Offelia Castro,
	Officer in Charge, Geography Division,	Joaquin B. Borja
	Deputy Administrator,	Linda SD. Papa,
	Director of Information Management Department	John Santiago F. Fabic
Philippines Atmospheric, Geophysical and Astronomical Services Administration (PAGASA)	Acting Deputy Administrator for R&O,	Ms. Flaviana Hilario,
	Assistant Weather Service Chief,	Mr. Heraclio Borja Jr.
Department of Public Works and Highways (DPWH)	Director of Bureau of Maintenance,	Ms. Betty Sumait
Metro Manila Development Agency (MMDA)	Planning Officer III,	Angeli E. Khan,
	Special Operation Officer II,	Ryan E. Castaneda,
	Executive Assistant III,	Josephine R. Sy,
	Special Operation Officer III,	Cokator DJ. Agular,
	Dir. Chief – HPSEPO,	Jr. Loida Alzoan,
	Planning Officer I,	Oshean Lee Garonita,
	Planning Officer II,	Elisar A. Elison,
	Director III, Office of the Assistant General Manager for Planning,	MA. Josefina J. Faulan,
	Chief, Public Safety Division,	Aldo R. Mayor
River Basin Control Office (RBCO),	Executive Director, Department of Environment and Natural Resources (DENR)	Dr. Vicente B. Tuddaro Jr.
Philippine Council for Industry, Energy & Engineering Technology Research & Development (PCIEERD), Department of Scientific and Technology (DOST)	Supervising Science Research Specialist,	Nonilo A. Pena,
	Senior Science Research Specialist,	Loreto A. Carasi,
	Deputy Executive Director,	Raul C. Sabularse,
	Senior Science Research Specialist,	Mel Dimapilia,
	Planning Assistant II	Alma Dupagam
Mines and Geosciences	Supervising Science Research Specialist,	Lilian A. Rollan,
	Supervising Science Research	Antonio Apostol,

Bureau (MGB)	Specialist,	
	Office in Charge, Assistant Director,	Atty Emelyne Talabis,
	Supervising Science Research Specialist	Karvo L. Queano

8. **Singapore**

Organization	Position	Name
Singapore Civil Defense Force (SCDF),	Director, Planning & Corporate Department,	LTC Yong Meng Wah,
	Assistant Director, International & Corporate Affairs Branch, Planning & Corporate Department,	LTC Tan Jee Piau,
	Assistant Director, Plans & Projects Branch, Operations Department,	LTC Daniel Seet,
	Assistant Director, Corporate Systems Branch, Technology Department, SCDF,	MAJ Lim Boon Teck,
Department, Public Utilities Board (PUB),	Assistant Director, Catchment & Waterways	Choy Wai Kwong,
	Engineer, Catchment & Waterways	Lou Pang Boon,
Weather Services Department, Meteorological Service Singapore,	Chief Meteorological Officer,	Lesley Choo、

9. Thailand

Organization	Position	Name
JICA Study Team for Chao Phraya Flood Mitigation	Team Leader	Mr. Yoshiharu Matsumoto,
	Team Member	Ms. Ryoko Mizuyori
Department of Disaster Prevention and Mitigation (DDPM),	Director General,	Mr. Wiboon Sanguanpong,
	Director, Research and International Cooperation Bureau, DDPM	Mr. Adthaporn Singhawichai
The Project on Capacity Development in Disaster Management in Thailand (Phase-II)	Leader of JICA Experts, Disaster Management Institution	Noritoshi MAEHARA
National Disaster Warning Center (NDWC), Ministry of Information and Communication Technology,	Director of Plan and Policy Section,	Mr. Vorapong Grittiyashote
Department of Mineral Resources (DMR)	Director Bureau of Geological Policy and Planning,	Mr.Pairatt Jarnyaharn,
	Senior Geologist of Geo-hazards,	Mr. Tinnakorn Tatong,
	Geologist,	Ms. Patchara Sangoen,
	Director General	Mr. Nitat Poovatanakul
Ministry of Natural Resources and	Chief of Mekhala Center, Water Crisis Prevention Center,	Mr. Supon Sodsoon,

Environment	Foreign Relation Officer, Department of Water Resources,	Ms. Rakchai Kiat,
		Ms.Pra-on Udomprasert
Royal Thai Survey Department (RTSD)	Deputy Director General,	Lt. Gen. Vinai Semsawat
	Survey School,	Col. Uamkiat Charoensom,
	Director of Mapping Division,	Col. Ruppulent Chaichana,
	Director of Mapping Information Center,	Col. Chaisit Preeyanupab,
	Director of Aerial Survey Division,	Col. Surasak Therdkiattikoon,
	Director of Geodesy and Geophysics Division,	Col. Chaiwat Promthong, Director of Geodesy and Geophysics Division,
	Plan and Project Division,	Lt. Col. Chokchai Puatanachokchai,
	Chief of Terrain Analysis Section,	Col. Attowoof Kiatiwat,
Thai Meteorological Department (TMD)	Director of Meteorological Development Bureau, TMD,	Ms. Chongholuee Yusabye
	Meteorologist, Climatological Academic Group,	Boonlert Archerara Huproh,
	Meteorologist, Climatological Academic Group,	Chalalai Jumphon,
	Meteorologist, Water Forecast Bureau,	Maytee Mahayosananta
	Meteorologist, Water Forecast Bureau,	Burin Wechbunthung,
	Meteorologist, TMD Staff Seismological Bureau,	Sotharat Insawang
	Meteorologist, TMD Staff Seismological Bureau,	Kathavudlhi Marloirodynisir
	International-relations Officer	Ms. Hathaichanok Ngerndee
Disaster Prevention and Mitigation (DPM Phuket), Phuket Province	Head of DPM Phuket,	Mr. Sam Jantangwong,
	Communication Officer Experienced level,	Mr. Preedee Angsang,
	Plan and policy Analysist/	Ms. Pattareeya Kumban

10. **Vietnam**

Organization	Position	Name
Disaster Management Center (DMC), Directorate of Water Resources, Ministry of Agriculture and Rural Development (MARD)	Deputy Director,	Mr. Dang Quang Minh,
	Deputy Chief, National Disaster Mitigation Division (NDMD)	Mr. Nguyen Thanh Phuong,
	Expert, DMC,	Ms. Nguyen Anh Son
Department of Agriculture and Rural Development, DARD	Deputy Director of Provincial Committee for Water Resources, Flood and Storm Control, Deputy Chief of Office of Steering Committee for Flood and Strom Control,	Tran Duc Duy,
	Deputy Head of Division, Provincial Committee for Water Resources, Flood and Storm Control,	Le Dien Minh
Department of Dyke	Deputy Director,	Mr. Vu Kien Trung,

Management, Flood and Storm Control (DDMFSC), Directorate of Water Resources (DWR), Ministry of Agriculture and Rural Development (MARD)	Deputy Head of Standing Office for CCFSC	
	Deputy Chief of Flood and Storm Control Division, DDMFSC, DWR, MARD,	Mr. Nguyen Hiep,
	Officer, DDMFSC, DWR, MARD,	Mr. Nguyen Duc Thang
General Department of Geology and Minerals of Vietnam	Deputy Director General,	Dr. Do Canh Duong
	-	Other 2 officers

11. **Embassy of Japan, JICA-Country Offices**

Organization	Position	Name
JICA Cambodia Office	Senior Representative	HIRATA Hitoshi
	Representative	EGAMI Masahiko
	Project Formulation Advisor	NONAKA Hiroyuki
Embassy of Japan in Indonesia Mission of Japan to ASEAN	First Secretary	Yasuhiro NGASAKA
JICA ASEAN	Principal Representative for ASEAN Coordination	MATSUDA Norio
JICA Indonesia	Representative	OKITA Yosuke
	JICA Expert on Integrated Water Resources Management	SAWANO Hisaya
	JICA Expert, Chief Advisor of the Project for Capacity Development of Jakarta Comprehensive Flood Management	TANAKA Takaya
	JICA Senior Advisor	BABA Hitoshi
JICA Lao PDR Office	Representative Infrastructure Sector, JICA Laos Office,	Ms.Yoko Hattori,
	JICA Expert	Mr.Noriyuki Mori
JICA Malaysia Office	Senior Representative	OHKUBO Kyoko
	Senior Program Manager,	Syariza Shariff
Embassy of Japan, Myanmar	Counselor and Head, Economic & ODA Section	MATSUO Hideki
JICA Myanmar Office	Chief Representative	TANAKA Masahiko
	Representative	SATO Yasuyuki
	Senior Representative	SAITO Katsuyoshi
JICA Philippine Office	Representative	Ms. TANADA Etsuko
	Project Formulation Advisor	NAKAMURA Hayato
JICA Thailand office	Representative	Mr. Hajime Taniguchi
JICA Vietnam Office	Senior Project Formulation Advisor, Disaster Management and Rural Water Supply	MATSURA Syohei

12. **ASEAN Secretariat – Jakarta, Indonesia**

Organization	Position	Name
ASEAN	Head of Disaster Management and Humanitarian Assistance Division, ASEAN Secretarial	Ms. Adelina Dwi Ekawah KAMAL
ASEAN- ISDR	Technical Advisor, Disaster Risk Reduction	Ms. Marqueza Lepana Reyes, Dr. Eng
	Knowledge Manager, Disaster Risk Reduction	Ms. Vicky Eleen Diopenes

13. AHA Center – Jakarta, Indonesia

Organization	Position	Name
AHA Center	Executive Director	Said Fasal
	Expert on Disaster Risk Assessment Early Warning and Monitoring	Janggam Adhityawarma
	Information and Communication Technology Officer	Adi Bishry
	Executive Assistant	Rivie Ayudhia

14. **Japan ASEAN Integration Fund (JAIF) – Jakarta, Indonesia**

Organization	Position	Name
JAIF Management Team (JMT)	Director,	A.K.P. Mochtan, Ph. D
	Senior Programme Officer	Zin Aung Swe
	Admin / Finance Officer	Yudhi Purnama

15. Mekong River Commission (MRC) -

Organization	Position	Name
MRC in Phnom Penh, Cambodia	MRC-FMMP Coordinator, Regional Flood Management and Mitigation Center (RFMMC)	Dr. Lam Hung Don
MRC-Vientiane, Lao PDR	Program Coordinator Climate Change & Adaptation Initiative	Ms.Nguyen Huong Thuy Phan

16. Asian Disaster Preparedness enter (ADPC) - Thailand

Organization	Position	Name
Asian Disaster Preparedness Center	Project Support Manager, Information technology and Communication Unit,	Bill Ho,
	Project Officer, Disaster Management System,	Sudhir Kumar

17. UNDP- Vietnam

Organization	Position	Name
UNDP, Vietnam	Country Director,	Ms. Setsuko Yamazaki,
	Technical Specialist, Disaster Risk Management, UNDP,	Mr. Ian Wilderspin,
	Programme Officer, Disaster Risk Management, UNDP,	Ms. Bui Viet Hien,
	International Specialist, UNDP,	Mr. Miguel Coulier

18. ICHARM – Tsukuba, Japan

Organization	Position	Name
I-Charm	Director	TAKEUCHI Kuniyoshi
	Chief Researcher	KAMOTO Minoru
	Research Specialist	HIBINO Shigenobu
	Doctoral Program Student	HISHINUMA Shiro

19. Asia Disaster Reduction Center (ADRC) – Kobe, Japan

Organization	Position	Name
Asia Disaster Reduction Center	Executive Director	Atsushi KORESAWA
	Senior Administrative Manager	Kozo ARAKAWA
	Researcher	Yumi SHIOMI

20. Tohoku University – Sendai, Japan

Organization	Position	Name
International Research Institute of Disaster Science,	Deputy Director	Prof. Fumihiko IMAMURA

21. JAXA (at the work shop on 11 June 2012)

Organization	Position	Name
Japan Aerospace Exploration Agency (JAXA)	Associate Senior Engineer, Satellite Application and Promotion Center (SAPC) Space Application Mission Directorate	Kakoto KAWAI
	Deputy Director、Space Cooperation Officer for Asia Pacific Region (SCOAP),Space Application Mission Directorate	Toshiro TAKANAMI

22. JETRO – Tokyo, Japan

Organization	Position	Name
Japan External Trade Organization, Japan	Asia-Pacific Division, Overseas Research Department	Jyunichiro HASEBA

Appendix-2

Availability of Topographic Maps of Each Country

Table Availability of Topographical Map in ASEAN Countries

Nation	Head Agency	Coverage	Scale	Year of creation	Availability
Brunei	Survey Department, Ministry of Development	All land except remote islands	1:1,000 1:10,000 1:25,000 1:50,000 2m contour map by laser surveying, nationwide orthophoto map	Information N/A After 2000	All restricted The scale of 1:100,000or less is not restricted
Cambodia	Department of Geography (DoG), Ministry of Land-use Management Urban Planning and Construction (MoLMPC)	95% of all land	1:50,000	1960-90s	Available to purchase in DoG The topographic maps（1:50,000~1:100,000） are also commercially available
Indonesia	National Coordination Agency for Survey and Mapping (BAKOSURTANAL)	All land Java island Other area Jakarta city	 1:25,000 1:50,000 1:1,000	 1990~2000, Others are 1980s or earlier	Available to purchase in BAKOSURTANAL In case of the topographic map of military, need for application.
LaoPDR	National Geographic Department (NGD), Ministry of Security	All land All land All land Some areas Some areas Some areas	1:500,000 1:200,000 1:100,000 1:50,000 1:25,000 1:5,000 (Digital data)	1950s-60s 1980s 1980s~ 1960s 1996 1996	Topographic maps including digital data are commercially available to public. Topographic map was produced in 1996 supported by JICA. Index map is not available
Malaysia	Department of Survey and Mapping	All land Including Sabah Sarawak	1:25,000 1:50,000 1:30,000 - 1:12,500 1:10,000	Vary[1] Map with a scale of 1:25,000 produced since late 1980s Map with a scale of 1:50,000 has been produced in editing of digital files	Unrestricted, Restricted[1]
Myanmar	Myanmar Information management Unit (MIMU)	All land	1:50,000	2011	In order to obtain a topographic map, need for approval of the Government of Myanmar and it takes a long time for the procedure. Topographic map and its GIS data produced by support of JICA in 2011
Philippine	National Mapping and Resource Information	All land 672sheets	1:50,000	1950s~2011	Available to purchase in NAMRIA Produced for the project such as

	Authority (NAMRIA), Department of Environment and Natural Resources (DENR)	Urban area 83 sheets	1:10,000 Topographic maps with a scale of 1:50,000 in Metro Manila, Cebu City and Davao City was produced in 2003 are available	~2007	READY project accordingly.
Singapore	Singapore Land Authority	All land	Information N/A	Information N/A	All restricted
Thailand	Royal Thai Survey Department (RTSD)	All land 830sheets	1:50,000	Upgraded every 5 years	Maps with a scale of 1:50,000 are available for purchase in RTSD.
Viet Nam[2]	Department of Survey and Mapping, Ministry of Natural Resources and Environment (MONRE)	Cities and Towns,	1:2,000 & 1:5,000	2011(expected) Digital Mapping	All restricted When implementing a project, available for purchase
		All country	1:10,000	2011(expected)	
		Midland, economic area	1:25,000	Unknown	
		All country	1:50,000, 1:100,000, 1:250,000, 1:500,000, 1:1,000,000	2004	

Source: JICA Study Team

[1] http://www.jupem.gov.my/SPPMG/dv/MappingProd.aspx?p=m; (Copyright Reserved © 2006 JUPEM)
[2] 18th UN Regional Cartographic Conference for Asia and the Pacific, Survey and Mapping Activities in Vietnam (2009): http://unstats.un.org/unsd/geoinfo/RCC/docs/rccap18/CRP/18th_UNRCCAP_econf.100_crp1.pdf; (accessed on 5th April, 2012)

Appendix-3

List of Projects and Activities under the AADMER WP 2010-2015

List of Projects and Activities under the AADMER Work Programme 2010 - 2015

Updated: 26 August 2011
Data in hand: Feb 2012

	List of Projects/Activities under the AADMER Work Programme	Status of Projects/Activities	Source of Funding/Donor	Implementing Partner
STRATEGIC COMPONENTS				
1. RISK ASSESMENT, EARLY WARNING AND MONITORING				
A.	Risk Assessment AADMER WP output: "ASEAN-Wide Disaster Risk Assessment" (**No particular AADMER Output number**) 1 Multi-hazard mapping and vulnerability assessment based on national & sub-national data inputs 2 Basis for regional response planning and assisting Member State in developing mitigation measures 3 Utilize Geographic Information System (GIS) as a multi-decision support platform	Pipeline	A.1 GFDRR, UNISDR, AIFDR	A.1 ASEAN Earthquake Model Group, ASEAN-UNISDR, World Bank, PDC
B.	AADMER WP output: " Satellite-Based Disaster Monitoring System (**No particular AADMER Output number**) 1 Hazard-specific (earthquake, tsunami, typhoon, etc) 2 Includes multi-point communication system and public information dissemination system	Pipeline	US - ASEAN Disaster Response and Monitoring System (DRMS) JAIF (potential)	
C.	AADMER WP output: GIS-Based Disaster Information-Sharing Platform for early warning : (**No particular AADMER Output number**) 1 An efficient, timely, and technology-assisted information-sharing platform for early warning on different hazards (i.e typhoon, flood, tsunami and earthquake) for effective response 2 Relies on efficient disaster monitoring system	Pipeline	JAIF (potential) US (potential)	
2. PREVENTION AND MITIGATON (P&M)				
D	2.1 Implementing National Action Plans on Disaster Risk Reduction and Strengthening Legal and Institutional Frameworks (**AADMER WP Output-3, -4, 5**) 1 Development of Strategic National Plans (SNAP) for Member States 2 Formation of National Platform for DRR in ASEAN Member States	Ongoing	GFDRR	ASEAN-UNISDR

2. PREVENTION AND MITIGATON (P&M)				
	3 National review and evaluation on the implementation of HFA 4 Regional review analysis on the implementation of HFA in ASEAN (**AADMER WP Output-2, 6: Information N/A- no progres**s) 2.2 Main streaming Disaster Risk Reduction in National Development Plans (**Information N/A**)			
E.	2.3.1 Mainstreaming DRR in Education and Health Sectors - Integrating DRR in School Curriculum **(AADMER WP Output-1, Output-3**) 1 Knowledge Sharing and Benchmarking Workshop on Mainstreaming DRR in Education Sector in ASEAN; 2 Development of Guidelines on Mainstreaming DRR in school curriculum	E.1 Completed	GFDRR	ASEAN- UNISDR, SOMED, SEAMEO, ADPC
F.	2.3.2, Mainstreaming DRR in Education Sectors - Disaster Safety of Educational Facilities; 2.3.3 Mainstreaming DRR in Health Sectors - Disaster Safety of Health Facilities (**AADMER WP Output 2.3.2.1, 2.3.3.1**) 1 One Million Safe Schools and Hospitals Pledging Campaign 2 National Launching of One Million Safe Schools and Hospitals Pledging Campaign 3 ASEAN Forum on Safe Hospitals **AADMER WP Output 2.3.2.2-4: Information N/A** **AADMER WP Output 2.3.3.2-4: Information N/A**	Ongoing	GFDRR	ASEAN-UNISDR, Relevant partner organizations for school and hospital
G.	2.4 Mainstreaming DRR in Education and Health Sectors - Public Education, Awareness and Advocacy **(AADMER WP Output-2, -5)** 1 Development of ASEAN DRR Knowledge Portal 2 Development of information, education and communication (IEC) materials on AADMER and related DRR activities of ACDM and ASEAN; 3 ASEAN Drawing Competition for youth 4 The annual joint observance event of ADDM and International Day for Disaster Reduction (IDDR) **AADMER WP Output 1, 3, 4: Information N/A**	G.1-2 Ongoing G.3-5 Annually	GFDRR, Private sector (Siam Commercial Bank, Unilever, Bangkok, etc)	ASEAN-UNISDR, UNESCAP, Private sector
H.	2.5 Urban Disaster Risk Reduction **AADMER WP (Output-1, 2)**	Pipeline	GFDRR, UNISDR	ASEAN-UNISDR,

2. PREVENTION AND MITIGATON (P&M)				
	1 Inspection of selected high-risk schools in pilot cities; 2 Development of a standard methodology for multi-hazards inspection of at-risk schools that includes both structural and non-structural aspect; 3 Training for city engineers, architects, and other allied professionals from ASEAN cities/ education ministers on multi-hazards inspection of schools; 4 World Disaster Reduction Campaign on Making Cities Resilient, "My City is getting Ready" 2.6 **CBDRR (Information N/A – no progress)** 2.7 **Building Partnerships between DRR and Climate Change Adaptation Institutions and Programmes (Information N/A – no progress)**			
I.	2.8 **Disaster Risk Financing including Microfinance (AADMER WP Output-1, 2)** 1 Stocktaking of disaster risk financing schemes in ASEAN Member States 2 ASEAN forum/workshop on disaster risk financing 3 Development of a roadmap/ guidelines on disaster risk financing	I.1 Ongoing I.2-3 Scheduled in November 2011 to produce a roadmap /action plan on risk financing	GFDRR, World Bank	ASEAN-UNISDR, World Bank, ADB, ASEAN insurance and finance sectors

3. PREPAREDNESS AND RESPONSE				
J.	**AADMER WP Output 1:** "a fully operational AHA Centre": 1 Develop Updated Concept of Operations (CONOPS) for the AHA Centre comprising elements such as strategic work plan, organizational structure, legal framework, structure, legal framework, budget, operational requirements, budget, operational requirements, emergency operations procedure , etc 2 Develop and finalise Agreement on the Establishment of the AHA Centre 3 Develop and finalise Host Country Agreement 4 Recruiting experts and technical staffs for the early stage of the operationalisation of the AHA Centre	Ongoing. Most A.1-3 done AHA Centre was launched in November 2011	Japan (JAIF); New Zealand ; Australia (AIFDR); United States (USFS & USTATF)	Japan Mission, NZ Aid, AIFDR, USFS, USTATF
K.	**AADMER WP Output 2:** "SASOP is fully develop , institutionalised, and disseminated":	K.1 Ongoing, 2012 ARDEX in Viet Nam	K.1 Host of the ARDEX,	K.1 OCHA,

3. PREPAREDNESS AND RESPONSE				
	1 Conduct regular exercise (such as ARDEZX) to continuously enhance SASOP and identify improvements. Additional chapters 2 Conduct training and other (including with other sectors) and with disaster responders 3 Develop other appropriate SOPs to respond to specific disasters, such as pandemics 4 Develop system and mechanism to ensure continuity o essential services when requires in a disaster	K.2 An Institutionalisation and mainstreaming strategy being developed K.3 TWG for Pandemic Preparedness & Response	Participating ASEAN Countries	IFRC, ICRC, USFS
L.	**AADMR WP Output 3:** "Civil-military relations with respect to improving" ASEAN Disaster response enhanced: 1 Finalise the procedure for the utilisation of military assets and capacities for possible incorporation into SASOP 2 Validate the procedure through the conduct of ARDEX and other exercise with the participants of military/defense units 3 Develop mechanism to sustain dialogues between the CDM and the ADSOM (and other defense/military counterpart) 4 Conduct capacity and institutional development to enhance civil military coordination (AADMER WP Output 4: Information N/A – no progress)	Ongoing	L.1 ASEAN militaries L.2: Host of the ARDEX and other TOT, participating ASEAN Countries	ADSOM, ASEAN militaries, OCHA ICRC
M.	**AADMER WP Output 5:** "ASEAN Standby Arrangements developed and regularly updated" 1 Identify earmarked assets and capacities for the ASEAN Standby Arrangements 2 Develop a system in AHA Centre to facilitate information sharing and resource tracking 3 Update information regularly, and conduct exercise to test system efficiency and applicability **(AADMER WP Output 6: Information N/A – no progress)**	Ongoing O.2 Database has been developed and is being improved	USTATF	USTATF
N.	**AADMER WP Output 7**: "Procedure for entry of International assistance reviewed, and gaps identified" 1 Review existing domestic policies, procedures and regulations to facilitate the entry International assistance 2 Indentify gaps and suggest amendments or refinements to make it easier for	Ongoing N.1 A questionnaire has been developed o assist the review		IFRC (IDRL Unit), APG

3. PREPAREDNESS AND RESPONSE				
	other Member States and assisting entities to provide assistance, if needed 3 Develop tools to enhance efficiency of the entry of assistance, disseminate through relevant training and other activities, conduct exercise such as table-top to review efficiency of procedures (possibly as part of ARDEX) (AADMER WP Output 8: Information N/A – no progress)			
O.	AADMER WP Output 9: " A pool of trained and rapidly deployable (within 24 hours) ASEAN-Emergency Rapid Assessment Team (ERAT) established": 1 Develop the deployment procedures for ERAT, including clarification on the roles and responsibilities between ERAT and UNDAC and other relevant system 2 Develop and conduct training, determine competencies and certifications requirements for ERAT members 3 Establish a pool and database for ERAT 4 Develop and provide for ERAT personal manual, tools and supporting kits **(AADMER WP Output 10: Information N/A – no progress)** **(AADMER WP Output 11: Information N/A – no progress)**	Ongoing O.1-4: Mostly done, refresher course and induction course being planned in 2012	AIFDR, Singapore (SCDF)	AIFDR, ACAPS, APG, OCHA
P.	**AADMER WP Output 12**:" Adaption and incorporation of Incident Command System (ICS) into relevant national and regional disaster management system": 1 Adapt relevant components of the ICS into regional management system such as SASOP and the AHA Centre 2 Adapt relevant components of the ICS into national disaster management system **(AADMER WP Output 13: Information N/A – no progress)**	P.1-2: Ongoing ICS elements being incorporated into ERAT and AHA	P.1 US Department of State, OFDA P.2 Pilot countries, US Department of State	US Department of Agriculture Forest Service (USFS)
Q.	**AADMER WP Output 14:** "An efficient ASEAN disaster emergency logistic system: 1 Determine the feasibility to set up a stockpiling system or other appropriate arrangements 2 Develop recommendations for the establishment of ASEAN's emergency logistics system and the requirement 3 Set up the logistic system based on the outcome of the discussions	Pipeline Q.1-2 A concept is being developed, workshop to be held in Dec 20122 to refine the concept	Q.3 JAIF allocation for ASEAN-Japan stockpile available	Procurement agency being determined WFP/UNHRD

3. PREPAREDNESS AND RESPONSE				
R.	**AADMER WP Output 15:** " ASEAN needs assessment strategy (including tool box, training package, and partnership mechanism)": 1 Desktop study on rapid needs assessment tools, including those for ERAT (focusing on Phase 1) 2 Brainstorming with OCHA, ACAPS and APG (focusing on Phase 1) 3 Further activities being planned	Ongoing	AIFDR (particularly for ERAT)	APG, OCHA, ACAPS
S.	**AADMER WP Output 16**: "SOPs and /or mechanism for coordination with other humanitarian actors developed" 1 Asses the strengths, capabilities and added values of other humanitarian actors to identify areas of complementation 2 Clarify the role and relationship between ASEAN's mechanism and other humanitarian system 3 Develop and recommend instruments for joint or ways of working together, and disseminate them through awareness or training activities	S.1-2 Ongoing S.3: With OCHA		OCHA, APG, IFRC

4. RECOVERY				
T.	AADMER WP outputs on the "Production of a Disaster Recovery Toolkit" **(AADMER WP Output-1.1):** 1 A compendium of good practices on recovery assessment and planning, with proposed strategies for applying the best practices 2 Guidelines for recovery planning and transition planning 3 Recovery tools such as Recovery Information Accountability System (RIAS) based on the system developed from the recovery operations in Myanmar **AADMER WP Output 1.2 – 1.3 Information N/A – no progress** **AADMER WP Output 2.1 – 2.3 Information N/A – no progress** **AADMER WP Output 3.1 – 3.3 Information N/A – no progress** **AADMER WP Output 4.1 – 4.3 Information N/A – no progress** **AADMER WP Output 5.1 – 5.3 Information N/A – no progress**	T.1-2 Pipeline Done for good practices and tools (such as RIAS) from Nargis response	Australia (Nargis) World Bank, GFDRR	World Bank, GDFRR, ADPC, IRP

BUILDING BLOCKS

1. INSTITUTIONALISATION OF ADDMER				
U.	AADMER WP outputs: 1 Establish national structure to ensure actual enforcement of AADMER, including designating National Focal Point and Competent Authorities 2 Analysis gaps and challenges in implementation of AADMER and SASOP, review of domestic DM policies, procedures and regulations 3 Create an enabling environment (supportive policy and legal frameworks) that will promote and expedite AADMER implementation	Ongoing		IFRC (IDRL Unit), APG

2. PARTNERSHIP; 3. RESOURCE MOBILISATION				
V.	AADMER WP outputs under "Multi-Stakeholder (MS) partnership at different levels identified and developed": **(AADMER WP 2 Output 1)** 1 AADMER orientation forums at country level 2 Regular AADMER partnership conferences/forums	Ongoing,	Canada and DIPECHO (through APG) **JAIF** (partnership conference in 2010)	APG (in Cambodia, Indonesia, Philippines, Viet Nam)
W.	AADMER WP project under "Coordination mechanism and agreements identified and developed": **(AADMER WP 2 Output 2)** 1 Joint Declaration on ASEAN-UN Collaboration in Disaster Management (adopted), and the Strategic Plan of Action 2 Framework for Partnership with CSOs 3 Draft MoU with ICRC 4 Draft MoU/Cooperation Arrangement with IFRC **(AADMER WP 2 Output 3 – 5: Information N/A – no progress)** **(AADMER WP 3 Output 1 – 3: Information N/A – no progress)**	Ongoing	W.2 Currently with DIPECHO, APG to fundraise for the activities	UN, APG, IFRC, ICRC

4. OUTREACH AND MAINSTREAMING				
X.	AADMER WP outputs under " Communication Strategy on AADMER and its Mechanism": **(AADMER WP Output 1)** 1 Production of IEC materials on AADMER in ASEAN and beyond 2 Dissemination of IEC materials on AADMER in ASEAN and beyond	Ongoing	Canada and EU/DIPECHO through APG GFDRR	APG, ASEAN-UNISDR

4. OUTREACH AND MAINSTREAMING				
	3 AADMER orientation forums for government officials and non-government organizations 4 ASEAN Day for Disaster Management.			
5. TRAINING AND KNOWLEDGE MANAGEMENT				
Y	**5.1 Training** AADMER WP outputs under " Training Needs Assessment (TNA)" and " Regional Training Courses" and "DMER trainers pool created': **(AADMER WP Output 1, 2, – 5)** 1 Conduct regional training needs assessment 2 Establish a network of disaster training institutions 3 Set up DMER training certification 4 Create DMER trainers pool **(AADMER WP Output 3, 4: Information N/A – no progress)**	Y.1 Researches done by APG in four courtiers Y.1 Training and KM needs assessment workshop scheduled at the end of Sept with AIFDR funding	AIFDR DIPECHO through APG GFDRR (fro roster of experts)	APG, AIFDR ASEAN-UNISDR
Z	**5.**2 Knowledge Management System AADMER WP outputs under "ASEAN Resource set up" and "AADMER Website created": **(AADMER WP Output 3, 4)** 1 Conduct knowledge needs assessment 2 Set up of ASEAN Resource Centre 3 Create AADMER website **(AADMER WP Output1, 2, 5: Information N/A – no progress)**	Ongoing	Z.1 DIPECHO through APG Z. 2-3 GFDRR, ADPC Z.3 Government of Indonesia	APG ASEAN-UNISDR, ADPC
6. INFORMATION MANAGEMENT AND COMMUNICATION TECHNOLOGY				
AA	1 Establish an integrated Information and Communication Technology (ICT) system to strengthen the operation of AHA Centre 2 Promote and strengthen interoperability between the AHA Centre and ASEAN Member States	On-going	**JAIF**	

IMLEMENTATION, MONITORING AND EVALUATION

3. MONITORING AND EVALUATION				
BB	Develop a Monitoring and Evaluation System for the Implementation of the AADMER Work Programme (2010-2015)	Pipeline	Regional EU- ASEAN Dialogue Instrument (READI)	READI, APG, ASEAN-UNISDR

Acronyms

ACAPS: Assessment Capacities (http://www.acaps.org/)

ADPC: Asia Disaster Preparedness Center

ADSOM: ASEAN Defence Military Meetings

AIFDR: Australia – Indonesia Facility for Disaster Reduction

APG: ASEAN Partnership Group

DIPECHO: ECHO's disaster preparedness programme

ARDEX: ASEAN Regional Disaster Emergency Response Simulation Exercises

ECHO: European Commission's humanitarian aid department

ERAT: ASEAN-Emergency Rapid Assessment Team

GFDRR: Global Facilities for Disaster Reduction and Recovery (WB)

ICRC: International Committee for Red Cross

IDRL: International Disaster Response Laws,

IFRC: International Federation for Red Cross and Red Crescent Societies

IRP: International Recovery Platform

JAIF: Japan ASEAN International Fund

OCHA: Office for the Coordination of Humanitarian Affairs

OFDA: USAID- Office of Foreign Disaster Assistance (OFDA)

PDC: Pacific Disaster Center

RIAS: Recovery Information Accountability System

SCDF: Singapore Civil Defence Force

SOMED: Society for Microbial Ecology and Disease

SEAMEO: Southeast Asian Ministers of Education Organization

TWG: Technical Working Group

UNESCAP: United Nation Education and Social Commission fir Asia and the Pacific

UNHRD: United Nations Humanitarian Response Depot

UNISDR: United Nation International Strategy for Disaster Reduction

USFS: United State Forest Services

USTATF: US Technical Assistance and Training Facility

WFP/UNHRD: World Food Program

Appendix-4

Records of 1st Workshop

1. Programme
2. Record of Discussions
3. Photographs

Records of 2nd Workshop

4. Programme
5. Record of Discussions
6. Photographs

WORKSHOP HELD IN JAKARTA
- PROGRAMME -

1 Workshop

The first workshop was held from June 11 to 13, 2012 in Jakarta, Indonesia participants from 10 ASEAN member countries, and other Jakarta based organizations relevant to disaster managements. The detail program distributed to the participants invited is shown in the following pages.

2 Purpose of the workshop and participants invited from ASEAM member countries

The purposes are shown in the program and the participants invited from ASEAN member countries are as follows.

- A senior officer from National Disaster Management Office with specific responsibility or involvement in the risk assessment activities
- A technical officer from flood management agency that is involved or responsible in flood risk assessment activities

3 Program

The workshop proceeded with the following program.

(1) June 11, 2012 (Mon):

1. Workshop on Needs Assessment for Regional Cooperation in ASEAN Disaster Management
2. Workshop on Guideline on Flood Risk Assessment (200 min)
3. Presentation on Flood Risk Monitoring

(2) June 12, 2012 (Tue):

1. Workshop on Terminology on Hydrological Disaster
2. Workshop on Terminology on Hydrological Disaster Assessment and Historical Data
3. Presentation from JAXA, Japan

(3) June 13, 2012 (Wed):

1. Seminar on Satellite Data Utilization for DRR
2. How to Request Emergency Observation (only for Technical staff of AHA Centre)

4 Outputs

Output from the workshop was reflected to the Draft Final Report prepared in September 2012.

Workshop for
JICA Data Collection Survey for Disaster Management and
Development of Regional Flood Risk Assessment Guidelines

1. BACKGROUND

After the devastating Great East Japan Earthquake on 11th March 2011, it was re-affirmed that Japan and the ASEAN would continue the regional cooperation in the field of disaster management; at the Special Japan-ASEAN Ministerial Meeting held on 9th April, 2011; at the ASEAN Post Ministerial Conference of 21st July, 2011; and at the Japan-ASEAN Summit on 18th November 2011.

In accordance with this context, JICA (Japan International Cooperation Agency) has decided to conduct the data collection survey; thereby JICA would formulate a menu of future cooperation/assistance. This survey was commenced on 29th January, 2012.

The study team dispatched by JICA was received by each ASEAN country with warm hospitality and was provided with extensive coordination for the information and data collection. The Study Team has planned a workshop with the purposes set out below on 11th and 12th June, 2012 at Jakarta inviting two delegates from each member state.

2. PURPOSE OF THE WORKSHOP

- To share the potential needs for regional cooperation on disaster management among the member states in ASEAN region based on the progress survey results of the JICA Study Team; and
- To share common understandings about why we need a standard for flood risk assessment, and to mark the first step toward establishing qualified flood disaster risk assessment with the overall goal to reduce adverse consequences of flooding.

3. OUTPUTS TO BE ATTAINED

- To identify preliminary priority needs (conceptual and/or specific) for bi-lateral and/or regional cooperation on disaster management;
- To identify issues and/or needs toward establishing qualified flood disaster risk assessment specifically for ASEAN.

4. RATIONALE OF WORKSHOP FOR REGIONAL COOPERATION

In support of disaster risk assessment activities in ASEAN that are being undertaken at the regional, national and sub-national levels, a common understanding and approach for risk assessment are indispensable; i.e. the current regional activities need to be consistent in methodology, data content, scale, or resolution, and to fully address the requirements outlined in Article 5 of ASEAN Agreement on Disaster Management and Emergency Response (AADMER) on Risk Identification and Monitoring which calls for the member states to take appropriate measures to identify risks in its respective territories to cover the following aspects: natural and human-induced hazards, monitoring of vulnerabilities, disaster management capacities, and risk assessment[1].

To operationalize such provisions in the Agreement into concrete actions, the AADMER Work Program has identified several flagship projects which include the “ASEAN-Wide Disaster Risk Assessment” as a priority program for implementation in Phase 1 (2010-2012). Under the risk assessment component of

[1] ASEAN –UNISDR Technical Cooperation, Concept Note of the ASEAN Regional Risk Assessment Scoping Workshop, October 11-12, 2011, UN Convention Center, Bangkok, Thailand

the AADMER Work Program, a number of agreements and guidelines that need to be developed have been enumerated, such as agreements on terminology, type and scale of data to be collected, type of analysis that will be conducted at the regional, national and sub-national levels, and type of risk assessment outputs.

On the other hand, sever flood disasters have increasingly prevailed in the ASEAN region which has necessitated urgent development of a guideline to flood risk assessment for regional coordination on risk reduction. Under such circumstance, the workshop hereby called for is totally in line with the necessary activities specified by the ASEAN-Wide Disaster Risk Assessment Scoping Workshop[2]:-

- Regional Workshops for Agreements, Definitions, Guidelines and Mechanics for Risk Assessment;
- Data Collection at the National and Sub-National Level;
- Data Consolidation and Analysis at the Regional Level;
- Regional Risk Analysis Conference (presentation of findings)[3].

5. PROGRAM (PRELIMINARY)

Note that the Program may change.

5.1 Subject	1. Work shop on Needs Assessment for Regional Cooperation in ASEAN Disaster Management	
	2. Workshops on Guideline on Flood Risk Assessment	
	3. Seminar on Satellite Data Utilization for DRR	
5.2 Date	11th , 12th and 13th June 2012 (3 days)	
5.3 Venue	11th and 12th, June 2012: - Kencana Room, 4th Floor, Sari Pan Pacific, Jakarta, Jl. MH. Thamrin No.6, Jakarta 13th, June 2012: - AHA Center, 17th Floor BBBT 1st Building, Jl. MH. Thamrin No.8, Jakarta	
5.4 Participants	1. A senior officer from National Disaster Management Office with specific responsibility or involvement in the risk assessment activities	Persons 10
	2. A technical officer from flood management agency that is involved or responsible in flood risk assessment activities	10
	3. ASEAN Secretariat	1
	4. ISDR to ASEAN	1
	5. World Bank, Indonesia	1
	6. AHA Center	3
	7. Japan Embassy to Indonesia	1
	8. JICA Advisor to AHA Center	1
	9. JICA experts relevant to Disaster Management and flood, in Indonesia	3
	10. JICA Indonesia	1
	11. JICA Study Team	8
	12. JAXA, Sentinel Asia Secretariat	2
	13. Other parties as necessary	

[2] *Ibid*
[3] *Ibid*

5.5 Agenda (Program)
(Subject to change)

The First Day (11th June 2012)

08:15 – 08:45 (30 min.)	Registration
08:45 – 09:00 (15 min.)	Opening Address (JICA-Jakarta/ AHA-Center)

***

Morning Program (11th June 2012)

1. Workshop on Needs Assessment for Regional Cooperation in ASEAN Disaster Management (150min)

09:00 – 09:40 (40 min.)	Presentation of the Survey Results (JICA Team)
	・ Potential needs for ASEAN regional cooperation will be presented.
09:40 –10:40 (60 min.)	Group Discussions on Needs for Regional Cooperation (Participants)
	・ Explanation (JICA Team) – (10 min.)
	・ Group Discussions (Participants) - (50 min.)
10:40-10:50 (10 min.)	*Refreshment*
10:50 –11:30 (40 min.)	Presentation and Discussions (Participants)
11:30 - 11:40 (10 min.)	Summery of Discussions and Conclusions (JICA Team)

2. Workshop on Guideline on Flood Risk Assessment (200 min)

2.1 Explanation and Discussions (60 min.)

11:40–12:00 (20 min.)	Explanation and discussion Part-1 (JICA Team)
12:00–12:10 (10 min.)	Q & A, Discussions
12:10- 13:00 (50 min.)	*Buffett Lunch*

***

Afternoon Program (11th June 2012)

13:00–13:20 (20 min.)	Explanation and Discussion Part-2 (JICA Team)
13:20–13:30 (10 min.)	Q & A, Discussions

2.2 Group Discussions (80 min.)

13:30–14:30 (60 min.)	Group Discussions
14:30–14:50 (20 min.)	Presentation
14:50 -15:00(10 min.)	*Refreshment*

2.3 Discussion and Conclusions (60 min.)

15:00–15:40 (40min.)	Overall Discussions
15:40–16:00 (20 min.)	Summary and Conclusion

3. Presentation on Flood Risk Monitoring

16:00 –17:30 (90 min)	Introduction of Flood Risk Monitoring in Global to Local Scale (Hitoshi Baba, JICA and JanJaap Brinkman, Deltares)
18:30 -	Reception at the Hotel

The Second Day (12th June 2012)

08:45 – 09:00 (15 min.) Meet at the lobby and depart to the AHA Centre

***

Morning Program (12th June 2012)

09:00 – 10:00 (60 min.) Tour of the AHA Centre

10:00 – 10:30 (30 min.) Return to the venue and refreshments

1. Workshop on Terminology on Hydrological Disaster

10:30 – 12:00 (30 min.) Workshop 1: Discussion on terminology on hydrological disaster

12:00 – 13:15 (75 min.) Lunch

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Afternoon Program (12th June 2012)

13:15 – 13:45 (30 min.) Workshop 1: Wrap-up and conclusion on the terminology and standard on the Hydrological disaster

2. Workshop on Terminology on Hydrological Disaster Assessment and Historical Data

13:45 – 14:15 (30 min.) Workshop 2: Discussion on standards on hydrological disaster assessment and historical data

14:15 – 14:30 (15 min.) *Refreshment*

14:30 – 15:30 (60 min.) Workshop 2: discussion and conclusion

15:30 – 16:00 (30 min.) Wrap up and way forward

3. Presentation from JAXA, Japan

16:00 – 16:30 (30 min) Overview of APRSAF (Toshiro Takanami, JAXA)

16:30 – 17:00 (30 min) Overview of Sentinel Asia (Makoto Kawai, JAXA)

The Third Day (13th June 2012)

Morning Program

8:45-9:00 (15 min) Meet at the AHA Center

1. Seminar on Satellite Data Utilization for DRR

9:00 – 10:30 (90min.) Introduction of Satellite Data Utilization for DRR (Makoto Kawai, JAXA)

10:30 -10:45 (15 min.) *Refreshment*

10:45 – 12:00 (75 min.) Hands-on: Visual Comparison of ALOS data (Makoto Kawai, JAXA)

*** End of Program for the Participants Invited ***

***

Afternoon Program (only for Technical Staff of AHA Centre)

13:00 – 15:00 How to Request Emergency Observation
(only for Technical staff of AHA Centre)

*** End of the Programs***

DRAFT OF RECORD OF MEETING

1st Workshop for

JICA Data Collection Survey for Disaster Management and Development of Regional Flood Risk Assessment Guidelines

Place	:	Sari Pan Pacific Hotel
Day/date	:	Monday/June 11, 2012
Time	:	08.45 am – 05.00 pm
Attendance list	:	See the Attachment

Point of Discussion:

- Session I : Data Collection Survey for Disaster Management (08.45 am – 11.40 am)

I. Mr. Edgardo J. Ollet from Philippines as Leader of **Green Team** conveyed presentation as below:

1. Regarding with Formulation of "Disaster Management Plan" Specific to Economic Zone, **Green Team** agreed to divide into several items as follow:
   a. **Internal cooperation,** focusing in industrial area to cope flood disaster which impacted to production process. Other direct impact of flood for industry such as big flood in Myanmar also affected to worker.
   b. **Legislation,** regulation was needed for preparing disaster management plan.
   c. **Planning,** several planning needed to be conducted such as risk assessment, improvement on disaster management plan to mitigate and indicate of flood, drainage system mitigation, preparedness plan, reviewing flash flood, disaster management plan which was including business and industry, etc.
   d. **Awareness,** education was needed for public awareness.
2. Regarding with Formulation of "Tsunami Disaster Management Plan", **Green Team** agreed to divide into several items as follow:
   a. **Internal cooperation,** to provide Early Warning System (EWS) and build Center of Dissemination for EWS.
   b. **Awareness,** to provide an understanding of tsunami to common people.
   c. **Planning,** to provide disaster management plan for threat or non-threat areas, setting up EWS, risk assessment, preparedness plan, tsunami plan, coastal committee, etc.
   d. **Research,** it needed to be conducted in each country and focused in technology transfer.

II. Mr. Choy Way Kong from Singapore as Leader of **Orange Team** conveyed presentation as below:

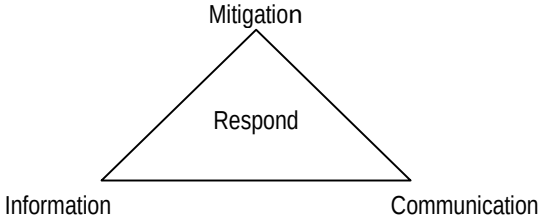
1. Regarding with Formulation of "Disaster Management Plan" Specific to Economic Zone, **Orange Team** suggested 1 item as below:
   - **Planning,** purposing for identifying of industrial area located in hazard disaster area, relocating the industrial zone, operational plan, flood respond plan, etc.

Orange Team provided basic formulation of disaster management plan as below**:**

Risk Map

Business Continuity Plan

Social



2. Regarding with Formulation of "Tsunami Disaster Management Plan", **Orange Team** agreed to divide into 2 items as follow:
   a. **Planning,** including trigger contingency plan, regional EWS, information to community, prevention and adaptation.
   b. **Regional cooperation,** including important aspects in countries cooperation such as providing information for height of tsunami wave, public private partnership, regional cooperation center, and standardization of terminology used among countries.

   Orange Team concluded some important matters such as:

   - Central for warning system in South Cina Sea
   - Installation EWS in high disaster area
   - Public information/education campaign for flood and tsunami
   - Comprehensive tsunami and flood management plan
   - Public Private Partnership

III. Mr. Edgardo from Philippines suggested that research for actual level of tsunami/earthquake should be conducted. Mr. Choy Way Kong also suggested that disaster plan should be well-prepared so that could accommodate all important aspects.

IV. Mr. Takahashi closed first discussion session with several conclusions as follows:
   - Proper plan for disaster management plan is important
   - Regional and international cooperation for tsunami and earthquake are required
   - Awareness and early warning system also important

• Session II : A Guide to Flood Risk Assessment (13.15 pm – 15.30 pm)

I. Mr. Htay Aung Tint from Myanmar asked about definition of hazard, vulnerability, and risk used for flood hazard map. Mr. Mizutani explained that definition already informed in presentation slide. In other hand he also explained that the purposes of flood hazard and vulnerability map could be different depend on the purposes such as map for providing information of dangerous prone area will be different with map for evacuation area. It was also provided in different scale. Flood hazard map usually prepared for regional water area and serious impacted area. For evacuation purposes was used the scale between 1:10.000 and 1:50.000 so that general information and specific information could be included.

II. Regarding with formula used in Hazard-Damage-Relationship slide, Mr. Edgardo from Philippines would like to confirm whether JICA Study Team did some observation to trace hold parameters or indicators. Mr. Mizutani explained that in this case JICA Study Team intended to introduce flood

hazard map which could also estimated floodways. Risk or vulnerability was not ratio or index but it was defined as the function of vulnerability and damages. Damages were function of vulnerability and exposure whereas exposure was value of asset.

III. Ms. Rosalie from Philippines proposed that it would be better if put information of discharge of dam because in several cases the discharge of dam could cause inundation in downstream area.

IV. Ms. Rosalie Pagulayan from Philippines as leader of **Orange Team** conveyed presentation as follows:

Flood Hazard Map

a. **Policy making,** purposed to provide zoning of flood area, identify high risk flood area, develop some strategies, area collaboration or partnership, and develop plan for all the cities.
b. **Flood management plan,** purposed to provide academic resources learning, active participation or preparedness flood control, identify vulnerable groups and population census (to indentify number of population and population affected by flood), and direct transfer information to local people which are easy to understand.
c. **Preparedness/emergency action,** purposed to mobilize of respond asset, conduct capacity building, and preparedness for emergency protocol proposes.
d. **Damage analysis,** purposed to build recovery programme, cost benefit estimation, damage and loss estimation, insurance, and identify stakeholder and owners.
e. **Information to be included,** purposed to provide weather forecast information, risk level or assessment level used for local people, easy explanation for people, information about method to identify flood and landslide area, information of important public facilities, mitigation disaster risk reduction and implementation in curriculum, and community base of EWS etc.

Challenges and Information Sharing

a. **Base map scale larger than 1:50.000,** covered potential solution such as identify map scale, standardization scale, utilize satellite imageries, working groups among countries for collaboration.
b. **Rainfall and discharge record,** covered potential solution such as installation additional equipment, monitoring current facilities conducted by an agency for central data collection, deployed water level sensor, and budget for recorders.
c. **Regional socio economic data for vulnerability,** covered potential solution such as involvement of social media for information sharing, and survey information.
d. **Building infrastructures,** covered potential solution such as design platform for engineering alternative that can be used for the buildings
e. **Additional potential solution** such as dedication of government, public private partnership, building reserve, harmonize activity in river basin, sustainability development, capacity building through software development training, utilization asset and resources, standardization terminology used for easy understanding, public awareness of flood hazard started education in school.

Mr. Edgardo conveyed additional proposed that regroup organization, assessment tool, policy, and awareness could be applied for potential solution.

V. Mr. Hj. Abdul Muthalib from Malaysia as leader of **Green Team** conveyed presentation as follows:

Flood Hazard Map

a. **Policy making,** purposed to provide instrument plan at provincial and local level, development planning for new area or township, Government Central Acts, sedimentation control manual, urban drainage design manual, storm weather management manual.
b. **Identify strategic areas, budgeting,** purposed to clarify by priority, density, and economic. Also identify flood prone area.
c. **Flood management plan,** purposed for development of flood mitigation measures, flood management plan under strategic plan, map to protect loss of life.
d. **Preparedness/emergency action,** purposed to provide location of evacuation center and relief center.
e. **Damage analysis,** purposed to assess losses and recovery effort
f. **Information to be included such as** damage and losses information, person/agency which responsible for damage and losses data, community base disaster risk reduction, distribution of public houses, commercial, and government area, land use affected by flood, structural and non-structural measures (number of people affected by flood, location of police station, who is the person in charge in flood relief, etc), asset values divided into sector such as business or industry etc.

Challenges and Information Sharing

a. **Rainfall and discharge record** included potential solution such as information of land use, discharge, and vulnerability. Agreement boundary country, regional data, development data base, and sharing protocol for regional cooperation.
b. **Base map scale larger than 1:50.000,** included potential solution such as updating map, cost for setting up the model of river basin.

VI. Mr. Hitoshi Baba, JICA conveyed presentation of sample of flood hazard map in Japan. Hazard map contained information of debit flow, river stream, possibility for occurrence of flash flood, place of community, heavy rainfall, possibility area affected by land slide, social data, etc. Map was used for evacuation and land use. Map should be protected by law in each country for implementation in field.

VII. Mr. Hitoshi Baba also explained that map was prepared by using flood simulation, inundation simulation, landslide simulation, and extreme flood.

VIII. Mr. Abdul Thalib from Malaysia asked that water depth and velocity were sufficient for preparing flood hazard map. Mr. Baba informed that data used for map was depending on the area. Water depth, debit flow, risk area of landslide, flood prone area and geography area were important data.

IX. Mr. Mizutani closed the second session with several conclusions as below:

- There were many various challenges of international and domestic challenges
- It was needed more effort to generate some information/relevant information to prepare flood hazard map
- Discussion with other countries which have experience for preparing flood hazard map was necessary such as Japan or China.

- Session III: Presentation from Mr. Hitoshi Baba, JICA and JanJaap Brinkman, Deltares related with Flood Risk Monitoring in Global to Local Scale (15.30 pm – 17.00 pm).
  1. Mr. Hitoshi Baba presented several flood hazard map, he also introduced to participant about Global Alert Flood System which can be accessed via website: http://gfas.internationalfloodnetwork.org/gfas-web/. Visitor could select date, rainfall duration, return period, and area to get display information of flooded area.

  2. Mr. Brinkman explained that for flood forecasting ground data as important as global satellite rainfall data to prepare flood forecasting information. Currently, there was rainfall radar that could provide information within 2 minutes and satellite data provide data every 3 hours and those equipments have chance to be developed in the next years. He also underlined that flood hazard map was prepared for next 10 to 20 years and it was need an organization to update flood hazard map.

Attendance List

Workshop for JICA Data Collection Survey for Disaster Management and Development of Regional Flood Risk Assessment Guidelines

Attendance List (1/3) **Date: June 11, 2012**

No.	Name	Country / Organization	Signature
1	Mr. Sallehuddin Hj Ibrahim	Brunei / National Disaster Management Centre	
2	Mr. Sufri Abd Hamid	Brunei / Public Works Department	
3	Mr. Chanborith Ros	Cambodia / National Committee for Disaster Management	
4	Mr. Monith Seang	Cambodia / National Committee for Disaster Management	
5	Mr. Sugeng Triutomo	Indonesia / National Agency for Disaster Management (BNPB)	
6	Mr. Ir. Teddy W. Sudinda	Indonesia / National Agency for Disaster Management (BNPB)	
7	Mr. Arung Samudro	Indonesia / Ministry of Public Works	
8	Mr. Sudarsono	Indonesia / Ministry of Public Works	
9	Mr. Pradityo Yuda Angono	Indonesia / Ministry of Public Works	
10	Mr. Phonesavanh Saysompheng	Lao PDR / Ministry of Labour and Social Welfare	
11	Mr. Vineliem Bounlom	Lao PDR / Department of Meteorology and Hydrology	
12	Mr. Mohamed Fauzi bin Mohamed Salleh	Malaysia / National Security Council	
13	Mr. Haji Abd. Mutalib bin Mat Hassan	Malaysia / Department of Irrigation and Drainage	
14	Ms. Lae Shwe Zin Oo	Myanmar / Relief and Resettlement Department	
15	Mr. Htay Aung Tint	Myanmar / Irrigation Department	
16	Mr. Edgardo J. Ollet	Philippines / Office of Civil Defense	
17	Ms. Rosalie Pagulayan	Philippines / Philippine Atmospheric, Geophysical and Astronomical Services Administration	
18	Mr. Dennis Ng Chin Ngee	Singapore / Singapore Civil Defence Force	
19	Mr. Choy Wai Kwong	Singapore / Public Utilities Board	
20	Mr. Nummon Talaluck	Thailand / Department of Disaster Prevention and Mitigation	
21	Mr. Somsak Vanseng	Thailand / Department of Disaster Prevention and Mitigation	
22	Mr. Nguyen The Luong	Vietnam / Department of Dyke Management and Flood Storm Control	
23	Mrs. Nguyen Thi Thuy Lieu	Vietnam / Department of Dyke Management and Flood Storm Control	

Workshop for JICA Data Collection Survey for Disaster Management and Development of Regional Flood Risk Assessment Guidelines

Attendance List (2/3) **Date: June 11, 2012**

No.	Name	Country / Organization	Signature
24	Ms. Adelina Dwi kawah kamal	ACDM Secretariat	
25	Dr. Marqueza Lepana Reyes	ISDR	
26	Mr. Arlan Rahman	World Bank, Indonesia	
27	Mr. Ir.Wahyu Budi Setyawan	Indonesian Institute of Sciences (LIPI)	
28	Mr. Said Faisal	AHA Centre	
29	Mr. Janggam Adhityawarma	AHA Centre	
30	Mr. Adi Bishry	AHA Centre	
31	Mr. Yasuhiro Nagasaka	Embassy of Japan in Indonesia	
32	Dr. Hitoshi Baba	JICA	
33	Mr. Hisaya Sawano	JICA	
34	Mr. Takaya Tanaka	JICA	
35	Mr. Yoshio Tokunaga	JICA	
36	Mr. Norio Matsuda	JICA Indonesia	
37	Mr. Toshiro Takanami	Japan Aerospace Exploration Agnecy (JAXA)	
38	Mr. Makoto Kawai	Japan Aerospace Exploration Agnecy (JAXA)	
39	Mr. Shinya Takahashi	JICA Study Team	
40	Mr. Noboru Ikenishi	JICA Study Team	
41	Mr. Yukihiro Mizutani	JICA Study Team	
42	Mr. Naoki Kawahara	JICA Study Team	
43	Mr. Yasunori Shiraishi	JICA Study Team	
44	Mr. Yuki Okuma	JICA Study Team	
45	Mr. Nobuyuki Hashimoto	JICA Study Team	
46	Ms. Hikaru Sugimoto	JICA Study Team	

Workshop for JICA Data Collection Survey for Disaster Management and Development of Regional Flood Risk Assessment Guidelines

Attendance List (3/3) **Date: June 11, 2012**

No.	Name	Country / Organization	Signature
47	Radityo Utomo	JICA	
48	Jaap Brinkman	Deltares	
49	Kees Boris	〃	
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Photographs of the Workshop on June 11th 2012

All Participants of the Workshop

Opening address by Mr Faisal of AHA center

Opening address by Mr Matsuda of JICA Indonesia

Presentation from JICA study team

Group discussion on needs for the regional cooperation

Photographs of the Workshop on June 11th 2012

<table>
<tr><td>  </td><td> 
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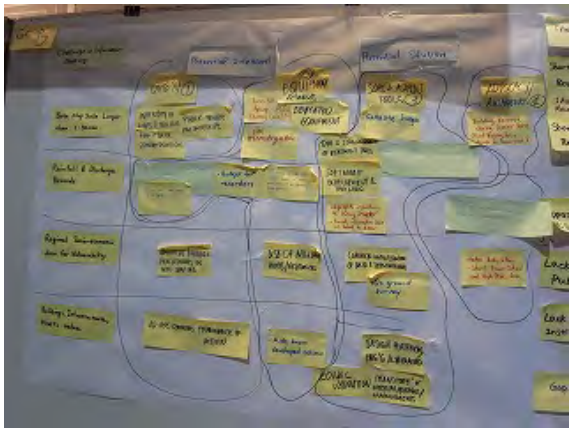
<tr><td>Presentation on the conclusion of discussion</td><td>Presentation on the conclusion of discussion</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Group discussion on guideline on flood risk assessment</td><td>Group discussion on guideline on flood risk assessment</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Result of the discussion on guideline on flood risk assessment</td><td>Presentation on the conclusion of discussion</td></tr>
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The 2nd Workshop for
JICA Data Collection Survey for Disaster Management and
Development of Regional Flood Risk Assessment Guidelines
On 8th and 9th November 2012

1. PROGRAM (PRELIMINARY)

Note that the Program may change.

1.5 Agenda (Program)

The First Day (8th November 2012) Venue: UPPER Room 2-3, 11th Floor, Annex Building Wisma Nusantara Complex, Jakarta (Connected with the Pullman Hotel)	
***	
08:10 – 08:40 (30 min.)	Registration
08:40 – 08:45 (05 min.)	Guidance
08:45 – 09:00 (15 min.)	Opening Address
	Mr. Said Faisal (Director, AHA-Centre)
	Mr. MATSUDA Norio (Principal Representative for ASEAN Coordination, JICA
	Ms. ITO Takako, (Minister-Counsellor, Deputy Chief of Mission, Mission of Japan to ASEAN)
09:00 – 09:10 (10 min.)	Group photographing
***	
Morning Program 8th November, 2012	
1. Presentation of the Survey Results–Draft Final Report (Mr. Takahashi, JICA Study Team)	
09:10 – 09:30 (20 min)	1.1 ASEAN Hazard Profiles with updated data
09:30 – 09:45 (15 min)	1.2 Q&A, Discussions
09:45 – 10:25 (40 min)	1.3 Needs identified through the survey

10:25 – 10:45 (20 min)	1.4 Q&A, Discussions
10:45 – 11:00 (15 min)	*(Refreshment)*
2. A Draft Guide to Flood Risk Assessment (Mr. Mizutani, JICA Study Team)	
11:00 – 11:15 (30 min)	3.1 Presentation
11:15 – 12:15 (30 min)	3.2 Consensus Sounding through Q&A, Discussions
12:15 – 13:10 (55 min)	*(Lunch)*
Afternoon Program 8th November, 2012	
3. Earthquake Disaster Management in ASEAN Region (Dr. Iwata, JICA Study Team)	
13:10 – 13:40 (20 min)	3.1 Approach to Earthquake and Tsunami Disaster Management in ASEAN Cities
13:40 - 13:50 (10 mini)	*3.2 Q&A (as necessary)*
13:50 – 14: 10 (20 min)	3.3 Continuation
14:10 – 14:30 (20 min)	3.4 Q&A, Discussions
14:30 – 14:45 (15 min)	*(Refreshment)*
4. Natural Disaster Risk Assessment of Strategic Industrial Clusters and Formulation of Regional BCP (Mr. Mizutani, JICA Study Team)	
14:45 – 15:15 (30 min)	4.1 Presentation
15:15 – 15:45 (30 min)	4.2 Q&A, Discussions
5. Disaster Management Information System (DMIS) (Mr. Okuma, JICA Study Team)	
15:45 – 16:15 (30 min)	5.1 Introduction of DMIS in Japan 5.2 Proposed projects for ASEAN Region
16:15 – 16:35 (20 min)	5.3 Q&A, Discussions
18:30 -	Reception

The Second Day (9th November 2012) Venue: UPPER Room 2-3, 11th Floor, Annex Building Wisma Nusantara Complex, Jakarta (Connected with the Pullman Hotel)	
***	
Morning Program 9th November, 2012	
6. Current State of Data and Map Available for Disaster Monitoring, Analysis, and Risk Assessment in ASEAN Member States	
09:00 – 10:00 (60 min)	6.1 Presentation (Mr. Janggam, AHA Center)
10:00 – 10:30 (30 min)	6.2 Q&A, Discussions
10:30 – 10:45 (15min)	*(Refreshment)*
7. Overview of Lessons from the Great East Japan Earthquake and Tsunami (Dr. H. Baba, Senior Advisor to AHA Centre)	
10:45 ― 11:45 (60min)	7.1 Presentation
11:45 ―12:15 (30 min)	7.2 Q&A, Discussions
12:15– 14: 15 (120 min)	*(Lunch/Prayer/Free-time)*
Afternoon Program 9th November, 2012	
8. Strengthening Disaster Resilience of ASEAN by human resource development for DRM and regional cooperation (Dr. H. Baba, Senior Advisor to AHA Centre)	
14:15 – 15:00 (45min)	8.1 Presentation
15:00 – 15:15 (15min)	*(Refreshment)*
15:15 – 15:45 (30 min)	8.2 Q&A, Discussions
15:45 – 16:45 (30 min)	8.3 Q&A, Discussions
16:45 -	Closing

DRAFT OF RECORD OF MEETING

2nd Workshop for

JICA Data Collection Survey for Disaster Management and Development of Regional Flood Risk Assessment Guidelines

Place : Upper room 2-3, 11th Floor, Annex Building Wisma Nusantara Complex, Jakarta

Day/date : Thursday - Friday/Nov 8-9, 2012

Attendance list : See the Attachment

Point of Discussion:

I. Workshop on 8th November 2012

- Session I : Presentation of The Survey Results-Draft Final Report: ASEAN Hazard Profile by Mr. Takahashi (09.10 – 10.00)

1. Mr. Moh. Robi Amri, Indonesia
   With regard to the survey results, he suggested the study team to review the data in BNPB because there is no report for death persons caused by drought.
2. Mr. Ridwan Yunus, Indonesia
   - He commented that EM-DAT compiled the data based on peak events which occur once in 100 or 20 years. If compared with the real events that occurred in respective countries there are many small events of which impacts are larger than peak events.
   - He informed that Indonesia has its official disaster data base, to capture small scale data and more information of disaster data base.
   - With regard to hazards crossing the countries in ASEAN, he would like to confirm why forest fire hazard is not included in the study, there is an example that forest fire in Indonesia affected Malaysia and Singapore.
3. Mr. Takahashi, Study Team
   - He answered that the data base used in this study is a data base which have same criteria. He requested to participants to compare and check with their data base if they have any data base related to survey results.
   - With regard to forest fire, he explained that forest fire is not included in TOR of the study.
4. Mr. Choy Wai Kwong, Singapore
   He asked about the differences between flood and storm.
5. Mr. Takahashi, Study Team
   He said that he is not really sure how EM-DAT distinguishes flood and storm. If participants have information about these differences it will be valuable for the study.
6. Ms. Takako Ito, Mission of Japan to ASEAN as Minister-Counselor
   She said that landslide is one of important hazards that must be aware by people. The landslide could be caused by flood or storm that can affect many victims. She would like to confirm why landslide is not mentioned in the study.
7. Mr. Takahashi, Study Team
   He answered that landslide is included in one of mass movements. In Indonesia and Philippines, rain and volcano activity can cause landslide. Mass movements also occurred in Malaysia,

Myanmar, Thailand, and Vietnam.

8. Mr. Pradityo Yudo Anggoro, Indonesia
   He asked about how the study team distinguished mass movement and debris flow.
9. Mr. Takahashi, Study Team
   He explained that based on EM-DAT, mass movement divided into wet mass movement and dry mass movement, and debris flow is included in wet mass movement.
10. Mr. Edgardo, Philippines
    - He asked about the way to categorize mass movement/landslide caused by rainfall, volcanic or tectonic activity. The terminology should be clear in order to focus when discuss about dry and wet mass movement.
    - He suggested the study team to check EM-DAT data with ASEAN data which are to be provided by AHA center.
    - He asked about basic terminology of huge disaster. He also suggested that if study team use data and terminology from EM-DAT. It should be coordinated with AHA Center so that data and terminology can be familiar among ASEAN countries.
    - With regarding to conclusion of the presentation, he commented that the last conclusion should be hazard integrity areas (demographic distribution of region or areas).
11. Mr. Takahashi replied that the team was happy if the presentation would start the discussion on terminology. Also he mentioned it was his intention that the presentation should stimulate the participants to study more about the disasters including the preparation of demographical distribution analysis.
12. Ms. Marqueza, ISDR
    She explained that ASEAN has the road map of risk assessment; priority or action plans have common understanding of using different terminology by different countries. Each country has own definition of hazard, landslide, storm, etc. This is one thing that shall be clarified in ASEAN road map. For example number of death person in Brunei will have different meaning from Indonesia; 10 death persons in Brunei caused by disaster has different meaning, compared with 10 death persons in Indonesia.

- Session II : Presentation of The Survey Results-Draft Final Report: Needs Identified through The Survey by Mr. Takahashi (10.00 – 11.00)

1. Mr. Tokunaga, JICA Expert on Disaster Management Policy
   He informed that there is an information from the World Bank specialist concerning volcanic disaster in Tokyo. Indonesia's Early Warning System of volcano is more progress than Japan and there are total 100 persons of volcano specialists in the Indonesia government so that annual job is to observe and monitor volcanic activities. He also proposed to introduce its experience how to monitor and observe volcanic activity to other country.
2. Mr. Sulaiman, Malaysia
   With regarding to issue of flood early warning system and integrated planning against flash flood occurred in the mountainous areas, urban areas, and semi-arid lands. He informed that Malaysian government is now preparing flood risk maps and flood hazard maps that can be used for multi purposes.

3. Mr. Edgardo, Philippines
   - He said that mass movement is different from sediment disaster. The Study team should check not only the scientific meaning of those disasters because flow of sediment is influenced by human activity in river body. He also said that this study may fulfill the scientific purpose but cannot be applied in the field.
   - He suggested the study team to put three agencies together and let them generalize the definition of mass movement then it will be useful for all users.
   - Mr. Takahashi responded again the presentation was not intended for a complete interpretation and analysis but for the initiation of further discussions among ASEAN countries.
4. Mr. Nummon Talaluck, Thailand
   He informed that after big flood in Thailand, there is dyke construction along the Chao Praya River.
5. Ms. Nguyen Thi Thuy Lieu, Vietnam
   She said that enhancement of early warning system for flash flood is needed and also flood risk assessment. Coping with flood hazards is the highest priority for Vietnam.
6. Ms. Marqueza, ISDR
   She conveyed that currently, there is a research program by NTU Singapore, BMKG, and Phivolcs related with ASEAN Earthquake Modeling Study. This study informed that the Manila trench could cause earthquake and tsunami which will affect to Philippines, Indonesia, Malaysia, Brunei, Vietnam and also Singapore. Not only Manila trench but also Indo-Australia tectonic plate can also cause tectonic movement and can impact to Indonesia, Malaysia, and Singapore.
7. Mr. Takahashi, Study Team
   He said that many trenches have possibilities of causing tectonic movement. There is a comprehensive research by Indonesia (BMKG), Phivolcs, and NTU Singapore. Other countries should be involved in this study to have information about earthquake and tsunami threat.

- Session III : Presentation of Disaster Management Information System (DMIS): Introduction of DMIS in Japan by Mr. Okuma (11.15 – 12.15)

1. Dr. Janggam, AHA Center
   - He commented that AHA Center may not effectively utilize the DMIS developed unless source information from ASEAN member states is shared well among ASEAN. For example now no flood hazard maps which were already developed by ASEAN member states have been provided to AHA center yet. The function of AHA center will not be effectively operated without relevant source information.
   - He explained that one function of AHA Center is to collect information from the national disaster management offices (national focal points), but AHA Center will not be able to collect relevant information directly from respective cities or megacities of ASEAN member states.
2. Mr. Mizutani, Study Team
   He answered that at present there is no institutional arrangement to collect officially the information from expected ASEAN member states. For example topographic maps of which scale is larger than 1:50.000 and primary rainfall and hydraulic data are not available for foreigners in most member states. Accuracy of small scale maps will not be enough for detailed risk assessment. ASEAN collaboration is required to resolve the issues.
3. Mr. Ridwan Yunus, Indonesia

- He conveyed that it is not very difficult to get some data but creating data to input to relevant in information systems is difficult because every country has independent regulation about data sharing.
- He said that the purpose of AHA center to collect data is not clear. If the AHA center is a coordinating agency, then they will collect general information, but if the AHA Center is an operating agency then they need to collect detail information. Hazard data is rather easy to be opened to the public but vulnerability data is difficult to be opened because it is related with critical infrastructure, economic points, etc in which everyone know about significance of this. It is better start with general data.

4. Mr. Takahashi, Study Team

   He noted that AHA Center just established one year ago, thus it is important to discuss what kind of information should be operated by AHA Center in the future. Development of AHA Center will be done step by step.

5. Ms. Marqueza, ISDR
   - With regard to presentation from Mr. Okuma about data format, she considers that historical data will be needed. Indonesia is one of good examples for historical disaster data base because documentary is provided by online. Other countries such as Lao PDR, Cambodia, and Vietnam are also developing their historical data of damages and losses by disasters, and UNDP is supporting their data base. Soon Philippines and Brunei will develop the data base. In parallel with developing historical data base there is capacity building in relevant countries.
   - The important is every country has different information also within the cities. ASEAN secretariat just started to service this issue.

6. Dr. Janggam, AHA Center

   He explained that in developing of information system there is one principle. It should be developed as a reliable system which can accommodate all systems of ASEAN Countries. If there is no information system in ASEAN countries, AHA Center can introduce a reliable information system but if there are another information systems in the member states AHA Center should adjust with their system.

7. Mr. Edgardo, Philippines

   He proposed that there should be a learning center which prepares annual assessment about disaster impact to ASEAN countries so that other member can have information regularly related to disaster and attract other ASEAN member to share information.

8. Ms. Saiko Saito, Mission of Japan to ASEAN, Second Secretary
   - She would like to know about current status of the proposal of DMIS, if study team willing to develop such kind of project, they should consult with AHA Center. As we know AHA Center is not implementing agency they are coordinating agency thus they could not raise ASEAN members to have information system.
   - She informed that AHA Center was begun one year ago, so it still young institution. AHA Center together with Japan is trying to create disaster actions to face disaster events.

9. Mr. Takahashi, JICA Study Team

   He answered that the DMIS development is just an introduction for AHA Center in the future, but not as a concrete project.

- Session IV: Presentation of Earthquake Disaster Management in ASEAN: Approach to Earthquake and Tsunami Disaster Management in ASEAN Cities by Dr. Iwata (13:10 – 14.30)
  1. Mr. Pradityo Yudo Anggoro, Indonesia
     He asked about a way to raise people's awareness to earthquake disaster.
  2. Dr. Iwata, Study Team
     He answered that the trend of disaster risk awareness started almost 100 years ago. To cultivate people's awareness is needed constantly through disaster education especially in big cities such as Jakarta, Manila, and Tokyo.
  3. Mr. Ridwan Yunus, Indonesia
     - He informed that BNPB have established a standard guideline of multi hazard assessment. Now BNPB is working in 33 locations for district risk assessment. With reference to two parameters, hazard and risk mentioned in the presentation, he would like to ask about parameter of vulnerability in coping with government capacity.
     - He asked about how to plan government as part of BCP
     - He also asked about the class of tsunami and multi hazards which have different scoring.
  4. Dr. Iwata, Study Team
     He answered that selecting indicator parameters for ASEAN countries can be exchanged, and there is no scientific basis because it is based on judgment. Parameter can be different for each country. The information will provide for practitioners, city leaders, and government officers etc. for today and tomorrow.
     BCP can be implemented by governments, communities, and Industries. In raising people's awareness in disaster hazard it is expected people can participate in this process.
  5. Ms. Marqueza, ISDR
     She agreed that the results are depending on the used indicator. For example social vulnerability uses income, population, and social vulnerability. Results could be different from different risk maps. If we add awareness scenario then risk configuration for Jakarta could be different.
     Basis of BCP include risk assessment. In Indonesia there is a computer software with various hazard scenarios, this tool can be used to support risk assessment with various scenarios of hazard. She asked about kind of tools used by Dr. Iwata.
  6. Dr. Iwata, Study Team
     He said that every country has different policies to determine what tool should be used. Study team use GIS tool with classical and manual method. The advantages of manual method are that it can be sure how we thread data and it can be generated very quickly for different various scenarios.
  7. Dr. Hitoshi Baba, JICA Senior Advisor
     With regard to the question of Ms. Marqueza, he would like to clarify about the results that would be different based on parameters. The important is to know various scenarios of hazard based on data available, decision, and government think. A lesson learned from the Japan tsunami last year it should be considered many priority scenarios.
  8. Dr. Iwata, Study Team
     He noted that this procedure is scientific, we should develop many scenarios so that more practically.

- Session V: Presentation of Natural Disaster Risk Assessment of Strategic Industrial Clusters and Formulation of Regional BCP by Mr. Mizutani (14:30 – 15.30)
  1. Ms. Marqueza, ISDR
     - She would like to clarify definition of the word "regional BCP". If 'region' does not mean the whole ASEAN region but it means one region of industrial park within respective countries.
     - She commented that BCP would involve business sector and industrial parks as economic zone. In any country there is a government which governs a region. According to her opinion, regional continuity of operation is more comprehensive than business continuity. Companies could not operate utilities by their selves because those are conducted by government. She suggested that private sectors shall be involved in BCP. It will be better adopt participatory approach inviting both public and private stakeholders for discussion.
  2. Mr. Mizutani, Study Team
     - He agreed with Ms. Marqueza regarding the word of regional BCP which refers to an area within any industrial park of a country. Usually BCP refer to one company, an industrial park is a region, and also infrastructure and utilities are for a region.
     - BCP is originally limited to an individual company, but if there is a catastrophic flood in industrial parks, companies could not operate utilities and infrastructure by their selves only. Water supply, power supply, transportation systems, etc will not be available due to flood disaster. For sustainable operation of industrial parks, collaborative role of public and industrial sectors are important.

- Session VI: Presentation of A Draft Guide to Flood Risk Assessment by Mr. Mizutani (15:45 – 16.50)
  1. Mr. Ridwan Yunus, Indonesia
     He informed that Indonesia has a guideline for multi hazard assessment. One of assessment is flood. One of parameter used in flood assessment is soil because different type of soil will result in different water flow. Other parameter is land cover because rain water will flow faster in open land. Data used in risk assessment and vulnerability are socio-economic, physical, and environmental. Expected final outputs are maps, number of people exposed in hazard areas, and monetary losses due to flood. There are 15 risk maps for a region for different scenarios, different hazards and indices.
  2. Mr. Sulaiman, Malaysia
     He informed that Malaysia has produced flood hazard maps and multi hazard maps. Those are prepared for three different scenarios that are 10, 50 and 100 years. Data is made by surveys.
  3. Ms. Marqueza, ISDR
     She commented that in the ASEAN road map there are different methodologies of risk assessment. The draft guide prepared by the study uses probabilistic risk assessment and it is different with deterministic assessment. Probabilistic methodology is more scientific than deterministic assessment. In this methodology, it is determined likelihood of flood event happening in a return period such as 1% per year.
     Many academics use this probabilistic methodology trough many researches. It is required many data for example exposure data to make a stage damage curve and a lot of analyses.
     Deterministic ones done by Indonesia use indicators and index. This methodology is very useful for many purposes and doing risk assessment in simple way.

The probabilistic methodology requires sophisticated analyses because loss or damage analysis should use stage damage curves, so only a few of specialists in institution can do this analysis. In ASEAN it is agreed that they will promote all types of methodology because there is appropriate purpose for each methodology.

4. Mr. Choy Wai Kong, Singapore
   He noted about cost requirement to do probabilistic methodology and importance of producing accurate hazard maps. Estimating amount of damages to assets required for risk assessment is very difficult because assets are different depending on location, type of buildings, owners, time, etc., and value of assets varies.

II. Workshop on 9th November 2012

- Session I : Presentation of Current State of Data and Map Available for Disaster Monitoring, Analysis, and Risk Assessment in ASEAN Member States by Dr. Janggam (09.00 – 10.00)
  1. Mr. Ridwan Yunus, Indonesia
     He noted about the reason of vulnerability that is not included in existing information system. Online data has village level data used for risk assessment, and also their system already integrated to risk disaster data base and analysis that can be done by online link with disaster and poverty.

- Session II : Presentation of Overview of Lesson Learned from Great East Japan Earthquake and Tsunami by Dr. Hitoshi Baba (10.20 – 11.30)
  1. Ms. Marqueza, ISDR
     She agreed with Dr. Baba's recommendation that there should be integrated disaster management regulation and governance based on probabilistic risk assessment,. In reality, in developing countries in ASIA there is not enough capacity for local city planning officers to conduct this risk assessment. Many local governments use hazards maps for their city planning but there are many limitations when we use hazard maps. So there is a need to enhance capacity of local governments for probabilistic methodology. Maybe JICA is interested in training for probabilistic risk assessment methodology.
  2. Dr. Hitoshi Baba, JICA Senior Advisor
     He said that he aware for lack of capacity in local government capacity. He will explain in this afternoon regarding with human resources development. Even in Japan, some cities of disaster officers still use deterministic methodology. It is quite difficult to change the mind set of local officers for using probabilistic methodology for city planning.

- Session III : Presentation of Strengthening Disaster Resilience of ASEAN by Human Resources Development for DRM and regional cooperation by Dr. Hitoshi Baba (14.15 – 15.20)
  1. Ms. Marqueza, ISDR
     She would like to encourage the participant to give comments on the draft guide to flood risk assessment before the dead line on November 16, 2012. She informed that Ms. Adelina Kamal as Head of Disaster Management and Humanitarian Assistance on Disaster Management will circulate the Proposal of Risk Assessment in Industrial Zone in National Focal Point. She also informed that in February 2013, there will be a working group meeting on Early Warning System. If possible a representative from JICA will attend the meeting

Attendance List

Workshop for JICA Data Collection Survey for Disaster Management and Development of Regional Flood Risk Assessment Guidelines

Attendance List (1/3) **Date: November 8, 2012**

No.	Name	Country / Organization	Signature
1	Mr. Abdul Ghani Othman	Brunei / National Disaster Management Centre	
2	Mr. Sufri Abd Hamid	Brunei / Public Works Department	
3	H E Khun Sokha	Cambodia / National Committee for Disaster Management	
4	Mr. Khoun Phanna	Cambodia / National Committee for Disaster Management	
5	Mr. Sugeng Triutomo	Indonesia / National Agency for Disaster Management (BNPB)	
6	Mr. Ir. Teddy W. Sudinda	Indonesia / National Agency for Disaster Management (BNPB)	
7	Mr. Arung Samudro	Indonesia / Ministry of Public Works	
8	Mr. Sudarsono	Indonesia / Ministry of Public Works	
9	Mr. Pradityo Yuda Angono	Indonesia / Ministry of Public Works	
10	Ms. Vimala Khounthalangs	Lao PDR / Ministry of Labour and Social Welfare	
11	Mr. Vineliem Bounlom	Lao PDR / Department of Meteorology and Hydrology	
12	Ms. Siti Mariam binti Abu	Malaysia / National Security Council	
13	Mr. Wan Mohd Sulaiman bin W. Ismail	Malaysia / Department of Irrigation and Drainage	
14	Mr. Than Soe	Myanmar / Relief and Resettlement Department	
15	Mr. Aung Nyi Win	Myanmar / Irrigation Department for Data Collection Survey on ASEAN Regional Collaborationi in Disaster Management	
16	Mr. Edgardo J. Ollet	Philippines / Office of Civil Defense	
17	Ms. Rosalie Pagulayan	Philippines / Philippine Atmospheric, Geophysical and Astronomical Services Administration	
18	Mr. Md Faizul Kamaruddin	Singapore / Singapore Civil Defence Force	
19	Mr. Choy Wai Kwong	Singapore / Public Utilities Board	
20	Mr. Nummon Talaluck	Thailand / Department of Disaster Prevention and Mitigation	
21	Mr. Somsak Vanseng	Thailand / Department of Disaster Prevention and Mitigation	
22	Mr. Nguyen The Luong	Vietnam / Department of Dyke Management and Flood Storm Control	
23	Ms. Nguyen Thi Thuy Lieu	Vietnam / Department of Dyke Management and Flood Storm Control	

Workshop for JICA Data Collection Survey for Disaster Management and Development of Regional Flood Risk Assessment Guidelines

Attendance List (2/3) **Date: November 8, 2012**

No.	Name	Country / Organization	Signature
24	Ms. Adelina Dwi kawah kamal	ACDM	
25	Ms. Neni	ACDM	
26	Dr. Marqueza Lepana Reyes	ISDR	
27	Mr. Ir.Wahyu Budi Setyawan	Indonesian Institute of Sciences (LIPI)	
28	Mr. Said Faisal	AHA Centre	
29	Mr. Janggam Adhityawarma	AHA Centre	
30	Mr. Adi Bishry Andy	AHA Centre	
31	Ms. Takako Ito	Mission of Japan to ASEAN	
32	Mr. Yasuhiro Nagasaka	Mission of Japan to ASEAN	
33	Ms. Saiko Saito	Mission of Japan to ASEAN	
34	Dr. Hitoshi Baba	JICA	
35	Mr. Hideaki Matsumoto	JICA	
36	Mr. Norio Matsuda	JICA Indonesia	
37	Ms. Yoko Yamoto	JICA Indonesia	
38	Mr. Hideki Katayama	JICA Indonesia	
39	Mr. Yoshio Tokunaga	BNPB	
40	Mr.Murakami	Ministry of Internal Affairs and Communications	
41	Mr. Shinya Takahashi	JICA Study Team	
42	Dr. Shizuo Iwata	JICA Study Team	
43	Mr. Yukihiro Mizutani	JICA Study Team	
44	Mr. Yuki Okuma	JICA Study Team	
45	Ms. Rina Yuliani	JICA Study Team	
46	Ms. Masako Teramoto	JICA Study Team	

Workshop for JICA Data Collection Survey for Disaster Management and Development of Regional Flood Risk Assessment Guidelines

Attendance List (3/3) **Date: November 8, 2012**

No.	Name	Country / Organization	Signature
47	Fuji Maeda	Japan / NTT	
48	Fujisaki Seiya	~~JICA~~ JICS	
49	Mohd Rdz. Amri	BNPB	
50	B. Andy Musaffa	AHA Centre	
51	Radityo, Adhi	JICA	
52	Ridwan Yunus	BNPB	
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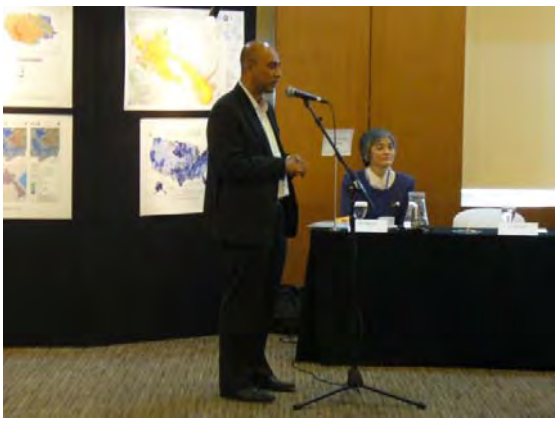
Photographs of the Workshop on November 8-9th 2012

All Participants of the Workshop



Opening address by Mr. Faisal of AHA center

Presentation from JICA study team

Discussion

Presentation from AHA Center