NATIONAL AGENCY FOR DISASTER MANAGEMENT (BNPB)
REPUBLIC OF INDONESIA

THE PROJECT FOR ENHANCEMENT OF THE DISASTER MANAGEMENT CAPACITY OF BNPB AND BPBD

PROJECT COMPLETION REPORT

NOVEMBER 2015

JAPAN INTERNATIONAL COOPERATION AGENCY

ORIENTAL CONSULTANTS GLOBAL CO., LTD.
ASIAN DISASTER REDUCTION CENTER

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Abbreviations

AIFDR	Australia–Indonesia Facility for Disaster Reduction
APBD	Regional Budget
BAPPEDA	Indonesian: Regional Body for Planning and Development
BG	Geological Agency of Indonesia
BGR	German Federal Institute for Geosciences and Natural Resources
BIG	Agency of Geospatial Information
BMKG	Agency for Meteorology, Climatology, and Geophysics
BNPB	National Agency for Disaster Management
BPBD	Regional Agency for Disaster Management
BPPT	Agency For The Assessment And Application Of Technology
BPS	Central Bureau of Statistics
CA	Capacity Assessment
CBDRM	Community-Based Disaster Risk Management
C/P	Counterpart
CPX	Command Post Exercise
DIBI	The Indonesian Disaster Information and Data
DIG	Disaster Imagination Game
DM	Disaster Management
DRR	Disaster Risk Reduction
FGD	Focus Group Discussion
FTX	Field Training Exercise
GIS	Geographic Information System
GIZ	German Society for International Cooperation
HFA	Hyogo Framework for Action 2005-2015
HVC	Hazard, Vulnerability, Capacity
IC/R	Inception Report
ITB	Bandung Institute of Technology
JCC	Joint Coordination Committee
LIPI	Indonesian Institute of Science
OJT	On-the-Job Training
PU	Ministry of Public Works
P/D	Project Director
PDM	Project Design Matrix
PMI	Palang Merah Indonesia / Indonesian Red Cross
PUSDALOPS	Emergency Response Headquarters
PVMBG	Center for Volcanology & Geological Hazard Mitigation
QRT	Quick Response Team
RPJMD	Midterm Regional Development Plan
R/D	Record of Discussion
RDMP	Regional Disaster Management Plan
SATLAK	Disaster Management Coordinating Agency
SAR	Search and Rescue

SFDRR	Sendai Framework for Disaster Risk Reduction 2015-2030
SEKDA	Regional Secretary
SNI	Standard National Indonesia
SRTM	Shuttle Radar Topography Mission
SOP	Standard Operating Procedure
TTX	Tabletop Exercise
UGM	Gajamada University
UNDP	United Nations Development Programme

1. Introduction

1.1 Background of the Project

Indonesia has a population of 227 million, and a territory of 1.90 million km², which consists of more than 18,000 islands. The country's GNI per capita is 2,010 US dollars (as of 2008). The weather in most of the country can be divided into the dry season and the rainy season. In the dry season, there is damage from droughts and forest fires. In the rainy season, water immersion and flood damage caused by squalls or heavy rain occur frequently. Furthermore, the country is located on the borders of the Pacific plate, Eurasian plate, Australian plate and Philippine Sea plate, which often cause natural disasters, such as earthquakes, volcanic eruptions, and tsunamis caused by earthquakes. Examples of such disasters and resulting damage in recent years are: the Indian Ocean earthquake and tsunami in December, 2004 (165,708 people dead, 4,450 million US$ cost) and the Java earthquake in May, 2006 (5,778 people dead, 3,100 million US$ cost). Damage from both of the earthquakes was quite heavy. In addition, the most recent large-scale disasters include: the Padang earthquake in September, 2009 (1,195 dead, 2.2 billion US$ cost), eruptions of Mount Merapi (322 people dead), and the Mentawai island tsunami (530 people dead) in September, 2010. These disasters have raised awareness of the importance of disaster management.

The government of Indonesia, upon these occasions, enacted Law No. 24 on Disaster Management in 2007, and strengthened the disaster management systems of the country through establishing the BNPB (National Agency for Disaster Management). At the same time, as a part of the measures to enhance the capacity for disaster management, the government of Indonesia requested the government of Japan to formulate a comprehensive disaster management plan at the national and local levels and for the enhancement of capacities for natural disaster management. Having received the request, JICA implemented "The Study on Natural Disaster Management in Indonesia" (hereinafter referred to as "the JICA Study") from March, 2007 to March, 2009. Through this JICA Study, formulation of a provisional disaster management plan at both national and local levels (in three pilot areas), development of hazard and risk maps at local levels, and capacity enhancement for natural disaster management for the organizations involved in disaster management at both national and local levels and for the communities supported. A system for disaster management at national and local levels was determined. Also through this Study, the know-how for development of the hazard and risk maps and Regional Disaster Management Plan were accumulated in each related government division. However, BNPB, which has only a short history, does not have an adequate organizational structure, budget, skills, know-how, or staff, and it is difficult for BNPB to give directions or sufficiently support the local governments in establishing BPBD (the Regional Agency for Disaster Management) or in formulating the Regional Disaster Management Plans. Additionally, although each local government proceeds with establishing its own BPBD as a permanent main agency in case of disaster, the effective activities do not seem realistic since their knowledge and

experience on disaster management are lacking. This project was implemented with counterparts (hereinafter referred to as "C/P(s)") of BNPB, provincial BPBDs in North Sulawesi and West Nusa Tenggara provinces, and regency/municipality BPBDs in both provinces, with the goal of enhancing the disaster management capacity for reducing damage from disasters in Indonesia. In this Project, in order to implement the disaster management operations validly and effectively, the staff of BNPB, which is an agency of the central government, shall not only acquire professional skills regarding disaster management, but also strengthen the leadership for arranging the disaster management systems in each local area relating to budget arrangement, environmental and social considerations and by providing advice to the local governments. On the other hand, since some counterpart BPBDs of pilot provinces and their regencies and municipalities have been recently established and others are currently being established, they do not possess much experience in implementing disaster management operations. Accordingly, BPBDs shall learn basic knowledge on disaster management measures, ways to utilize the lessons learned from cases in the past, what necessary information is to be delivered for disaster management, how it should be delivered, the contents of disaster management operations necessary for prevention (damage repression, damage reduction) measures, and shall acquire the skills needed to implement the above operations.

1.2 Outline of the Project

(1) Project Name

The Project for Enhancement of the Disaster Management Capacity of BNPB and BPBD

(2) Overall Goal

The provincial BPBDs as well as the regency/municipality BPBDs beside the target areas are established, and the disaster management capacities of them are enhanced by using materials formulated and methodology established in the project.

(3) Project Purpose

The disaster management capacities of BNPB, the provincial BPBDs, and the regency/municipality BPBDs in the target area are enhanced.

(4) Project Outputs and their Indicators

【Output 1】

The capacity for the regency/municipality BPBDs to accumulate disaster data/information which are fundamental for disaster risk management and improve accuracy of such data/information in the target area is enhanced.

【Activities】

1-1. To study contents of disaster data/information to be acquired and accumulated at a regional

level (regency/municipality level) in the target area based on the lessons learned from the JICA Study, "The Study on Natural Disaster Management in Indonesia (the JICA Study)" in order to establish format for sharing disaster data

1-2. To study necessary data items as well as data format to be shared and informed to the provincial BPBDs from the regency/municipality BPBDs in the target area, and informed to the BNPB from the provincial BPBDs in the target area in order to establish the methodology for accumulating necessary data

1-3. To formulate "Technical guideline for acquiring and accumulating disaster data/ information for regencies/municipalities"

1-4. To acquire and accumulate disaster data/information in the in the 1st target area using the format developed through the Project

1-5. To list the disaster data accumulated in the in the 1st target area into the disaster annual report

【Indicators】

1-1. Accumulation of disaster data items (Newly accumulated since there are no existing data) in the target area.

1-2. Improvement of disaster data quality (By following the format, data are sufficiently accumulated) in the target area.

【Output 2】

The capacity for creation of Hazard and risk maps at regency/municipality level in the target area is enhanced.

【Activities】

2-1. To study and verify effectiveness of "the manual for creation of hazard and risk maps" developed through the JICA Study.

2-2. To formulate "Technical guideline for creation of hazard maps for regencies/municipalities"

2-3. To collect and clarify basic data including statistics, social data, data on natural conditions

2-4. To create hazard and risk maps based on the data accumulated through Output 1 as well as basic data collected in Activity 2-3

2-5. To plan disaster mitigation measures based on the hazard and risk maps created through Activity 2-4 as well as the lessons learned from the Regional Disaster Management Plan (RDMP) developed through the JICA Study

【Indicators】

2-1. Number of the regencies/municipalities where hazard and risk maps at regency/municipality level are created in the target area.

【Output 3】

The capacity for formulation of Regional disaster management plans for regency/municipality in the target area is enhanced.

【Activities】

3-1. To formulate "Technical guideline for formulation of regional disaster management plan for regencies/municipalities".

3-2. To study about revision of Standard Operation Procedure (SOP) used commonly by regency/municipality in order to prepare standard manual and formulate "Technical guideline for formulation of SOP for regencies/municipalities"

3-3. To collect and clarify basic data including statistics, social data, data on natural conditions necessary for formulating RDMPs for the target area

3-4. To formulate RDMPs and Regional Action Plans for Disaster Risk Reduction (DRR) for the target area

3-5. To formulate or revise SOP in the 1st target area

3-6. To revise the existing SOP according to emergency response plan of the RDMP formulated through the Activity 3-4 in the 1st target area

3-7. To promote official appraisal by regency/municipality of RDMP formulated through Activity 3-4

【Indicators】

3-1. Number of the regencies/municipalities where regional disaster management plans are formulated at regency/municipality level in the target area.

【Output 4】

The capacity for conducting Disaster management exercises at the regency/municipality in the target area is enhanced.

【Activities】

4-1. To study existing documents for implementation of disaster management exercises

4-2. To formulate "Technical guideline for implementing disaster management exercises for regencies/municipalities"

4-3. To implement disaster management exercises in the 1st target area together with national level organizations

4-4. To revise "Technical guideline for implementing disaster management exercises for regencies/municipalities" as well as SOPs based on the result of the disaster management exercise if necessary

4-5. To conduct activities on community-based disaster risk management (CBDRM) to empower disaster management capacity utilizing output formulated through the Project

【Indicators】

4-1. Number of disaster management exercises implemented in the target area.

4-2. Number of activities on CBDRM in the target area.

【Output 5】

Nationwide dissemination activities are implemented.

【Activities】

5-1. To improve Technical guideline for formulation of RDMP to be utilized as reference document of BNPB

5-2. To participate events hosted by BNPB to explain effective utilization of the Technical Guideline for formulation of RDMP

5-3. To give input for formulation of disaster risk assessment technical guideline for regencies/municipalities

5-4. To promote the methodology developed in Output 2 Activity 2.2 especially on Earthquake Hazard

【Indicators】

5-1. Technical Guideline for formulation of RDMP is utilized as reference documents of BNPB

5-2. Number of events to support nationwide dissemination activities on formulation of RDMP

(5) Target Areas

The main target areas of the Project are as follows:

1) The Project is to be implemented with its target areas as follows: Jakarta (BNPB), provincial BPBD of North Sulawesi province and regency/municipality BPBDs within it, as well as provincial BPBD of West Nusa Tenggara province and those of its regencies/municipalities. (At the beginning of the project, the second pilot was Bali province, but West Nusa Tenggara province was officially selected as the second pilot province by the letter from BNPB on May 17, 2013)

2) During the Project period, project operations are done to BNPB during the whole period, to North Sulawesi province mainly in the first period, and to West Nusa Tenggara province mainly in the second period.

3) Meanwhile, in order to study the disaster management capacities of organizations related to and involved in disaster management, such as BNPB, BPBDs, and those of communities, surveys will be added if needed. Survey sites will be: Jember regency in East Java province, Padang Pariaman regency, Pariaman municipality in West Sumatra province where the JICA Study was conducted, as well as locations which have been hit by disasters in recent years such as offshore of the Mentawai Islands, where the earthquake and tsunami disaster hit in 2010, and areas around Mount Merapi, which erupted in 2010.

Currently, BPBDs have been established in all 15 regencies/municipalities of North Sulawesi province, and all 10 regencies/municipalities in West Nusa Tenggara province. The following regencies/municipalities are targeted in the Project.

Table 1.2.1 Pilot Provinces and Regencies/Municipalities in the Pilot Provinces

Province	Regency/Municipality	Province	Regency/Municipality
North Sulawesi	Manado Municipality	West Nusa Tenggara	Mataram Municipality
	Bitung Municipality		West Lombok Regency
	Tomohon Municipality		North Lombok Regency
	Kotamobagu Municipality		Central Lombok Regency
	Bolaang Mongondow Regency		East Lombok Regency
	North Bolaang Mongondow Regency		West Sumbawa Regency
	South Bolaang Mongondow Regency		Sumbawa Regency
	East Bolaang Mongondow Regency		Dompu Regency
	Minahasa Regency		Bima Regency
	North Minahasa Regency		Bima Municipality
	South Minahasa Regency		
	South East Minahasa Regency		
	Kepulauan Sitaro Regency (Island Regency)		
	Kepulauan Sangihe Regency (Island Regency)		
	Kepulauan Talaud Regency (Island Regency)		

(6) Related Authorities and Organizations

1) C/P Organizaions

BNPB, provincial BPBD in North Sulawesi province, regency/municipality BPBDs in North Sulawesi province, provincial BPBD in West Nusa Tenggara province, regency/municipality BPBDs in West Nusa Tenggara province

2) Beneficiaries

Direct Beneficiaries: BNPB, provincial BPBDs of North Sulawesi and West Nusa Tenggara province, regency/municipality BRPDs in both provinces

Indirect Beneficiaries: Residents of target areas

1.3 Objectives of the Project

The Project will be implemented with its C/Ps of BNPB, provincial BPBDs in North Sulawesi and West Nusa Tenggara provinces, and regency/municipality BPBDs in both provinces, with the goal of enhancing the disaster management capacity for reducing damage from disasters in Indonesia.

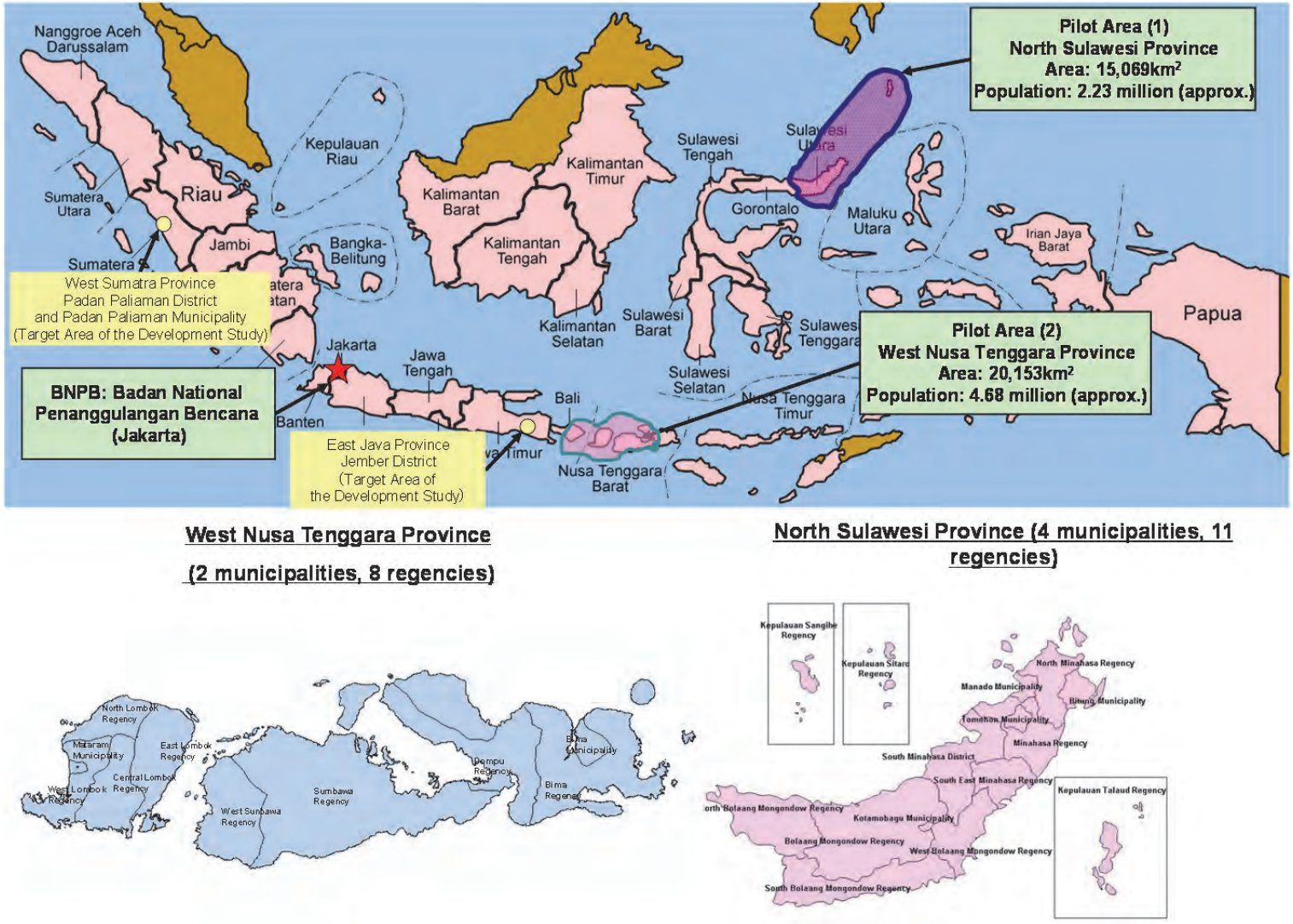


Figure 1.3.1 Pilot Area of the Project

Table 1.3.1 Project Design Matrix, Version 1

Project Design Matrix (PDM), (Version 1)

Date: November 24, 2011

Project Name: The Project for Enhancement of the Disaster Management Capacity of BNPB and BPBD
Project Term: 2011 - 2015 (four years)
Target area (pilot provinces): North Sulawesi province (Manado Municipality and other regencies/municipalities), Bali province: Tentative (Denpasar Municipality and other regencies/municipalities)
Target group: National Disaster Management Agency (BNPB); at least two Regional Disaster Management Agencies (BPBDs) of two provinces: North Sulawesi province, Bali province (Tentative); and the Regency/Municipality BPBDs in the target area (pilot provinces)

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal The provincial BPBDs as well as the regency/municipality BPBDs beside the pilot areas are established, and the disaster management capacities of them are enhanced by using the same method in the project.	The number of provinces as well as regencies/municipalities that apply the methodologies established in the Project for accumulating disaster data, creating hazard and risk maps, formulating regional disaster management plan and conducting disaster management drill.	1. Interviews with the BNPB and BPBD staff	Disaster management framework by current disaster-related organizations as well as disaster-related policy in Indonesia remains unchanged.
Project Purpose The disaster management capacities of BNPB, the provincial BPBDs, and the regency/municipality BPBDs in the pilot area are enhanced.	1. Number or Cases that Regional Disaster Management Plan (RDMP) formulated through the Project is officially approved by the respective local authority. 2. Number of voluntary disaster management drill conducted within the pilot community.	1. Regency/municipality orders 2. BNPB or BPBD reports, newspaper articles on these cases, or interviewing the community	BNBP extends its activities in the pilot area to other provincial BPBDs, regencies/ municipalities outside the pilot areas.
Outputs 1. The capacity for the regency/municipality BPBDs to accumulate disaster data/information which are fundamental for disaster risk management and improve accuracy of such data/information are improved. 2. Hazard and risk maps at regency/municipality level in the pilot area are created. 3. Regional disaster management plans for regency/municipality in the pilot area are formulated. 4. Disaster management drills are conducted in the pilot provinces as well as regency/municipality in the pilot provinces.	1-1. Accumulation of disaster data items (Newly accumulated since there are no existing data) 1-2. Improvement of disaster data quality (By following the format, data are sufficiently accumulated) 2-1. Number of the regencies/municipalities where hazard and risk maps at regency/municipality level are created in the pilot provinces 3-1. Number of the regencies/municipalities where regional disaster management plans are formulated at regency/municipality level in the pilot provinces. 4-1. Number of disaster management drills implemented in the pilot area together with national level organizations. 4-2. Number of activities on CBDRM in the pilot area.	1-1. Project reports 1-2. Project reports 2-1. Project reports 3-1. Project reports 4-1. Project reports 4-2. Project reports	
Activities 1-1. To study contents of disaster data/information to be acquired and accumulated at a regional level (regency/municipality level) in the pilot area based on the lessons learned from the JICA Study, "The Study on Natural Disaster Management in Indonesia (the JICA Study)" in order to establish format for sharing disaster data 1-2. To study necessary data items as well as data format to be shared and informed to the provincial BPBDs from the regency/municipality BPBDs in the pilot area, and informed to the BNPB from the provincial BPBDs in the pilot area in order to establish the methodology for accumulating necessary data 1-3. To formulate the manual for acquiring and accumulating disaster data/ information 1-4. To acquire and accumulate disaster data/information in the pilot area using the format developed through the Project 1-5. To list the disaster data accumulated in the pilot area into the disaster annual report 2-1. To study and verify effectiveness of "the manual for creation of hazard and risk maps", developed through the JICA Study. 2-2. To revise manual for creation of hazard and risk maps developed through the JICA Study 2-3. To collect and clarify basic data including statistics, social data, data on natural conditions 2-4. To create hazard and risk maps based on the data accumulated through Output 1 as well as basic data collected in Activity 2-3 2-5. To plan disaster mitigation measures based on the hazard and risk maps created through Activity 2-4 as well as the lessons learned from the Regional Disaster Management Plan (RDMP) developed through the JICA Study 3-1. To add other disasters including volcanic eruptions, drought, destructive wind, and forest fires as target disasters and revise manual developed through the JICA Study, for formulation of RDMP, which covers 8 types of natural disasters (earthquakes, tsunamis, volcanic eruptions, floods, landslides, drought, destructive wind, and forest fires). 3-2. To study about revision of Standard Operation Procedure (SOP) used commonly by regency/municipality in order to prepare standard manual and formulate manual for formulation of SOP	**Inputs** **(Indonesian side)** 1. Assignment of counterpart personnel (C/P) - Project Director (P/D) from BNPB (Deputy Chief for Prevention and Preparedness) - Project Manager (P/M) from BNPB (Director for Disaster Risk Reduction) - Project Coordinator (Administration) from BNPB (Director for Bureau for Laws and Cooperation) -Output 1: Team Leader (Deputy Chief of Disaster Information, Division of Information Center) and necessary number of staff from BNPB, and necessary number of staff from BPBD in the pilot provinces) -Output 2: Team Leader (Sub-director of Prevention) and necessary number of staff from BNPB, and necessary number of staff from BPBD in the pilot provinces) -Output 3: Team Leader (Sub-director of Mitigation/Sub-director of Prevention) and necessary number of staff from BNPB, and necessary number of staff from BPBD in the pilot provinces) Deputy Team Leader (Sub-director of Response Planning and necessary number of staff from BNPB, and necessary number of staff from BPBD in the pilot provinces) -Output 4: Team Leader (Sub-director of Resource Preparedness) and necessary number of staff from BNPB, and necessary number of staff from BPBD in the pilot provinces) Deputy Team Leader (Sub-director of Community Empowerment) and necessary number of staff from BNPB, and necessary number of staff from BPBD in the pilot provinces) 2. Provision of facility and equipment - Project office space - Other expenses **(Japanese side)** 1. Dispatch of the Japanese experts - Chief advisor/ Comprehensive disaster management - Regional disaster management planning - Disaster management institution and organization - Emergency response planning - Disaster information system - Disaster mitigation measures (flood, landslide, drought, destructive wind, forest fire) - Disaster mitigation measures (earthquake, tsunami, volcanic eruption) - Database/ GIS - Disaster management drill (1) - Disaster management drill (2) - Community based disaster risk management - Capacity Development - Coordinator/support of the expert in community based disaster risk management 2. Provision of equipment - Training tools and materials - PC for preparing hazard and risk maps, printer, GIS software 3. Counterpart training - Necessary number of staff is trained in Japan once a year. The staff is selected from BNPB as well as the provincial and regency/municipality BPBDs in the pilot area.	(1) Trained staff continues to work for BNPB or BPBD. (2) Status of disaster management plan remains unchanged. (3) Relation among the relevant organizations remains unchanged. (4) Information is shared within the Project team sufficiently. **Pre-conditions** (1) Destructive disaster which may greatly affect to the smooth operation of the Project does not occur before the Project is completed. (2) Regular BNPB and BPBD officials are assigned to the Project under government order before the Project starts.

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumptions
3-3. To collect and clarify basic data including statistics, social data, data on natural conditions necessary for formulating RDMPs for the pilot area, based on the lessons learned from experience of the above-mentioned JICA Study 3-4. To formulate RDMPs and Regional Action Plans for Disaster Risk Reduction (DRR) for the pilot areas based on the modified manual for formulating RDMP, basic data, lessons learned from the experience of formulation of RDMP of the JICA Study, and study/ verification of effectiveness learned from real disasters 3-5. To formulate or revise Contingency Plan to be able to revise existing SOP 3-6. To revise the existing SOP and Contingency Plan according to emergency response plan of the RDMP formulated through the Activity 3-4 3-7. To promote official appraisal by regency/municipality of RDMP formulated through Activity 3-4 4-1. To study existing documents for implementation of disaster management drills 4-2. To formulate the manual for implementing disaster management drill 4-3. To implement disaster management drill in the pilot area together with national level organizations 4-4. To revise the manual for implementing disaster management drill as well as Contingency Plan/ SOP based on the result of the disaster management drill if necessary 4-5. To conduct activities on CBDRM to empower disaster management capacity utilizing output formulated through the Project	3. Operation budget - Personnel expenses as well as allowance for C/P - Other expenses		

Table 1.3.2 Project Design Matrix, Version 2

Project Design Matrix (PDM) (Ver.2)

Date: 3 April 2014

Project Name: The Project for Enhancement of the Disaster Management Capacity of BNPB and BPBD
Project Term: 2011 - 2015 (four years)
Target area (pilot provinces): North Sulawesi Province (Manado Municipality and other regencies/municipalities), West Nusa Tenggara Province (Mataram Municipality and other regencies/municipalities)
Target group: National Disaster Management Agency (BNPB); at least two Regional Disaster Management Agencies (BPBDs) of two provinces: North Sulawesi Province, West Nusa Tenggara Province; and the Regency/Municipality BPBDs in the target area (pilot provinces)

Modifications are underlined and in bold.

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal The provincial BPBDs as well as the regency/municipality BPBDs beside the **target** areas are established, and the disaster management capacities of them are enhanced by using **materials formulated and methodology established** in the project.	The number of provinces as well as regencies/municipalities that apply the methodologies established in the Project for accumulating disaster data, creating hazard and risk maps, formulating regional disaster management plan and conducting disaster management **exercise**.	1. Interviews with the BNPB and BPBD staff	Disaster management framework by current disaster-related organizations as well as disaster-related policy in Indonesia remains unchanged.
Project Purpose The disaster management capacities of BNPB, the provincial BPBDs, and the regency/municipality BPBDs in the **target** area are enhanced.	1. Number or Cases that Regional Disaster Management Plan (RDMP) formulated through the Project **processed to approve** by the local authority. 2. Number of voluntary disaster management **exercises** conducted **in the communities within the target area**.	1. **Province or** Regency/municipality **acknowledgements** 2. BNPB or BPBD reports, newspaper articles on these cases, or interviewing the community	BNBP extends its activities in the **target** area to other provincial BPBDs, regencies/ municipalities outside the **target** areas.
Outputs 1. The capacity for the regency/municipality BPBDs to accumulate disaster data/information which are fundamental for disaster risk management and improve accuracy of such data/information in the **target** area **is enhanced**. 2. **The capacity for creation of** Hazard and risk maps at regency/municipality level in the **target** area **is enhanced**. 3. **The capacity for formulation of** Regional disaster management plans for regency/municipality in the **target** area **is enhanced**. 4. **The capacity for conducting** Disaster management **exercises** at the regency/municipality in the **target** area **is enhanced**. **5. Nationwide dissemination activities are implemented.**	1-1. Accumulation of disaster data items (Newly accumulated since there are no existing data) **in the target area**. 1-2. Improvement of disaster data quality (By following the format, data are sufficiently accumulated) **in the target area**. 2-1. Number of the regencies/municipalities where hazard and risk maps at regency/municipality level are created in the **target area**. 3-1. Number of the regencies/municipalities where regional disaster management plans are formulated at regency/municipality level in the **target area**. 4-1. Number of disaster management **exercises** implemented in the **target area**. 4-2. Number of activities on CBDRM in the **target area**. **5-1. Technical Guideline for formulation of RDMP is utilized as reference documents of BNPB** **5-2. Number of events to support nationwide dissemination activities on formulation of RDMP**	1-1. Project reports 1-2. Project reports 2-1. Project reports 3-1. Project reports 4-1. Project reports 4-2. Project reports **5-1. Project reports** **5-2. Project reports**	

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumptions
Activities 1-1. To study contents of disaster data/information to be acquired and accumulated at a regional level (regency/municipality level) in the **target** area based on the lessons learned from the JICA Study, "The Study on Natural Disaster Management in Indonesia (the JICA Study)" in order to establish format for sharing disaster data 1-2. To study necessary data items as well as data format to be shared and informed to the provincial BPBDs from the regency/municipality BPBDs in the **target** area, and informed to the BNPB from the provincial BPBDs in the **target** area in order to establish the methodology for accumulating necessary data 1-3. To formulate **"Technical guideline** for acquiring and accumulating disaster data/ information **for regencies/municipalities"** 1-4. To acquire and accumulate disaster data/information in the **in the 1st target** area using the format developed through the Project 1-5. To list the disaster data accumulated in the **in the 1st target** area into the disaster annual report 2-1. To study and verify effectiveness of "the manual for creation of hazard and risk maps", developed through the JICA Study. 2-2. To **formulate "Technical guideline for creation of hazard maps for regencies/municipalities"** 2-3. To collect and clarify basic data including statistics, social data, data on natural conditions 2-4. To create hazard and risk maps based on the data accumulated through Output 1 as well as basic data collected in Activity 2-3 2-5. To plan disaster mitigation measures based on the hazard and risk maps created through Activity 2-4 as well as the lessons learned from the Regional Disaster Management Plan (RDMP) developed through the JICA Study 3-1. To **formulate "Technical guideline for formulation of regional disaster management plan for regencies/municipalities"**. 3-2. To study about revision of Standard Operation Procedure (SOP) used commonly by regency/municipality in order to prepare standard manual and formulate **"Technical guideline for** formulation of SOP **for regencies/municipalities"** 3-3. To collect and clarify basic data including statistics, social data, data on natural conditions necessary for formulating RDMPs for the **target** area 3-4. **To formulate RDMPs and Regional Action Plans for Disaster Risk Reduction (DRR) for the target area** 3-5. **To formulate or revise SOP in the 1st target area** 3-6. **To revise the existing SOP** according to emergency response plan of the RDMP formulated through the Activity 3-4 **in the 1st target area** 3-7. To promote official appraisal by regency/municipality of RDMP formulated through Activity 3-4 4-1. To study existing documents for implementation of disaster management **exercises** 4-2. To formulate "**Technical guideline** for implementing disaster management **exercises for regencies/municipalities"** 4-3. To implement disaster management **exercises** in the **1st target** area together with national level organizations 4-4. To revise **"Technical guideline for implementing disaster management exercises for regencies/municipalities" as well as SOPs** based on the result of the disaster management **exercise** if necessary 4-5. To conduct activities on CBDRM to empower disaster management capacity utilizing output formulated through the Project **5-1. To improve Technical guideline for formulation of RDMP to be utilized as reference document of BNPB** **5-2. To participate events hosted by BNPB to explain effective utilization of the Technical Guideline for formulation of RDMP** **5-3. To give input for formulation of disaster risk assessment technical guideline for regencies/municipalities** **5-4. To promote the methodology developed in Output 2 Activity 2.2 especially on Earthquake Hazard**	Inputs (Indonesian side) 1. Assignment of counterpart personnel (C/P) - Project Director (P/D) from BNPB (Deputy Chief for Prevention and Preparedness) - Project Manager**s** (P/M**s**) from BNPB (Director for Disaster Risk Reduction**, Director for Disaster Preparedness, Head of Data, Information and Public Relation Center, Director for Community Empowerment**) - Project Coordinator (Administration) from BNPB (Director for Bureau for Laws and Cooperation) - Output 1: Team Leader (Deputy Chief of Disaster Information, Division of Information Center) and necessary number of staff from BNPB, and necessary number of staff from BPBD in the pilot provinces) - Output 2: Team Leader (Sub-director of Prevention) and necessary number of staff from BNPB, and necessary number of staff from BPBD in the pilot provinces) - Output 3: Team Leader (Sub-director of Mitigation/Sub-director of Prevention) and necessary number of staff from BNPB, and necessary number of staff from BPBD in the pilot provinces) Deputy Team Leader (Sub-director of Response Planning and necessary number of staff from BNPB, and necessary number of staff from BPBD in the pilot provinces) - Output 4: Team Leader (Sub-director of Resource Preparedness) and necessary number of staff from BNPB, and necessary number of staff from BPBD in the pilot provinces) Deputy Team Leader (Sub-director of Community Empowerment) and necessary number of staff from BNPB, and necessary number of staff from BPBD in the pilot provinces) 2. Provision of facility and equipment - Project office space - Other expenses 3. Operation budget - Personnel expenses as well as allowance for C/P - **Expenditure to hold JCC and other events in Jakarta** - Other expenses	(Japanese side) 1. Dispatch of the Japanese experts - Chief advisor/ Comprehensive disaster management - Regional disaster management planning **(1)** - **Regional disaster management planning (2)** - Disaster management institution and organization - Emergency response planning - Disaster information system - Disaster mitigation measures (flood, landslide, drought, destructive wind, forest fire) - Disaster mitigation measures (earthquake, tsunami, volcanic eruption) - Database/ GIS - Disaster management **exercise** (1) - Disaster management **exercise** (2) - Community based disaster risk management - Capacity Development - Coordinator/support of the expert in community based disaster risk management 2. Provision of equipment - Training tools and materials - PC for preparing hazard and risk maps, printer, GIS software**, plotter, satellite image, and IFSAR data** 3. Counterpart training - Necessary number of staff is trained in Japan once a year. The staff is selected from BNPB as well as the provincial and regency/municipality BPBDs in the **target** area.	(1) Trained staff continues to work for BNPB or BPBD. (2) Status of disaster management plan remains unchanged. (3) Relation among the relevant organizations remains unchanged. (4) Information is shared within the Project team sufficiently. Pre-conditions (1) Destructive disaster which may greatly affect to the smooth operation of the Project does not occur before the Project is completed. (2) Regular BNPB and BPBD officials are assigned to the Project under government order before the Project starts.

2. Methodology of Technical Transfer

2.1 Descriptions of Items to be implemented

Work items corresponding to PDM of the Project are as follows.

Table 2.1.1 Work Items Corresponding to PDM

No.	Work Item	Activities in PDM
Common Task		
【1】	Preliminary information collection and formulation of the Inception Report (IC/R)	
【2】	Explanations and discussions of the IC/R, kickoff meeting, and the (1st) Joint Coordination Committee (JCC)	
【3】	Development of a "Capacity Assessment Checklist" and implementation of capacity assessment to the C/P staff (1)	
【15】	Holding the (2nd) Joint Coordination Committee (JCC)	
【16】	Implementation of Counterpart Training in Japan (1)	
【17】	Implementation of capacity assessment to the C/P staff (2)	
【33】	Holding the (3rd) Joint Coordination Committee (JCC)	
【34】	Implementation of Counterpart Training in Japan (2)	—
【35】	Implementation of capacity assessment to the C/P staff (3)	—
【50】	Implementation of capacity assessment to the C/P staff (4)	—
【51】	Holding the (4th) Joint Coordination Committee (JCC)	—
【52】	Implementation of the public forums of the third WCDRR in collaboration with the BPBB	
【53】	Implementation of Counterpart Training in Japan (3)	—
【54】	Holding the Final Seminar for the Project	—
【55】	Submission of the Project Completion Report for the Project	—
Output 1: The capacity for the regency/municipality BPBDs to accumulate disaster data/information which are fundamental for disaster risk management and improve accuracy of such data/information in the target area is enhanced.		
【4】	Study of the current status of the format for disaster data and information, and establishment of shared formats for both	1-1. To study contents of disaster data/information to be acquired and accumulated at a regional level (regency/municipality level) in the target area based on the lessons learned from the JICA Study, "The Study on Natural Disaster Management in Indonesia (the JICA Study)" in order to establish format for sharing disaster data
【5】	Information sharing and reporting of disaster data, study of the format, and establishment of accumulation methods	1-2. To study necessary data items as well as data format to be shared and informed to the provincial BPBDs from the regency/municipality BPBDs in the target area, and informed to the BNPB from the provincial BPBDs in the target area in order to establish the methodology for accumulating necessary data
【6】	Formulation of "Manuals for Acquisition and Accumulation of Disaster Data/ Information"	1-3. To formulate "Technical guideline for acquiring and accumulating disaster data/ information for regencies/municipalities"
【18】	Acquisition and accumulation of disaster data and information in the pilot areas (North Sulawesi province)	1-4. To acquire and accumulate disaster data/information in the in the 1st target area using the format developed through the Project
【19】	Listing disaster data on "Disaster Annual Report" (North Sulawesi province)	1-5. To list the disaster data accumulated in the in the 1st target area into the disaster annual report

No.	Work Item	Activities in PDM
Output 2: Create hazard and risk maps at the district/municipality level in the pilot area		
【7】	Study and verification of the effectiveness of the "Manual for Creation of Hazard and Risk Maps" developed through the JICA Study	2-1. To study and verify effectiveness of "the manual for creation of hazard and risk maps", developed through the JICA Study. 2-2. To formulate "Technical guideline for creation of hazard maps for regencies/municipalities"
【8】	Revision of the "Manual for Creation of Hazard and Risk Maps" developed through the JICA Study	
【20】	Collection and clarification of basic data required in creating Hazard and Risk Maps (North Sulawesi province)	2-3. To collect and clarify basic data including statistics, social data, data on natural conditions 2-4. To create hazard and risk maps based on the data accumulated through Output 1 as well as basic data collected in Activity 2-3
【21】	Creation of Hazard and Risk Maps (North Sulawesi province)	
【22】	Planning provisional disaster mitigation measures (North Sulawesi province)	2-5. To plan disaster mitigation measures based on the hazard and risk maps created through Activity 2-4 as well as the lessons learned from the Regional Disaster Management Plan (RDMP) developed through the JICA Study
【36】	Collection and clarification of basic data required in developing Hazard and Risk Maps (West Nusa Tenggara province)	2-3. To collect and clarify basic data including statistics, social data, data on natural conditions 2-4. To create hazard and risk maps based on the data accumulated through Output 1 as well as basic data collected in Activity 2-3
【37】	Creation of Hazard and Risk Maps (West Nusa Tenggara province)	
【38】	Planning provisional disaster mitigation measures (West Nusa Tenggara province)	2-5. To plan disaster mitigation measures based on the hazard and risk maps created through Activity 2-4 as well as the lessons learned from the Regional Disaster Management Plan (RDMP) developed through the JICA Study
Output 3: The capacity for formulation of Regional disaster management plans for regency/municipality in the target area is enhanced.		
【9】	Comparative examination of "Manuals for Formulation of Regional Disaster Management Plans" formulated through the JICA Study and the one formulated by the National Agency for Disaster Management (BNPB), and establishment of a manual formulation policy	3-1. To formulate "Technical guideline for formulation of regional disaster management plan for regencies/municipalities".
【10】	Addition of other disasters to the "Manuals for Formulation of Regional Disaster Management Plans" developed through the JICA Study	
【11】	Study of the revision of the Standard Operation Procedure (SOP) for regencies and municipalities, and development of "Manuals for Formulation of SOPs"	3-2. To study about revision of Standard Operation Procedure (SOP) used commonly by regency/municipality in order to prepare standard manual and formulate "Technical guideline for formulation of SOP for regencies/municipalities"
【23】	Collection and clarification of data required in formulating the Regional Disaster Management Plans (North Sulawesi province)	3-3. To collect and clarify basic data including statistics, social data, data on natural conditions necessary for formulating RDMPs for the target area
【24】	Formulation of the Regional Disaster Management Plans and the Disaster Risk Management Action Plans in the pilot areas (North Sulawesi province)	3-4. To formulate RDMPs and Regional Action Plans for Disaster Risk Reduction (DRR) for the target area
【25】	Formulation or revision of the Contingency Plans and revision of the existing SOPs (North Sulawesi province)	3-5. To formulate or revise SOP in the 1st target area 3-6. To revise the existing SOP according to emergency response plan of the RDMP formulated through the Activity 3-4 in the 1st target area
【26】	Assistance to promote official approval of the Regional Disaster Management Plans (North Sulawesi province)	3-7. To promote official appraisal by regency/municipality of RDMP formulated through Activity 3-4
【39】	Collection and clarification of data required in formulating the Regional Disaster Management Plans (West Nusa Tenggara province)	3-3. To collect and clarify basic data including statistics, social data, data on natural conditions necessary for formulating RDMPs for the target area
【40】	Formulation of the Regional Disaster Management Plans and the Disaster Risk Management Action Plan in the pilot areas (West Nusa Tenggara province)	3-4. To formulate RDMPs and Regional Action Plans for Disaster Risk Reduction (DRR) for the target area

No.	Work Item	Activities in PDM
【41】	Assistance to promote official approval of the Regional Disaster Management Plans (West Nusa Tenggara province)	3-7. To promote official appraisal by regency/municipality of RDMP formulated through Activity 3-4
Output 4: The capacity for conducting Disaster management exercises at the regency/municipality in the target area is enhanced.		
【12】	Study of existing documents on recent implementation of Disaster Management Drills	4-1. To study existing documents for implementation of disaster management exercises
【13】	Formulation of "Manuals for Implementation of Disaster Management Drills"	
【14】	Formulation of "Manuals for Community-based Disaster Risk Management (CBDRM) Manuals" by reviewing "Guidelines for CBDRM Activities" developed through the JICA Study	
【27】	Preparation for Disaster Management Drills in the pilot areas (North Sulawesi province)	4-2. To formulate "Technical guideline for implementing disaster management exercises for regencies/municipalities"
【28】	Implementation of Disaster Management Drills in the pilot areas (North Sulawesi province)	
【29】	Preparation and conduct of CBDRM activities (North Sulawesi province)	4-5. To conduct activities on CBDRM to empower disaster management capacity utilizing output formulated through the Project
【30】	Implementation of Disaster Management Drills at community levels in accordance with the CBDRM activities in the pilot areas (North Sulawesi province)	
【31】	Re-examination of manuals for Disaster Management Drills, Contingency Plans and SOPs, based on the result of Disaster Management Drills (North Sulawesi province)	4-3. To implement disaster management exercises in the 1st target area together with national level organizations 4-4. To revise "Technical guideline for implementing disaster management exercises for regencies/municipalities" as well as SOPs based on the result of the disaster management exercise if necessary
【32】	Re-examination of "Manuals for CBDRM" (North Sulawesi province)	4-5. To conduct activities on CBDRM to empower disaster management capacity utilizing output formulated through the Project
【42】	Implementation of the CBDRM activities (West Nusa Tenggara province)	4-5. To conduct activities on CBDRM to empower disaster management capacity utilizing output formulated through the Project
【43】	Implementation of Disaster Management Drills at community levels in accordance with the CBDRM activities in the pilot areas (West Nusa Tenggara province)	
【45】	Re-examination of "Manuals for CBDRM" (West Nusa Tenggara province)	4-5. To conduct activities on CBDRM to empower disaster management capacity utilizing output formulated through the Project
Output 5: Nationwide dissemination activities are implemented.		
【46】	To improve the Technical Guidelines for formulation of the RDMP to be utilized as a reference document of the BNPB	5-1. To improve Technical guideline for formulation of RDMP to be utilized as reference document of BNPB
【47】	To participate in events hosted by the BNPB to explain effective utilization of the Technical Guidelines for the formulation of the RDMP	5-2. To participate events hosted by BNPB to explain effective utilization of the Technical Guideline for formulation of RDMP
【48】	To give input for formulation of disaster risk assessment technical guidelines for regencies/municipalities	5-3. To give input for formulation of disaster risk assessment technical guideline for regencies/municipalities
【49】	To promote the methodology developed in Output 2, Activity 2-2 especially for Earthquake Hazards	5-4. To promote the methodology developed in Output 2 Activity 2.2 especially on Earthquake Hazard

: Items implemented in the second year

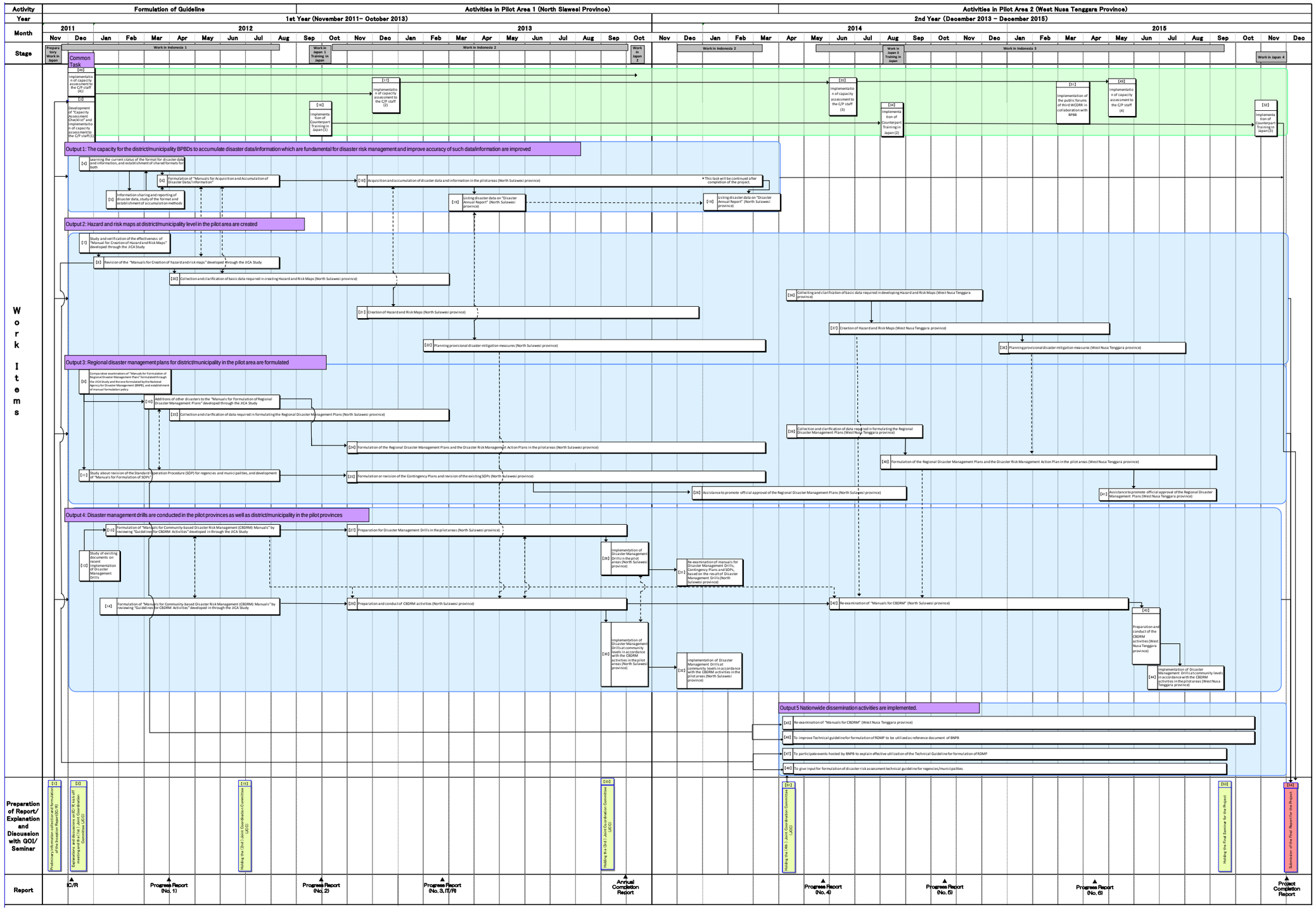


Figure 2.1.1 Flowchart of Project Implementation

2.2 Common Items

Progress and output of work items for all outputs in common are as follows.

Task (1): Preliminary information collection and formulation of the Inception Report (IC/R)

After organizing the materials and information that can be collected in Japan and examining the basic policies of Project implementation, contents and methods of technical instructions, schedules, and implementation structures, JICA Expert Team compiled the Inception Report (IC/R). After discussing with JICA and obtaining approval, IC/R was modified for approval of Indonesian C/P.

Task (2): Explanations and discussions on IC/R, kickoff meeting and the (1st) Joint Coordination Committee (JCC)

Task (15): Holding the (2nd and 3rd) Joint Coordination Committee (JCC)

Task (33): Holding the (3rd) Joint Coordination Committee (JCC)

Task (51): Holding the (4th) Joint Coordination Committee (JCC)

Kick-off meetings of the Project were held in Jakarta, North Sulawesi province, and West Nusa Tenggara province. In these meetings, JICA Expert Team explained and discussed the contents of the IC/R. After reaching consensus on the content, the IC/R was finalized and submitted to related agencies.

In each kickoff meeting, goals of the Project, planned schedules and measures will be explained not only to the direct C/Ps of the Project (BNPB, BPBDs of North Sulawesi and West Nusa Tenggara provinces, and regency/municipality BPBDs in both provinces), but also to other stakeholders, including related ministries, other donors, NGOs/NPOs and local organizations, aiming to form a shared recognition. In addition, organizational structures and the prerogatives of each organization shall be discussed and confirmed. Also, their roles, responsibilities, and ownerships in this Project will be clarified, and the Project goals shall be shared with the C/P staff.

Table 2.2.1 Schedule of Kickoff Meeting

No.	Name of Meeting	Place	Purpose	Date
1	Kickoff meeting (Jakarta)	Jakarta	Explanation and discussion of IC/R, and affirmation of common perception	Dec.2011
2	Kickoff meeting (North Sulawesi province)	North Sulawesi province	Explanation and discussion of IC/R, and affirmation of common perception	Dec.2011
3	Kickoff meeting (West Nusa Tenggara province)	West Nusa Tenggara province	Explanation and discussion of IC/R, and affirmation of common perception	Jun.2013

In the first year, Project Joint Coordination Committee (JCC) was held three times, as well as three times in the second year. Major issues discussed in each JCC were as follows:

Table 2.2.2 Contents of Each JCC

No.	Date	Participants	Contents of discussion
1.	2012/1/18	BNPB, BPBD in Pilot Province and Regency/Municipality, related government agencies, donors. NGOs, etc. Total: 33 participants.	1. Approval of IC/R and Annual Plan 2. Holding JCC on "as necessary" basis 3. Coordination with other projects and donors 4. Importance of capacity development and expectations for C/P training in Japan 5. Participation of National Disaster Management Plan review 6. Project evaluation 7. Preparation of manuals 8. Selection of pilot area 9. Selection of C/P 10. Provision of office space
2.	2012/7/11	BNPB, BPBD in Pilot Province, related government agencies, donors, etc. Total: 26 participants.	1. Agreement of implementation policy 2. Participation of BNPB staff for pilot activities 3. Target disaster 4. Frequency to hold JCC 5. C/P training in Japan 6. Second pilot province 7. Indicator of PDM (quantities indicator)
3.	2013/9/12	BNPB Major officers, midterm review mission, and other related agencies Total: 38 participants	1. Progress of the activities in North Sulawesi 2. Outline of midterm review
4.	2014/4/3	BNPB Major officers, donors, and other related agencies Total: 44 participants	1. Report of the progress in North Sulawesi Province 2. Modification of the activities in the second year 3. Approval of the second pilot province 4. Participation of the BNPB for the activities in West Nusa Tenngara Province 5. Modification of the PDM 6. Participation of the C/P Training
5.	2015/4/23	BNPB Major officers, terminal evaluation mission, and other related agencies Total: 40 participants	1. Report of the activities and submission of the progress report 2. Report of terminal evaluation 3. Confirmation of the future schedule 4. Confirmation about the workshops during DM month
6.	2015/9/15	BNPB Major officers, donors, and other related agencies Total: 20 participant	1. Report of the activities 2. Handover of equipment and technical guidelines 3. Knowledge co-creation program and DM month event

Picture 2.2.1 Pictures of 1st JCC


Picture 2.2.2 Pictures of 2nd JCC


Picture 2.2.3 Pictures of 3rd JCC


Picture 2.2.4 Pictures of 4th JCC


Picture 2.2.5 Pictures of 5th JCC


Picture 2.2.6 Pictures of 6th JCC

Task (3): Development of "Capacity Assessment Checklist" and implementation of capacity assessment to the C/P staff (1)

In order to seize individual and organizational capacity of BNPB and BPBD, C/P of the Project, the Project Team implemented a baseline survey of the C/Ps. Capacity Assessments are conducted regularly to assure the proper process of capacity development based on the result of the baseline survey. In the first year, the baseline survey was conducted from July, 2012 for C/Ps of BNPB and from October for C/Ps of BPBD in North Sulawesi province.

Baseline survey was designed to seize the capacity of C/Ps at the beginning of the project and Capacity Assessment followed by the baseline survey was conducted to assure the capacity development of the C/Ps.

Table 2.2.3 Schedule of Capacity Assessment (CA)

	July, 2012 (Task (3))	October, 2012~ (Task (17))	May to June, 2014	June, 2015
BNPB	Baseline Survey and 1st CA	-	2nd CA	3rd CA
North Sulawesi Province, Regency/ Municipality	-	Baseline Survey and 1st CA	2nd CA	-
Bali Province, Regency/ Municipality	-	-	Baseline Survey and 1st CA	2nd CA

Task (16): Implementation of Counterpart Training in Japan (1)

C/P training in Japan was held from August 25 to September 8, 2012 with a total of 19 participants from BNPB, BPBD North Sulawesi province, and 15 BPBD regencies/municipalities.

The goal of C/P training was to learn about disaster management administration systems, through visiting varieties of relevant disaster management organizations such as national, prefecture (equivalent to province), city government (equivalent to regency/municipality) and observing comprehensive disaster management drills. This will help to understand the proper roles of the national government, local governments (prefecture, city), and citizens (including community) in various types of disaster. Also, it is designed to utilize acquired knowledge and learning for activities

in this project, such as Hazard Identification, Regional Disaster Management Planning, Disaster Management Drills, and Community Activities, as well as for daily activities to mitigate damages from disasters in the future.

Participants of the training actively learned experiences in Japan and made comments that they would like to utilize the knowledge of coordination of disaster management-related agencies, other government agencies, the private sector, socialization of residents, and disaster management drills in Japan. After the counterpart training in Japan, heads of BPBD North Sulawesi province and BPBD regencies/municipalities who had participated in C/P training exercised leadership over the JICA's project furthermore based on the knowledge learned in Japan. Especially, the action by Mr. Jeffry Wowiling, who is the head of BPBD Bitung, set one of good practices for an enhancement of regency/municipality-level disaster management capacity. The experience to learn the comprehensive approach for disaster management in Japan became a major turning point for him, and he provided strong leadership to get on each output in the pilot activity with his staffs in order to learn further knowledge from JICA expert team. After the pilot activity in North Sulawesi, the budget for disaster management in Bitung municipality is increasing every year by his approach to the mayor and related organizations in Bitung municipality to enhance the organizational capacity of disaster management. It means that his action based on the knowledge and experience learned through JICA's project became effective specifically.

Picture 2.2.7 Activities in C/P training

Task (17): Implementation of capacity assessment to the C/P staff (2)

Task (35): Implementation of capacity assessment to the C/P staff (3)

Task (50): Implementation of capacity assessment to the C/P staff (4)

Following Task (3), the Project implemented Capacity Assessments of C/Ps for each output and organization in the BPBD North Sulawesi province and BPBD regency/municipality in North Sulawesi, October 2012, and West Nusa Tenngara, June 2014. From the results of the C/Ps, the Project Team analyzed individual and organizational capacity as well as capacities to be enhanced and compiled the Capacity Development Plan.

Task (34): Implementation of Counterpart Training in Japan (2)

The Project implemented the second C/P training in Japan from August 16th to 30th, 2014, for the same purpose of the training conducted in item【16】. Participants consisted of five people from the BNPB, one person from BPBD North Sulawesi Province, one person from BPBD Bitung, three people from BPBD West Nusa Tenngara Province, and 10 people from BPBD regencies and municipalities in West Nusa Tenngara Province, a total of 20 persons.

The participants actively participated in the training by asking questions to the lecturers at the site. In the questionnaire after the training, they commented on the necessity of formulating and updating the RDMP and raising awareness for the community. The training was effective for implementing the pilot activities in West Nusa Tenngara Province.

For implementation of C/P training in Japan in the early stage of second pilot activity in West Nusa Tenggara, the knowledge to be learned by heads of BPBD province and regency/municipality in Japan had shared with their own BPBD staff during the early period of each output activity. And The C/P training became important opportunity to encourage each head of BPBD province and regency/municipality to exercise leadership over the pilot activity and to mature the relationships with each other.

Picture 2.2.8 CP Training

Task (52): Implementation of the public forums for the third WCDRR in collaboration with the BPBB

The Project participated with the BNPB in the WCDRR in Sendai from March 14th to 18th, holding two public seminars: "Mainstreaming DRR into Development through practical DM Planning at the Local Level: Lessons Learned from BNPB and JICA Initiatives in Indonesia" and "Building Resilience at the Local Level: Learning from the Experiences in the Efforts for Sustainable CBDRR Activities in Asia."

The C/P officers and JICA Expert Team made presentations and held group discussions in the public seminar. On the topic of mainstreaming DRR, participants actively discussed the challenges at the local government level, necessity and methods for involving the private sector and universities, and promotions to continue the activities after the donor-funded projects. On the topic of CBDRM, the

participants discussed the necessity to involve various stakeholders and assistance by the local government based on experiences from several countries in Asia.

Picture 2.2.9 Picture of the Public Forums for the third WCDRR

Task (53): Implementation of Counterpart Training in Japan (3)

When the Project conducted the terminal evaluation in April 2015 BNPB requested to implement a Knowledge Co-creation program for policy makers to promote mainstreaming disaster risk reduction. The request from BNPB is based on the experiences of participating of WCDRR held in Sendai. BNPB officers had better understanding of mainstreaming of DRR by participating in the study tours during WCDRR. Participants of the Program consisted of high ranking officers from BNPB, MoHA, PU, BMKG, mayor of Bima City and so on in total 10 officers. Since the Program is targeting to policy makers the period of the Program is limited for a week. The Project mainly arranged lectures of disaster management related agencies from central government and discussions. The Program also included site visit of mainstreaming of disaster risk reduction in Japan such as seismic isolated buildings.

During the Program, participants had strong interests on the framework of management and budgeting of the disaster management related facilities and methodology to explain the importance of disaster risk reduction to politicians to secure the budget. The participants actively involved to the program and asked questions to each lecturer in the entire program.

During the wrap up of the Program, the significance of the Program was confirmed and the participants appreciated that the Program enabled them to understand the roles and policy enforcement of national government and local government based on the national legal framework and Disaster Countermeasure Basic Act. The participants suggested inviting members of the parliament in national level and local government level to obtain the budget for DRR sector in Indonesia.


Picture 2.2.10 Picture of the Program

Task (54): Holding the Final Seminar for the Project

The Project held the final seminar to report the progress of the Project through the activities and invited the C/Ps, other disaster management related offices, donors, and JICA project-related staff participated in the seminar. In order to share the outcome of the pilot activities, C/Ps from North Sulawesi and West Nusa Tenngara were invited to the seminar to present the activities during and after the pilot activities.

C/P officers who participated in the seminar commented that they will continue DRR activities by utilizing the outcome of the Project. BNPB commented that the outcomes of the pilot activities are applicable to other provinces, regencies, and municipalities, and would expand the activities to other provinces.


Picture 2.2.11 Picture of final seminar

Task (55): Submission of the Project Cmpleation Report for the Project

The Project Team compiled the process of implementing the project and results of the Capacity Assessment of the C/P and submitted the Project Completion Report.

2.3 Output 1

(1) Output:

The capacity for the regency/municipality BPBDs to accumulate disaster data/information which are fundamental for disaster risk management and improve accuracy of such data/information in the target area is enhanced.

(2) Schedule of Activities:

The schedule of activities of Output 1 is as follows:

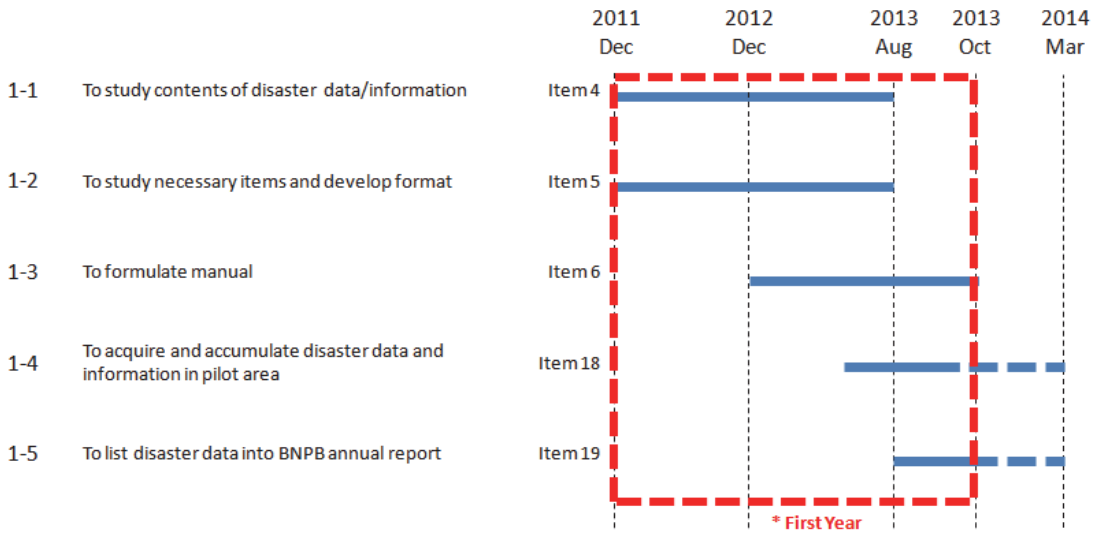


Figure 2.3.1 Schedule of Output 1 by Work Item in the First Year

(3) Methodology of Implementing Technical Transfer

Methodology of technical transfer of work items of Output 1 is as follows:

Task (4): Learning the current status of the format for disaster data and information, and establishment of shared formats for both

Task (5): Information sharing and reporting of disaster data, study of the format and establishment of accumulation methods

In the JICA Study (Natural Disaster Management Planning), it was observed that statistical data on disasters at the regency/municipality level, after having been reported to the province in a certain period after the disaster, were not stored or managed systematically. For the smooth and appropriate emergency response in affected areas and disaster risk evaluation to formulate the various plan based on the scientific information, collecting and managing the disaster information in pre-disaster phase is essential. Especially during the crisis management phase, transmission of quick, certain, organized and understandable information is essential.

As for Task (4) and (5), JICA Expert Team surveyed BNPB and provincial and regency/ municipality BPBD about the current condition of the format of existing disaster information and its transmission line for sharing and reporting the information. By the survey, JICA Expert Team confirmed the current method of information sharing and its problems at the stages of regency/municipality BPBD to provincial BPBD and provincial BPBD to BNPB.

Table 2.3.1 is the record of meetings with disaster management-related agencies in Japan and Indonesia.

Table 2.3.1 List of Interviews and Meetings Related to Output 1

Date	Venue	Points of Discussion
In Japan		
4/8/2013	Kobe City Office	Disaster Information activity of Kobe City in Pre-Disaster and Emergency Response Phase
4/18/2013	Hyogo Prefectural Government	Disaster Information activity of Hyogo Prefectural Government in Pre-Disaster and Emergency Response Phase Case Study of past Awaji-Earthquake which occurred in April, 2013
In Indonesia (BNPB)		
4/2/2012	BNPB	Latest disaster information system of BNPB
4/16/2012	BNPB	Latest disaster information system of BNPB Explanation of activity in Target region
4/17/2012	BNPB	Latest disaster information system of BNPB Explanation of activity in Target region
4/17/2012	BNPB	Progress report and explanation of next activity
8/23/2013	BNPB	Progress report and procedure of annual report
In Indonesia (Province, Regency and Municipality)		
4/9/2012	BPBD (North Sulawesi Province)	Report of summery of Output 1 activity
4/10/2012	BPBD (Minahasa Regency)	Confirmation of disaster information system (collecting and accumulation)
4/10/2012	BPBD (Tomohon Municipality)	Confirmation of disaster information system (collecting and accumulation)
4/11/2012	BPBD (Manado Municipality)	Confirmation of disaster information system (collecting and accumulation)
* Local consultants visited all regencies and municipalities to research the latest situation as a follow up activity		

The following are the results of discussion at the above meetings;

1) Disaster information system in Hyogo Prefecture in Japan

In Kobe City and Hyogo Prefecture, specific activities and methods for disaster information management are mentioned in each Local Disaster Management Plan. In the case of the Awaji Earthquake, which occurred on April 13, 2013 in Hyogo Prefecture, Awaji city reported the latest situation to the Hyogo Prefectural Government by using the existent disaster information format, which is included in the Local Disaster Management Plan. After that the Hyogo Prefectural Government grasped the latest situation by referring to the report from Awaji City, and requested other cities in the same prefecture (Kobe City and Akashi City) to dispatch emergency response teams.

As a pre-disaster phase activity, the Hyogo Prefectural Government made an agreement of association with other prefectures in case of large-scale natural disaster. During the regular phase, each prefecture collects and organizes the information of each locality, and prepares for emergency.

2) BNPB Regulation No. 8 (Standard Data Information)

The BNPB published a disaster information guideline, named "BNPB Regulation No. 8 (Standard Data Information)," in 2011. In this guideline, a brief summary of the disaster information system and disaster information concept for BNPB and BPBD staff is included. However, detailed procedures such as collecting and accumulating disaster information are not cleared yet.

The activities of Output 1 paid attention to these issues and designed manuals with concrete and detailed procedures and measures of disaster information collection as described in Task (6). The manual is designed based on "BNPB Regulation No. 8 (Standard Data Information)" to be in line with the policy of BPBD.

3) DIBI: Indonesia Disaster Data and Information

The DIBI (http://DiBi.bnpb.go.id) was launched on July 29, 2008 and accommodated disaster data in Indonesia that has been validated from 1997 to 2007 by the assistance of UNDP. This system covers all disaster information data in Indonesia. However updated disaster information is sometimes delayed due to a shortage of human resources at BNPB. At present, BNPB is planning to switch this system into each province in Indonesia. For instance, since the middle of 2009, TDMRC, together with UNDP, under the programmed Disaster Risk Reduction-Aceh (DRR-A), have been conducting adjustment activities of DIBI into the local context of Aceh province through some stages. *Information source: TDMRC (http://www.tdmrc.org/en/)

4) The latest situation and issues to be solved concerning the disaster information system in North Sulawesi province

A survey of the current condition of collecting disaster information in North Sulawesi was conducted in 15 regencies/municipalities to confirm the current activities. It was found that most of the regencies/municipalities in North Sulawesi already have a disaster information format. In addition, the method (i.e. accumulation and submission of disaster information) is different in each regency/municipality. The case of Manado municipality is shown in Figure 2.3.2. Collected data in each village is submitted to Manado BPBD, and then Manado BPBD integrates all of the latest disaster information and reports to the mayor as first priority. Then Manado BPBD shares the information with Provincial BPBD and BNPB as supplemental information. The reason to prioritize mayor is that mayor has authority to decide the issue of evacuation order to residents, policy for emergency rescue activities, and necessary budget for reconstruction from disaster. The reason that mayor and Manado BPBD were informed about

the disaster information is to decide the evacuation activities to secure the safety of the resident based on the information.

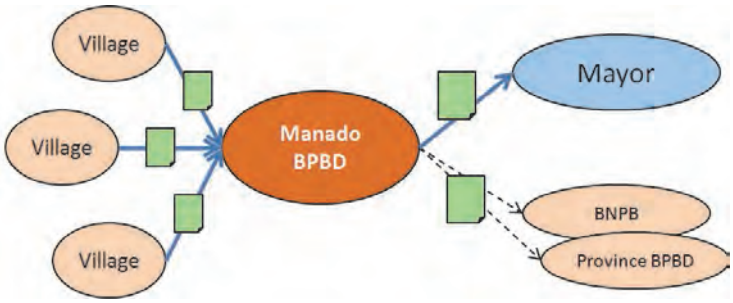


Figure 2.3.2 Route of Disaster Information Sharing in the Case of Manado Municipality

Referring to the results of the survey above, Output 1 held workshops three times in North Sulawesi province. The targets of these workshops are set for the staff responsible for disaster information in each regency/municipality. Requests and needs from the participants through the workshop are reflected in the activities of Output 1.

Table 2.3.2 shows the summary of the workshops. Various kinds of opinions and suggestions were pointed out during the 3 workshops. For instance, a topic related to the disaster management cycle was discussed in the first workshop. More than half of the participants answered that it is necessary to collect disaster information in only the emergency response phase. Only less than 20 percent of the participants recognized the necessity in the pre-disaster phase as DRR activity.

Then, the JICA Expert Team asked what method of disaster information sharing the participants use. It turned out that 60 percent of participants are using mail at present. Electronic methods such as e-mail usage were used by 10 percent. In the second workshop, an issue related to the shortage of human resources was discussed. It was found that most regency/municipality BPBDs have this issue due to budget constraints. However, around 90 percent of regency/municipality BPBDs report that past disaster information is already accumulated in each BPBD based on the original method and format. Through the workshop of Output 1, the JICA Expert Team strived to gather the information from the participants correctly, and incorporated it into the activities for effective implementation.

Table 2.3.2 Workshops of Output 1

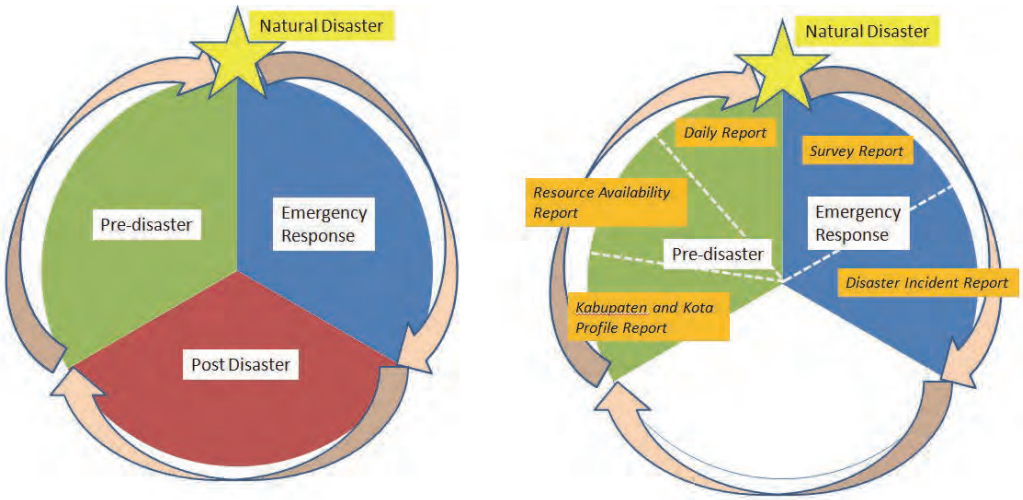
Date	Workshop	Number of participants	Contents
10/10/2012	First workshop	17	Explanation of summary of project Report: latest situation of disaster information
2/26/2013	Second workshop	11	Report: result of research in North Sulawesi Report: draft disaster information format
9/10/2013	Third workshop	15	Report: finalized disaster information format Report: draft disaster information manual

A variety of useful information was provided through the meetings and workshops of Output 1 activity. The implementation policy of Output 1 is designed as follows. For implementation, the JICA Expert Team regularly reports progress to BNPB and implements activities, obtaining assistance and direction from BNPB.

① Disaster Management Cycle

Basically, the Output 1 activity has been carried out based on the BNPB Guideline entitled "BNPB Regulation No. 8" to adapt for BNPBs direction on the disaster management field. This guideline divides the Disaster Management Cycle into 3 phases, Emergency Response, Post-Disaster and Pre-Disaster (Figure 2.3.3). The Project focused on the Emergency Response and Pre-Disaster phase and considered the practicability of its contents in the pilot area.

Through the workshops, it was found that it is better to separate the Disaster Management Cycle into 5 phases as shown in Figure 2.3.3. "Emergency Response" consists of "Survey Report" and "Disaster Incident Report." "Pre-Disaster" consists of "Regency/Municipality Profile Report," "Resource Availability Report" and "Daily Report." The purpose of "Survey Report" is to collect the latest disaster information for swift recovery activity in the affected area. The items of the format are kept to a minimum. The purpose of "Disaster Incident Report" is to submit a final report to upper organization. It should be attached as an official letter. The purpose of the "Regency/Municipality Profile Report" is to list past disasters in each regency/municipality. This data is available for DIBI. The purpose of the "Resource Availability Report" is to collect basic disaster information data, such as population and elevation data. The purpose of the "Daily Report" is just to collect disaster information. This phase is an everyday task, like a newspaper.



(Left: BNPB Regulation No. 8, Right: Project Team Design)

Figure 2.3.3 Concept of Disaster Management Cycle

② Disaster Information Format

In the present state, almost every regency/municipality already has an original format. However, items the included in each one are quite different. On the other hand, BNPB publishes the disaster management guideline "BNPB Regulation No. 8 (Standard Data Information)." For the actual implementation, using only the guideline would not be sufficient. In response to this condition, the JICA Expert Team developed the following formats through activities, and these disaster information formats have been modeled on real natural disasters, such as the Manado flood, which occurred in February, 2013. These formats were prepared as one of deliverables for this project.

③ Specific Procedures for Disaster Information

The procedures for disaster information are under consideration in each of the 5 phases shown above. It is suggested that the following method is one of most effective ways for disaster information sharing. However, the equipment (i.e. PC, FAX, etc.) of the regency/municipality BPBD is different in each region. Also some regency/municipality BPBDs already have original methods to inform other agencies (i.e. fire department, city office, etc.) of disaster information. These existing methods shall be kept available if they are more effective than the suggestions from the Expert Team.

Cooperation with other Outputs also makes it possible to consider better disaster information system solutions. Linkage with Output 2 is especially necessary. This relation is available to create GIS (Geographical Information System) data for hazard mapping activity.

[Emergency Response] Survey Report

A) Regency/municipality BPBD dispatches survey team to affected area. Blank format and map will be brought.
B) Survey team fill out disaster information into format and draw affected area into blank map.
C) Survey team bring above collected data to regency/municipality BPBD
D) Regency/municipality BPBD.
E) Confirm collected data and submit to mayor, governor and provincial BPBD (e-mail).
F) Province BPBD integrates and accumulates these data. And also provincial BPBD creates GIS data for mapping.

[Emergency Response] Disaster Incident Report

A) Regency/municipality BPBD re-input above data into "Disaster Incident Report Format."
B) Regency/municipality BPBD submit finalized "Disaster Incident Report Format" and "Official letter" to BNPB, provincial BPBD, mayor and governor (e-mail).

[Pre-Disaster] Regency/Municipality Profile Report

A) Regency/Municipality BPBD list past natural disasters into "Regency/Municipality Profile Report Format."

B) Regency/Municipality BPBD send list to provincial BPBD (e-mail). *1time per year
C) Province BPBD integrates all of the data from each regency/municipality BPBD and submits to BNPB (e-mail). *this data is available to input into DIBI

[Pre-Disaster] Resource Availability Report

A) Regency/municipality BPBD collects basic disaster information data from other institutions and organizations such as PU, BMKG, etc. *contact list is indicated in manual
B) Regency/municipality BPBD submits finalized data to provincial BPBD, mayor and governor (e-mail). *1 time per year

[Pre-Disaster] Daily Report

A) Regency/Municipality BPBD checks situation of own town and inputs data into format
B) Regency/Municipality BPBD accumulates these data as daily work

Task (6): Formulation of "Manuals for Acquisition and Accumulation of Disaster Data/Information"

The disaster information manual has been developed based on the results of meeting with the BNPB and BPBD. Opinions and suggestions from participants were also being reflected in the manual. Output 1 set the following concepts for the disaster information manual. Table 2.3.3 is a table of contents.

- ✓ Disaster Information Manual is developed referring to "BNPB Regulation No. 8 (Standard Data Information)"
- ✓ The target audience of this manual is province and regency/municipality BPBD staff
- ✓ Specific methods pertaining to disaster data and information (how to collect, accumulate, report) are shown

Table 2.3.3 Table of Contents of the Technical Guidelines

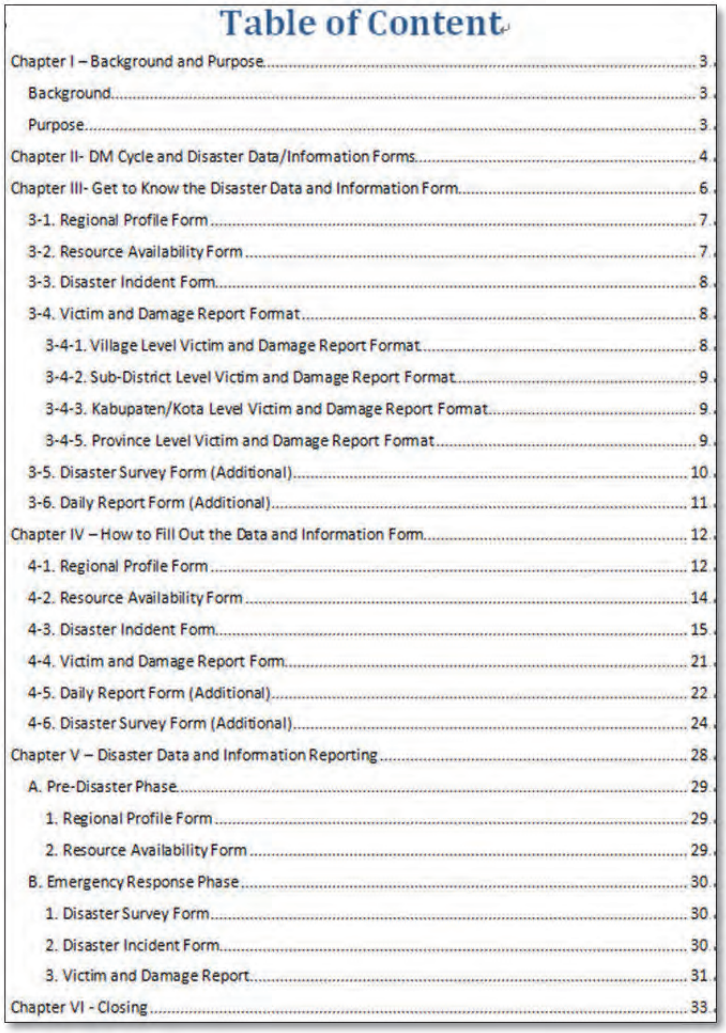


Table of Content

Task (18): Acquisition and accumulation of disaster data and information in the pilot areas (North Sulawesi province)

As mentioned above, it turned out that most of the regency/municipality BPBDs have an existing disaster information format and have been accumulating past disaster data in each region. However, these existent formats and methods are different in each regency/municipality BPBD. These issues cause a vicious circle, preventing better disaster management. In the first year, Output 1 tried to utilize a draft disaster information format and input disaster information as a trial.

A large-scale flood occurred in Manado in February, 2013. The draft disaster information format was utilized in affected areas and inspected to see whether items were useful or not. This could enable us to obtain valuable experience through this activity for modification of the format. And in the case of the pre-disaster phase, the draft disaster information format was provided to the Southeast Minahasa regency BPBD. This regency did not have an existing format before. Therefore, the developed format was already utilized as the official format.

The finalized disaster information format and technical guidelines were explained at a workshop held in September 2013. The BNPB made comments and suggestions for technical guidelines in this workshop. One is related to utilization of these guidelines in the BNPBs' workshop. The other one is to expand use of these guidelines to other provinces. The disaster information format and technical guidelines were modified based on these comments and suggestions as a final step and submitted to the BNPB.

Task (19): Listing disaster data on the "Disaster Annual Report" (North Sulawesi province)

The BNPB has been publishing an annual report related to basic disaster information in Indonesia. Through meeting with responsible staff of the annual report, the following situations and issues were shared:

- ✓ An annual report is published by the BNPB every year (e.g., the annual report for 2012 was published in the middle of 2013).
- ✓ The contents of the annual report are mainly a summary of any large-scale natural disasters.
- ✓ All natural disasters, including small ones, are listed and attached at the end of the book.
- ✓ DIBI quotes disaster information from this list in the annual report.

At present, responsible BNPB staff collects disaster information data from each BPBD. However, the frequency of updates is not enough due to a shortage of human resources. We focused on this issue and developed a disaster information list in the "Regency/Municipality Profile Report." Figure 2.3.4 is an image of the procedure. First, regency/municipality BPBDs list past natural disasters in each and provincial BPBDs integrate these data into one file (using Excel). Then the provincial BPBD submits this to the responsible staff of BNPB. The responsible staff input data into the DIBI by using this list. This list makes it easy to input data into the DIBI.

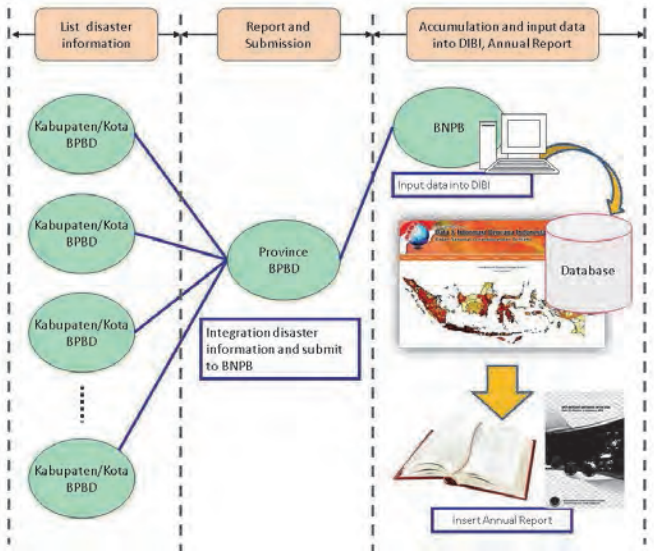


Figure 2.3.4 Procedure for Entering Disaster Information Data into the Annual Report

2.4 Output 2

(1) Output: The capacity for creation of Hazard and risk maps at regency/municipality level in the target area is enhanced.

(2) Schedule of Activities

The schedule of the activities of Output 2 is as follows:

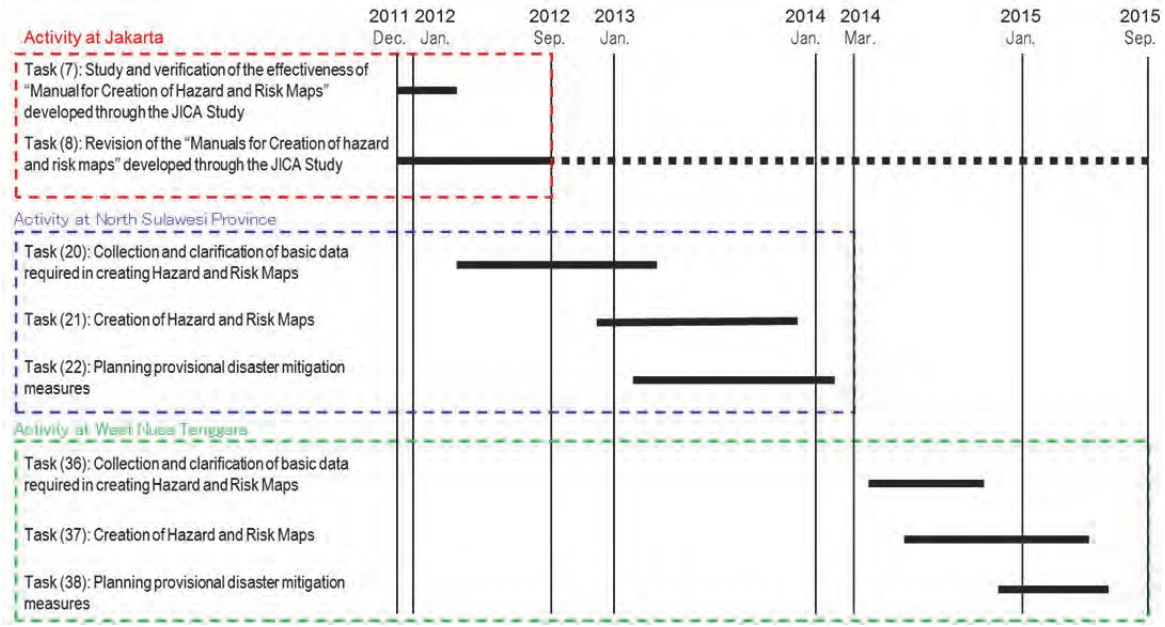


Figure 2.4.1 Schedule of Output 2

(3) Implementation Measures of Technical Transfer

Implementation measures of technical transfer for each activity regarding Output 2 are described below.

Task (7): Study and verification of the effectiveness of "Manual for Creation of Hazard and Risk Maps" developed through the JICA Study

This task was divided into three activities as follows:

Activity 1: Confirmation of the current status of utilization of the manual and maps developed through the JICA Study (2007-2009)

Activity 2: Verification and confirmation of the validity of the manuals and the maps through comparison with recent disasters

Activity 3: Confirmation of maps and manuals developed by the other projects or organizations

General outline and result of each activity are described below.

Activity 1: Confirmation of current status of utilization of the manual and maps developed through the JICA Study (2007-2009)

In order to confirm the effectiveness of the manual developed through the JICA Study, relevant officials were interviewed for a survey in December, 2011, in the JICA Study pilot regency of Jember, and the status of utilization of the manuals and hazard/risk maps prepared in the Study was verified.

As of December, 2011, BPBD was not established in Jember yet due to the influence of some events such as the governor election in 2010, although preparations for establishing BPBD had started in 2008 when field activities of the JICA Study had finished. Therefore, hazard/risk maps and the Regional Disaster Management Plan prepared through the JICA Study were kept and utilized by BAKESBANG LINMAS that is the central institution of Disaster Management Coordinating Agency (SATLAK).

Through the interview survey, it was confirmed that BAKESBANG LINMAS utilized the hazard/risk maps, for example, utilizing them as referential materials for evacuation drills. Mr. Edy Susilo, chief of BAKESBANG LINMAS, commented that "we want to continuously utilize the results developed through the JICA Study after establishment of BPBD since the results are well organized."

In addition, it was revealed through the interview with the irrigation officer of PU that the landslide hazard map prepared in the JICA Study had been used for selection of the site for an early warning drill in the JICA Integrated Disaster Mitigation Management Project for "Banjir Bandang" (2008-2012).

It could not be concluded that the hazard/risk maps developed in the JICA Study were utilized extensively since BPBD has not been established in Jember regency as of December, 2011, as mentioned above, however, it was confirmed that those maps had been actually utilized by BAKESBANG LINMAS and PU in an evacuation drill.

Activity 2: Verification and confirmation of the validity of the manual and the maps through comparison with recent disasters

The hazard and risk maps in the JICA Study were compared with actual disasters that had occurred after the JICA Study as one of a series of activities for verification and confirmation of the validity of the manual and the maps. The earthquake disaster that occurred in Padang Pariaman regency in 2009 and flood disasters in Jember regency in 2009 to 2011 were selected for comparison.

Comparing the expected number of collapsed buildings from the earthquake risk map in Padang Pariaman regency in the JICA Study with the actual number of collapsed buildings by the earthquake in 2009 at Kecamatan level in Padang Pariaman regency, it can be confirmed their areal distribution trend has a high correlation of r=0.65, as shown in Figure 2.4.2. However,

there is quite a large difference between the numbers themselves. The actual number of collapsed buildings is only about 6% of the expected total. The discrepancy may be attributed to the difference between expected external force on the risk map and the actual one in the 2009 earthquake.

Kecamatan Name	Number of Collapsed Buildings		Ratio (%) (B/A)
	A: JICA Development Study (expected)	B: 2009 September Disaster (Actual)	
IV Koto Aur Malintang	137,375	5,436	4.0%
Batang Gasan	33,805	2,540	7.5%
Sungai Geringging	125,371	7,387	5.9%
Sungai Limau	101,428	6,894	6.8%
V Koto Kampung Dalam	76,209	6,517	8.6%
V Koto Timur	54,124	4,998	9.2%
Patamuan	55,628	3,799	6.8%
Padang Sago	56,631	2,739	4.8%
VII Koto	103,523	9,387	9.1%
2 x 11 Enam Lingkung	87,273	4,612	5.3%
2 x 11 Kayu Tanam	59,401	4,367	7.4%
Nan Sabaris	134,639	6,437	4.8%
Enam Lingkung	115,475	4,505	3.9%
Ulakan Tapakis	81,610	5,107	6.3%
Sintuk Toboh Gadang	90,055	4,476	5.0%
Lubuk Alung	123,840	7,992	6.5%
Batang Anai	79,643	5,872	7.4%
Total	1,516,030	93,065	6.1%

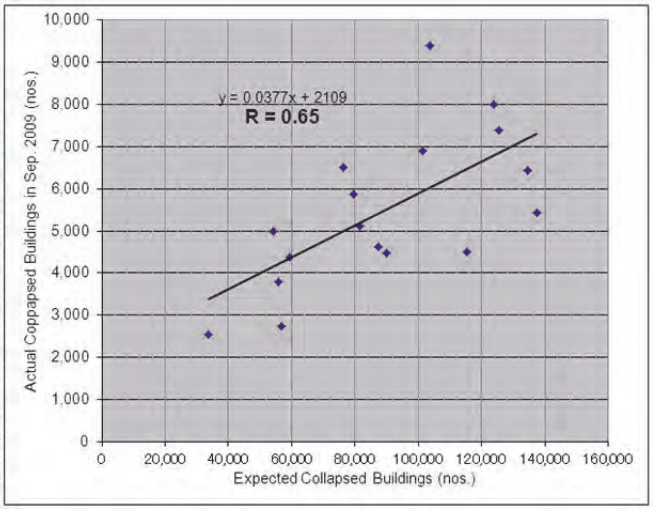
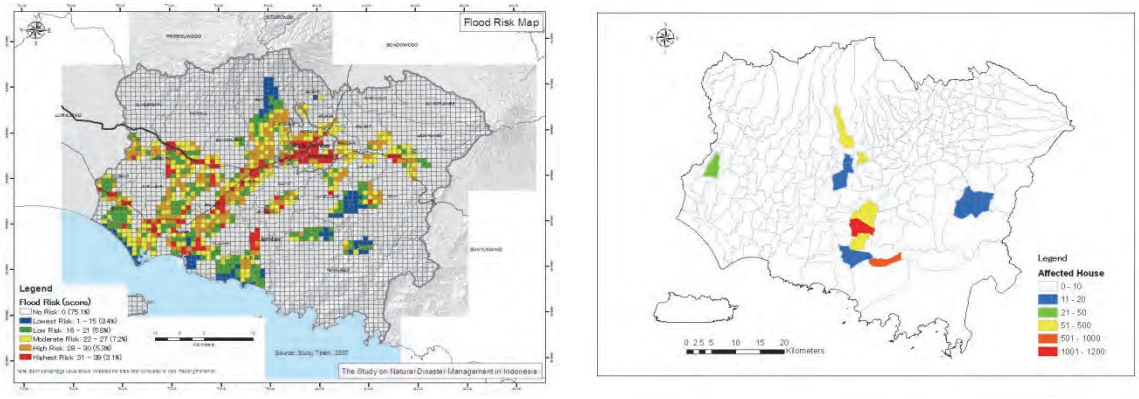


Figure 2.4.2 Comparison of Expected Number of Collapsed Buildings in JICA Study and Actual Number of Collapsed Buildings by Earthquake in 2009 in Padang Pariaman Regency

Further, the flood risk map in the JICA Study was compared with actual flood damage in 2009 to 2011 in Jember regency. Then, it was confirmed that actual flood damage had occurred in and around high flood risk areas specified in the JICA Study.



Flood Risk Map in JICA Study

Actual Flood Damage (Affected Houses in 2009-2011)

Figure 2.4.3 Comparison of Flood Risk Map in the JICA Study and Actual Flood Damage (Number of Affected Houses by Floods) in 2009 to 2011 in Jember Regency

Activity 3: Confirmation of maps and manuals developed by the other projects or organizations

In order to confirm the actual conditions of developing hazard/risk maps in Indonesia, the activities of relevant organizations/institutions were investigated. As a result, it was revealed that 1) different

organization/institution(s) in charge were assigned to each disaster, each of which could be a ministry, a governmental agency, or a team consisting of several ministries and universities, and 2) development of various manuals and hazard maps has proceeded at the initiative of the organizations in charge of each disaster. Further, BNBP has an idea that BNPB takes the lead role of disaster risk management but the hazard mapping and formulation of related guidelines are to be handled by each responsible organization. Table 2.4.1 shows the organization responsible for each hazard and the development status of each hazard map and guideline in Indonesia for each target disaster (eight disasters) in this Project.

Table 2.4.1 Organization Responsible for Each Hazard and Development Status of Hazard Map/Guideline in Indonesia

Target Disaster	Responsible Organization in Indonesia	Development Status of Hazard Map/Guideline
Earthquake	Team 9 (Organization consisting of earthquake experts from universities and relevant ministries), ESDM Badan Geologi	• For the earthquake hazard map, Team 9 developed a basement acceleration distribution map with a scale of 1:5,000,000 for all of Indonesia based on SNI and relevant reports. • Hazard maps with a scale of 1:250,000 are being developed by Badan Geologi, based on the SNI, but the maps are covered for part of Indonesia only.
Tsunami	ESDM Badan Geologi & BMKG	• Expected tsunami height was determined for each regency/municipality in the Tsunami Risk Assessment Guideline by BNPB. • Hazard map was not developed.
Volcano	PVMBG of ESDM Badan Geologi	• Hazard maps with a scale of around 1:50,000 were developed for major volcanos based on SNI. • Hazard maps were already prepared for all seven volcanos in North Sulawesi province (V. Karangetang, V. Awu, V. Lokon, V. Ambang, V. Ruang, V. Mahawu, and V. Soputan) and for all three volcanos in West Nusa Tenggara province (V. Rinjani, V. Tambora, V. Sangeang Api).
Flood	PU, BMKG and BIG	• Those three agencies are examining their methodology for assessment of flood potential using rainfall, slope, land use, and flood experience as indices with numerical scores. • Flood potential maps have been developed based on the above methodology in about 10 regencies/municipalities per year from 2006. • Based on the results of interviews with the three agencies, the above methodology is still under investigation and under discussion are the variety of input data and how to make the index and procedures for potential assessment. • Disaster risk assessment guideline by BNPB (to be described below) mentions that flooding is a disaster stipulated by SNI, but SNI for flooding has not been actually developed.
Landslide	ESDM Badan Geologi	• A ”Landslide Susceptibility Zone Map” with a scale of 1:250,000 has been developed based on SNI. • The map is developed only in some parts of Indonesia, not in all of Indonesia. • At present, the abovementioned map is developed in all of North Sulawesi province except island areas of Sitaro, Sangihe and Talaud.
Drought	BMKG and TAN (Dept. Of Agriculture)	• Authorized manual and hazard map are not published by responsible agencies. • Methodology for assessment of hazard potential is under study and is in developing stage. • Disaster risk assessment guideline by BNPB (to be described below) mentions that drought is a disaster stipulated by SNI, but SNI for drought has not been actually developed.

Target Disaster	Responsible Organization in Indonesia	Development Status of Hazard Map/Guideline
Extreme Weather (Destructive Wind)	BMKG	• Authorized manual and hazard map are not published by responsible agencies. • Methodology for assessment of hazard potential is under study and is in developing stage.
Forest & Land Fire	HUT (Dept. Of Forestry), BMKG and TAN (Dept. Of Agriculture)	• Authorized manual and hazard map are not published by responsible agencies. • Methodology for assessment of hazard potential is under study and is in developing stage.

Activities of other projects related to hazard/risk mapping were also surveyed. Various activities regarding natural disasters have been carried out by numerous donors in Indonesia. In this Activity 3, the survey was conducted targeting projects focusing on natural hazard/risk mapping among the various activities. The survey result of activities of representative projects is summarized in Table 2.4.2.

Table 2.4.2 Activities of Other Projects Related to Hazard/Risk Mapping of Natural Disaster

Project	Target Disaster	C/P	Outline/Output of Project
Geo-Risk Project (BGR, Germany)	Landslide	ESDM Badan Geologi	• Targeting Lombok Island in West Nusa Tenggara province, hazard and risk maps with a scale of 1:50,000 to 100,000 were developed. • Traces of landslide, faults, and vegetation are abstracted using satellite remote sending data such as Landsat and ASTER. Also, elevation and slope are extracted using ASTER-GDEM which is the elevation data created from ASTER satellite image. In addition, an approach using lithology maps is applied. Methodologies that need high-level and specialized experience and know-how are employed for creation of hazard and risk maps.
Risk in a Box (AIFDR, Australia)	Multi hazard	BNPB	• AIFDR developed a tool (a software based on GIS) for estimating hazard and risk, namely "Risk in a Box." • Hazard and risk can be estimated by preparing input data for estimation of hazard and risk and transferring the data to the tool. • As a merit of the tool, the user can estimate hazard and risk simply by preparing the necessary data. As a demerit of the tool, the user cannot check the details of the estimation process because the estimation process is a black box. • Risk in a box is a tool that estimates hazard and risk from various input data and is not a tool that implements a disaster simulation model. • A flood map was created in DKI Jakarta by this tool.
DGWR-PU (JICA)	Landslide Banjir Bandang	PU	• A manual for specifying hazard areas of landslide (slope failure) and "banjir bandang" was developed based on the premise of use by Indonesian engineers. • Various data such as historical disaster maps, slope maps, geological maps, and results of landslide potential area made out using existing topographic maps, satellite images and aerial photos are used for input data, and then the dangerousness of landslide is displayed in grid. Based on this result, ravines with high potential of "banjir bandang" are abstracted and likely affected areas are estimated using elevation data. • Targeting Jember regency, a landslide (slope failure) potential map with a scale of 1:100,000 were developed. Affected area (dangerous area) by debris flow (banjir bandang) was also investigated.

Task (8): Revision of the "Manuals for Creation of Hazard and Risk Maps" developed through the JICA Study

Before starting this Project, it was planned that disaster management maps at the regency/municipality level would be prepared using the manuals for creation of hazard and risk maps developed through the JICA Study as a base, with some revision if necessary. PDM and M/D of this Project were prepared under this premise.

However, in the meeting with BNPB on February 7, 2012 for discussing policy of future activities, it came down from Mr. Teddy of former Director of Disaster Risk Reduction, BNPB (leader of Output 2 at that time) that disaster risk assessment guideline targeting at the provincial level, which has been developed through a BNPB project, was preferable to use as a base instead of the manuals for creation of hazard and risk maps targeting the regency/municipality level, which had been developed through the JICA Study (2009). Considering two years had already passed after termination of the JICA Study and BNPB had independently prepared and is preparing hazard and risk maps and their guidelines in that time and even now, it was concluded that activities should be proceeded using BNPB's guideline as a base. The disaster risk assessment guideline developed by BNPB was enacted afterward as BNPB regulation No. 12/2012, Disaster risk assessment guideline.

Continuously, discussion about the creation of hazard and risk maps at the regency and municipality level with C/P (BNPB staff in charge of Output 2) was carried out through several meetings and workshops. BNPB had an idea to apply the concept and framework of disaster risk assessment guideline to regency and municipality as they were, and a policy of utilizing only hazard maps developed by Indonesian responsible organizations (other ministries/institutions or organizations consisting of universities and relevant ministries) as hazard information. The disaster risk assessment guideline describes some threshold values by which hazards are to be indexed but doesn't mention a methodology for creating maps, although it is mentioned that hazard maps as sources of hazard information should comply with information from responsible organizations.

However, it was gradually revealed that hazard maps developed by specialized agencies at the national and provincial levels (scale of 1:250,000 to 5,000,000) have limitations for describing hazard levels (high or low hazard) within a regency/municipality when trying to develop hazard and risk maps to utilize for regional disaster management plans at regency/municipality level (scale of 1:25,000 or 1:50,000). In some cases, all areas in one regency/municipality were given the same hazard level. Also, it became apparent, through the surveys of the organizations in charge of hazards in Indonesia that the methodology for hazard assessment was under investigation or was not authorized regarding some disasters such as floods, droughts, extreme weather (destructive wind) and forest & land fires.

As a result of a series of discussions with BNPB considering the above conditions, it was determined to prepare "Technical Guideline: Creation of Maps for Regional Disaster Management at Regency/Municipality Level" (tentative name) in this Project, which will be a technical guideline to

describe the methodology for developing hazard maps with a scale of 1:25,000 or 1:50,000 to be used for regional disaster management plans at the regency/municipality level. The technical guideline shall be prepared based on hazard maps developed by responsible organizations or their methodology and innovating Japanese knowledge. The guideline will become an annex of the disaster risk assessment guideline of BNPB regulation No. 2/2012. Figure 2.4.4 shows its position in the disaster risk assessment guideline of BNPB regulation No. 2/2012, and Table 2.4.3 shows the contents described in the technical guideline.

The draft technical guideline was prepared through the activities in Jakarta until September 2012. It was revised through the activities in North Sulawesi province and prepared as a "Technical Guideline for Creation of Hazard Map for Regencies/Municipalities (Ver.1.0)" in March 2014. Then, it was further revised through activities in West Nusa Tenggara province and prepared as the final version of the "Technical Guideline for Creation of Hazard and Risk Maps for Regencies/Municipalities (Ver.2.0)" in September 2015.

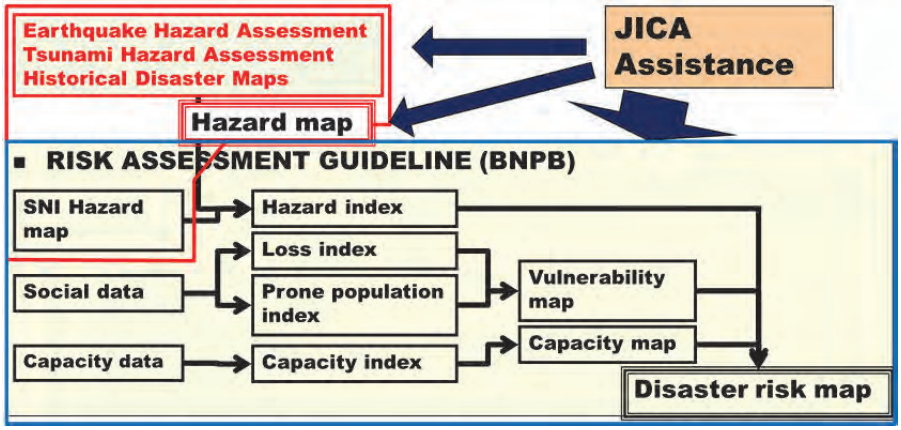


Figure 2.4.4 Position of Technical Guideline

Table 2.4.3 Development Status of Hazard Maps in Indonesia and Contents Described in Technical Guideline

Target Disaster	Development Status of Hazard Map in Indonesia	Contents Described in Annex
Earthquake	• For the earthquake hazard map, Team 9 developed basement acceleration distribution map with a scale of 1:5,000,000 for all of Indonesia.	• Innovating Japanese knowledge, a method of calculating the bedrock amplification factor at the 250 m mesh grid level was newly proposed and a methodology was introduced for developing bedrock acceleration distribution map with a 250 m mesh level based on the basement acceleration distribution map by Team 9.
Tsunami	• Expected tsunami height was determined in each regency/municipality in the Tsunami risk assessment guideline by BNPB. • The guideline on disaster risk assessment mentions the methodology for the assessment of hazard maps using elevation data of SRTM (free elevation data). • BNPB recognizes that this tsunami hazard mapping method has some limitations since SRTM is elevation data with errors of more than 10m.	• Based on the recognition that accuracy within several meters is crucial for tsunami hazard mapping, a methodology using IFSAR (non-free elevation data with high accuracy) was introduced for tsunami hazard mapping.
Volcano	• PVMBG of ESDM Badan Geologi developed hazard maps with a scale of 1:50,000 for major volcanos.	• A methodology for the creation of new hazard maps was not mentioned since hazard maps with a scale of 1:50,000 have already been developed.
Flood	• Methodology for assessment of flood potential is investigated by PU, BMKG, and BIG but is presently in the development stage. • Authorized manuals and hazard maps are not published.	• Considering spatial conditions such as topography, geology and land use, as well as meteorological and hydrological observation conditions in Indonesia, collecting and plotting past disaster records was considered as the most appropriate and practical methodology for flood hazard mapping at the regency/municipality level. Such methodology was introduced using topographic maps with a scale of 1:50,000 and 1:25,000 as a base.
Landslide	• ESDM Badan Geologi has developed "Landslide Susceptibility Zone Map" with a scale of 1:250,000.	• Methodology for creation of maps by overlapping past disaster records with 1:250,000 hazard maps developed in Indonesia was described.
Drought Extreme Weather (Destructive Wind) Forest & Land Fire	• Methodology for assessment of hazard potential is being investigated but is still at the developing stage. • Authorized manual and hazard map are not published.	• A reliable assessment method to be able to apply to disaster potential assessment at the regency/municipality level was not found. • Therefore, a methodology for creation of maps by using past disaster records and land cover maps was described.

Task (20): Collection and clarification of basic data required for creating hazard and risk maps (North Sulawesi province)

At the beginning of the Project, it was assumed that the BPBDs of 15 regencies/municipalities in North Sulawesi province prepared disaster management maps proactively with cooperation and guidance from relevant organizations such as BNPB, provincial BPBD, university and technical advisory committee. However, the above assumption was not realized due to the following reasons:

1) The BPBD of each regency/municipality has generally inadequate know-how and experience due to being a fledgling organization. Counterpart staff assigned to the activities of Output 2 is one to two persons from each BPBD and they don't have enough knowledge for map creation.

2) The process of using GIS software is crucial for creation of disaster management maps at the regency/municipality level considering future utilization, however, the BPBD of each regency/municipality doesn't have such software, nor an expert to be able to use the software. Furthermore, land phone line and internet connection infrastructure are not developed and the electric power supply is unstable. In addition, these issues are difficult to improve promptly.

3) Although the project assumed involvement and support from universities or relevant organizations, such as an organizing technical advisory committee, such a committee was not organized. If such a committee were to be organized, it may be possible to obtain technical advice and recommendations from the committee; however, it may be difficult for these universities and relevant organizations to implement concrete work for the creation of disaster management maps due to the deficiency of tools and human resources.

4) Considering the above situations of 1) to 3), the Project team discussed the creation process of hazard/risk maps with Mr. Hoyke, former Head of the provincial BPBD in North Sulawesi province. Since it was unlikely that BPBDs of regencies/municipalities could utilize GIS at this time, it was concluded that the best course of action would be for BPBDs of regencies/municipalities to handle disaster record surveying and the collection of basic statistics data without GIS software, while the provincial BPBD carries out the GIS process. In fact, "GIS corner" has been established in the provincial BPBD for consolidating data and information collected in regencies/municipalities and for creating disaster management maps.

Based on the above background, the GIS corner was established and it has proceeded to collect and arrange the necessary data (topographic maps, satellite images, statistical data, social data, natural condition data, etc.) for the creation of maps in regencies and municipalities in the pilot province of North Sulawesi. Collection and arrangement of the data were basically conducted by BPBDs of regencies/municipalities under the guidance of BNPB and provincial BPBD and the technical support of the Project Team. A flowchart of the creation of hazard and risk maps is shown in

Figure 2.4.5 and a list of collected data through the activities in North Sulawesi province is shown in Table 2.4.4.

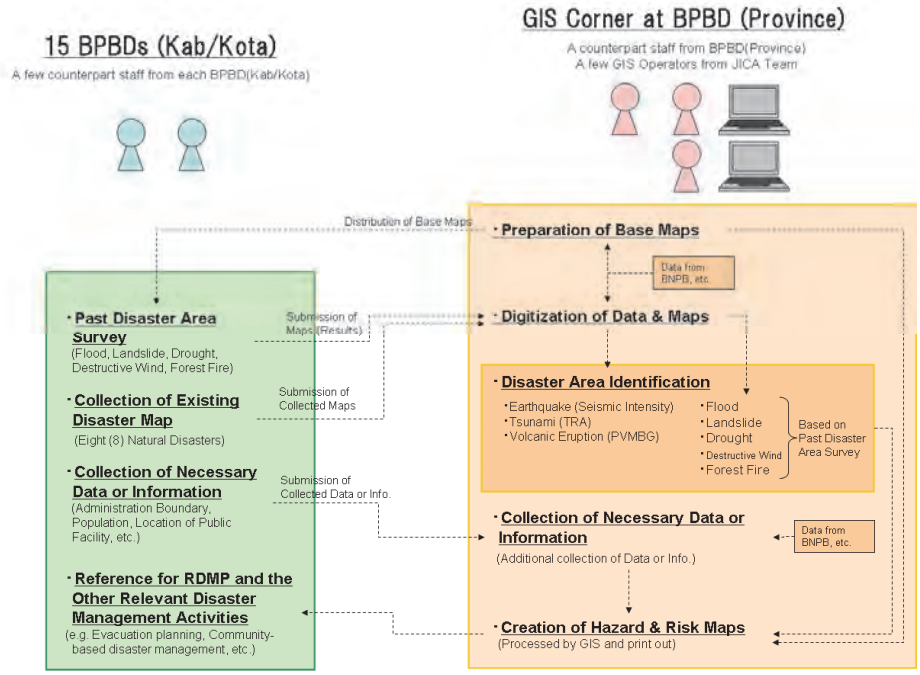


Figure 2.4.5 Flowchart of Creation of Hazard/Risk Maps

Table 2.4.4 List of Collected Data in North Sulawesi Province

Items	Data Source	Area	Data Type	Remarks
Administrative boundary (Province,Kabupaten/Kota level)	Bakosurtanal	All Sulut	GIS data (Polygon)	Attribute (Kab/Kota name, shape area, shape leng)
Administrative boundary (Kecamatan, Desa level)	BPS BAPPEDA of each Kab/Kota	All Sulut	GIS data (Polygon)	Attribute (Kecamatan/Desa name, shape area, shape leng)
Settlement Area	Bakosurtanal	All Sulut	GIS data (Polygon)	Attribute (shape area, shape leng) Based on Bakosurtanal Topo map (50K, 1991)
Infrastructure	Bakosurtanal	All Sulut	GIS data (Point)	Elements (Building, Church, Mosque, Port, Water pring, Monastery) Based on Bakosurtanal Topo map (50K, 1991)
River Networks	Bakosurtanal BAPPEDA of each Kab/Kota	All Sulut	GIS data (Line)	Attribute (River name (Only main river), shape leng)
Road Networks	Bakosurtanal BAPPEDA of each Kab/Kota	All Sulut	GIS data (Line)	Elements (highway, main road, secondary road, local road)
Land cover & Land use	Bakosurtanal	All Sulut	GIS data (Polygon)	Legend (Lake water, Pond water, Swamp water, fresh-water river, Forest, Sand beach Domestic airport, Settlement, Plantation, Irrigated rice field, Dry Irrigation rice field, Bush, Fields) Based on Bakosurtanal Topo map (50K, 1991)
Geology	Badan Geologi	All Sulut	GIS data (Polygon) Raster	Based on Systematic Geological Map (250K, 1986,1994,1997)
Rainfall data	BMKG,PU	All Sulut	GIS data (Point)	daily/10days/monthly
Population data	BPS	All Sulut	GIS data (Polygon)	Base on census data in 2010 Attribute (Desa's name, The number of male, female and total population each desa)
Satellite image (ALOS AVNIR2)	JAXA	All Sulut	Raster	Resolution 10m
Topographic map	Bakosurtanal	All Sulut	Raster	Edition-Ⅰ 1991 (These maps drawn from aerial photogrammetry scale of 1:100,000 in 1981-1982. The results of field checks in 1989 edited 1:50,000 scale topographical mapping is a national base mapping program)
Contour of elevation	Bakosurtanal	All Sulut	GIS data (Line)	25 pitch
Digital elevation model	SRTM90 (USGS)	All Sulut	Raster	Resolution 90m
Digital elevation model	ASTERGDEM (NASA, NIED)	All Sulut	Raster	Resolution 30m
Digital elevation model	IFSAR (INTER MAP)	Only Coastal area	Raster	Resolution 5m
River Basin map	Contour of elevation (Contour of elevation by Bakosurtanal)	All Sulut	Raster	Processing by GIS cornor at BPBD provical
Slope map	Contour of elevation (ASTERGDEM)	All Sulut	Raster	Processing by GIS cornor at BPBD provical
Flow accumulation map	Contour of elevation (ASTERGDEM)	All Sulut	Raster	Processing by GIS cornor at BPBD provical
Seismic zoning map	Seismic Hazard Map in Indonesia (Team9, 2010)	All Sulut	GIS data (Polygon) Raster	Utilized for evaluation of Earthquake potential
Surface Geometry map	Automated classifications of topography from DEMs : Junko Iwahashi, Richard J. Pike, Geomorphology 86 (2007) 409–440	All Sulut	GIS data (Polygon) Raster	Utilized for evaluation of Earthquake potential
Japanease seismic hazard infromation	NIED	-	GIS data (Polygon) Raster	Utilized for evaluation of Earthquake potential
Maximum Tsunami Height	Tsunami Risk Assessment National Guideline (BNPB, 2011)	-	-	Utilized for evaluation of Tsunami potential
Volocanic Hazard Map	Badan Geologi	-	GIS data (Polygon) Raster	V. Karangetang, 96(50k), V. Awu, 96(50k), V. Lokon,00(50k), V. Ambang,07(50k), V. Ruang,07(25k), V. Mahawu,07(50k), V. Soputan,98(50k)
Histrical Disaster area information	BPBD of each Kab/Kota	All Sulut	GIS data (Polygon) Raster	Mark/ indicate disaster area on base map (scale is 50K & 10K) by BPBD C/P Processing by GIS cornor at BPBD provical Elements (Flood, Debris flow, Landslide, Destructive wind, Abrasion)
Hazard map based on SNI	Disaster Management Plan in North Sulawesi :BNPB	All Sulut	Raster	Elements (Earthquake, Tsunami, Flood, Landslide, Valcanic eruption, Drought, Destructive wind, Frest fire)
Vulnerability map	Disaster Management Plan in North Sulawesi :BNPB	All Sulut	Raster	Elements (Earthquake, Tsunami, Flood, Landslide, Valcanic eruption, Drought, Destructive wind, Frest fire)
Capacity map	Disaster Management Plan in North Sulawesi :BNPB	All Sulut	Raster	Elements (Earthquake, Tsunami, Flood, Landslide, Valcanic eruption, Drought, Destructive wind, Frest fire)
Risk map	Disaster Management Plan in North Sulawesi :BNPB	All Sulut	Raster	Elements (Earthquake, Tsunami, Flood, Landslide, Valcanic eruption, Drought, Destructive wind, Frest fire)

Three counterpart personnel from the provincial BPBD were assigned to the GIS corner in provincial BPBD by the chief of BPBD of North Sulawesi province, where they enhanced their GIS skills through GIS technical training and on-the-job training by local staff of the Project. They conducted the plotting of existing maps and disaster records collected in BPBDs of regencies/municipalities and the creation of hazard and risk maps using two dedicated computers, an A0 size plotter and software of ArcGIS.

Working Condition in GIS corner of Provincial BPBD

A0 Size Plotter for Map Printing

Task (21): Creation of hazard and risk maps (North Sulawesi province)

The creation of hazard and risk maps was conducted in regencies/municipalities in the pilot province of North Sulawesi, referencing and utilizing draft technical guideline discussed in Task (8) and data collected and arranged in Task (20).

Five workshops in total were held on October 10, 2012; October 17-18, 2012; January 17, 2013; May 8, 2013; and December 17, 2013 to explain the generating mechanism of target disasters and give guidance on the creation of hazard and risk maps. Through the workshops, it was explained that the collection and accumulation of disaster records was important for basic data to grasp disaster characteristics at the regency/municipality level, and how to make topographic maps and how to record disaster. Participants were guided through practical training so that BPBD staff of regencies/municipalities could collect and accumulate disaster records properly by themselves.

Further, Japanese experts and local staff of the Project visited each BPBD in 15 regencies/municipalities about three times on average and gave technical guidance on the creation of hazard and risk maps and the collection and mapping of disaster records to C/P as a follow-up of the workshops. Table 2.4.5 summarizes the workshops in North Sulawesi province.

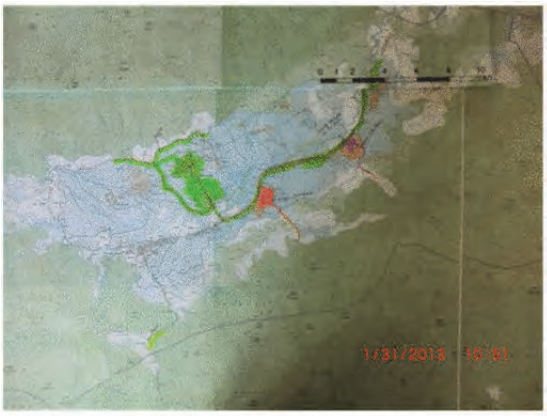
Table 2.4.5 Workshops of Output 2 in North Sulawesi Province

Date	Title	Content and Subject of Discussion
October 10, 2012	First WS	Activity plan of Output 2 in North Sulawesi province
October 17-18, 2012	Second WS	Characteristics of natural disaster in BPBD of each regency/municipality and methodology for creation of hazard map and historical flood map
January 17, 2013	Third WS	Role sharing and schedule of creation of disaster management map, details of its methodology, and process of collection of necessary data and information
May 8, 2013	Fourth WS	Strategy of creation of disaster management maps for floods and landslides, activity of GIS corner, and characteristics of disasters in each regency and municipality (presented by C/P)
December 17, 2013	Fifth WS	Explanation of Technical Guideline and methodology of disaster risk assessment, and confirmation and finalization of prepared hazard maps

A field exercise for the creation of historical flood maps (collection of flood record) was carried out. (Second WS)

Staff in each regency/municipality made a disaster record from 1:50,000 topographic maps for the creation of historical disaster maps. (Third WS)


Characteristics of disasters and the actual conditions of disaster records were presented using historical disaster maps prepared by GIS corner and presentation materials made by BPBD staff in each regency/municipality. (Fourth WS)





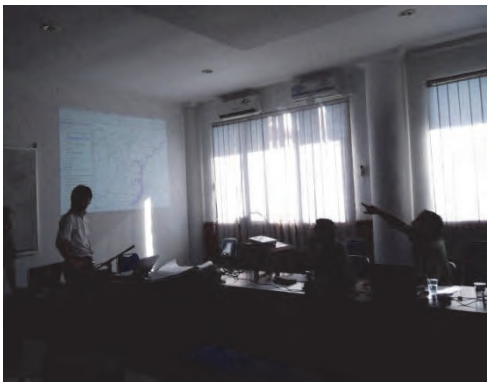
Follow-up technical guidance on the creation of hazard and risk maps, and collection and mapping of disaster records to C/P was carried out by visiting BPBDs in 15 regencies/municipalities as follow-up of the workshops. The above pictures are examples of maps the C/P made from disaster records by themselves.

As shown in Figure 2.4.5 in Task (20), role sharing of the creation of hazard/risk maps was set as follows: BPBDs of regencies/municipalities handle the disaster record survey and collection of basic statistical data, and provincial BPBD (GIS corner) handles data processing. As previously noted, the Project Team demonstrated how to record/plot disasters based on 1:50,000 topographic maps and how to update it to BPBDs of regencies/municipalities through workshops and visits of the BPBDs. When visiting BPBDs of regencies/municipalities, the Project Team accompanied BPBD staff to regional offices of other organizations such as BAPPEDA and PU and supported that BPBD staff as they collected basic spatial data and statistical data to be utilized as input data for the creation of hazard/risk maps.

GIS technical training was carried out aiming at capacity development of persons in charge (C/Ps of provincial BPBD) of the GIS corner. In the training, technical transfer of GIS utilization was conducted through a basic lecture on topographic maps and GIS, a lecture on GIS operation for the creation of historical disaster maps, and digitizing of disaster records collected by BPBDs of regencies/municipalities. Since many C/Ps in BPBDs of regencies/municipalities had requested to learn GIS before, C/Ps in BPBDs of regencies/municipalities were also called to participate in the GIS technical training. As a result, C/Ps from Manado municipality, Minahasa regency, South Minahasa regency and North Minahasa regency participated in the training and technical transfer could be done not only for provincial BPBD but also for regency/municipality BPBD.

Table 2.4.6 GIS Technical Training in North Sulawesi Province

Date	Title	Content
May 27, 2013	First GIS Technical WS	Basic lecture on topographic maps and GIS, and lecture on GIS operation through creation of historical disaster maps
June 19-20, 2013	Second GIS Technical WS	Explanation of basic tools of GIS software, practical training on GIS utilization (BPBD staff actually created and updated spatial data and geo database using GIS software)




Pictures of basic lecture and pracitical training. Participants installed free GIS software to their own PC and actually operated the software by themselves in the workshops. (GIS Technical WS)

The staff of the provincial BPBD obtained certain basic GIS knowledge and skills through the GIS technical workshops, and they received technical guidance and on-the-job training from the local staff of the Project. Considering continuous operation of the GIS corner even after termination of the Project, the following efforts were made: 1) to establish the cycle for updating maps, which includes the provincial BPBD processing information collected by BPBDs of regencies/municipalities, and then BPBDs of regencies/municipalities collecting additional information based on the processed result, and 2) to prepare a technical manual and to propose employment of a GIS engineer so that provincial BPBD can implement the process on their own initiative.

The final version of hazard and risk maps was completed in 15 regencies/municipalities in March 2014 through continuous activities of C/P and the GIS corner at the provincial BPBD. The printed maps and digital data were handed over to each BPBD in the Wrap-up WS in North Sulawesi province.

Task (22): Planning provisional disaster mitigation measures (North Sulawesi province)

As an activity for investigations of provisional disaster mitigation measures (inventory) needed in regencies/municipalities in the pilot province of North Sulawesi, BPBDs and relevant organizations such as PU and BAPPEDA in 15 regencies/municipalities were visited in order to study and understand disaster characteristics and disaster records in each regency/municipality. Table 2.4.7 shows the status of visits to regencies and municipalities. Provisional disaster mitigation measures were investigated in each regency/municipality based on hazard and risk maps prepared for each disaster type and disaster characteristic grasped by the field survey, and they were reflected in the action plan of each regional disaster management plan.

Table 2.4.7 Status of Visit to Regencies/Municipalities in North Sulawesi Province for Investigation of Characteristics and Records of Disasters

	Regency/Municipality	Visit Date
1	MANADO Municipality	October 30, 2012; January 22, 2013; March 20, 2013
2	BITUNG Municipality	January 28, 2013
3	TOMOHON Municipality	January 29, 2013
4	KOTAMOBAGU Municipality	February 12, 2013
5	MINAHASA Regency	February 7, 2013; 10/May/2013
6	NORTH MINAHASA Regency	October 31, 2012; February 5, 2013; May 20, 2013
7	SOUTH MINAHASA Regency	October 29, 2012; January 23, 2013; May 22, 2013
8	SOUTHEAST MINAHASA Regency	February 8, 2013
9	BOLAANG MONGONDOW Regency	January 31, 2013
10	NORTH BOLAANG MONGONDOW Regency	February 1, 2013; May 14, 2013
11	EAST BOLAANG MONGONDOW Regency	February 14, 2013; May 13, 2013
12	SOUTH BOLAANG MONGONDOW Regency	February 13, 2013
13	SANGIHE Regency	February 20, 2013; May 2, 2013
14	SITARO Regency	February 18, 2013
15	TALAUD Regency	April 29, 2013

Task (36): Collecting and clarification of basic data required in developing Hazard and Risk Maps (West Nusa Tenggara province)

The GIS corner was established in the Provincial BPBD in West Nusa Tenggara Province as in the case of North Sulawesi Province. Following the establishment of the GIS corner, the collection and arrangement of necessary data (topographic maps, satellite images, statistical data, social data, natural condition data, etc.) for creation of maps in regencies and municipalities in the pilot province of West Nusa Tenggara Province will begin. Collection and arrangement of the data were basically conducted by the BPBDs of regencies/municipalities under guidance of the BNPB and Provincial BPBD and technical support of the Project Team. A flowchart of the creation of hazard and risk maps is similar to the flow of the case of North Sulawesi Province as shown in Figure 2.4.5. A list of collected data through the activities in West Nusa Tenggara Province is shown in Table 2.4.8.

Table 2.4.8 List of Collected Data in West Nusa Tenggara Province

Category	Data Name	Source
Basic	Administrative Boundary (Up to Village)	BAPPEDA (Village boundary: BPS)
	Coastal Line (1:25,000)	BAPPEDA
	BIG Topographic Map (1:25,000)	BIG
	Geology Map(1:250,000)	Badang Geologi
	Road Network	BAPPEDA, PU
	River System	BAPPEDA, PU
Hazard	Earthquake: Seismic Intensity at Surface	BNPB, BPBD, JICA
	Estimated Tsunami Inundation Area (Based on IFSAR DEM (Resolution: 5 m))	BNPB, BPBD, JICA
	Volcanic Prone Maps (1:100,000) (3 volcanoes: Rinjani, Tambora, Sangeang Api)	PVMBG, Badang Geologi
	Landslide Susceptibility Maps (More than 1:100,000)	Badang Geologi
	Historical Disaster Records and Maps (Flood, Flash Flood, Landslide, Forest Fire)	BPBD, JICA
	Results of Provincial Disaster Risk Assessment in West Nusa Tenggara province	BNPB
Vulnerability	Statistical Data for each Village (Kecamatan Statistical Report, PODES, SUSENAS, PPLS, etc.)	BPS
	Land Use Data and Maps (1:250,000)	BAPPEDA, BPN
Capacity	The results of Regional Capacity Assessment 1. Focus Group Discussion 2. Questionnaire survey for Villages	BPBD, JICA
Risk	Disaster Risk Map (8 types disaster ×10 regencies/municipalities)	BPBD, JICA

The activities of the GIS corner have been carried out together with the staff of the Provincial BPBD through activities in the second pilot province of West Nusa Tenggara Province; however, it was difficult for a fixed staff to continuously engage in the GIS corner due to chronic staff shortage in the province and frequent transfers of staff. This issue was continuously discussed with the head of the Provincial BPBD and consequently two staff members were recommended and assigned by the head as the staff members to be involved in continuous operation of the GIS corner at the beginning of July 2015. A technical transfer of the two staff members was carried out for two to three hours three times a week from July to the end of August 2015 so as to operate the GIS corner continuously after completion of the Project. Also, preparation actions for maintaining the GIS corner, such as preparation of explanation material, were also implemented in case of a sudden staff transfer.

Task (37): Creation of Hazard and Risk Maps (West Nusa Tenggara province)

Creation of hazard and risk maps was conducted in regencies/municipalities in the pilot province of West Nusa Tenggara Province referencing and utilizing technical guidelines discussed in task (8) and the data collected and arranged in task (36).

Six workshops were held through the activities of Output 2 in West Nusa Tenggara Province with the purpose of explaining the generating mechanism of target disasters, as well as guiding the creation of hazard and risk maps and the methodology of disaster risk assessment. In the workshops, explanation and practical training for homework during the period of the C/Ps' individual activities was also conducted, as necessary. Individual activities of the C/Ps are listed as follows: collection of historical disaster records, creation of historical disaster maps, digitizing historical disaster maps (preparation of GIS data), assessment of disaster management capacity at the regency/municipality level by FGD (focus group discussion), questionnaire survey for assessing disaster management capacity at the Village level, implementation of disaster risk assessment (preparation of disaster risk assessment matrix), and preparation of the disaster risk assessment part of the regional disaster management plan.

Further, as a follow-up to the workshop and activity in the workshop itself, Japanese experts and local staff of the Project visited each BPBD in 10 regencies/municipalities in the time of creation of a historical disaster map in September 2014 after the second workshop and in the time of preparation of the disaster risk assessment part of the regional disaster management plan in April 2015 as the fifth workshop. They carried out technical guidance for C/Ps on collecting and mapping disaster records, including important points of creation of a historical disaster map, and discussion and exchange of opinions with C/Ps about methodology, methods of analysis, and descriptive contents for disaster risk assessment. Table 2.4.9 summarizes the workshops in West Nusa Tenggara Province.

Table 2.4.9 Workshops of Output 2 in West Nusa Tenggara Province

Date	Title	Content and Subject of Discussion
June 19-20, 2014	First WS	Introduction of activities for Output 2, explanation of methodology of risk assessment at the municipality/regency level along with the BNPB guideline, explanation of the methodology of hazard map creation, Practical training of creation of a historical disaster map, and explanation of a methodology for assessment of disaster management capacity at regency/municipality level and Village level
September 11 & 18, 2014	Second WS	Mechanism of disaster (flood and landslide) and mitigation measures, explanation of a detailed methodology of disaster risk assessment, explanation of activities of the GIS corner, and confirmation of progress of assessment of disaster management capacity at Village level by BPBD C/P
November 11 & 18, 2014	Third WS	Mechanism of disaster (earthquakes, tsunami, and volcanic eruption) and mitigation measures; explanation & confirmation of created hazard maps of earthquakes, tsunami, and volcanic eruption; confirmation for the progress of hazard & risk mapping—digitized historical disaster maps; results of assessment of disaster management capacity at regency/municipality level; and presentation of results/progress of assessment of disaster management capacity at Village level by BPBD C/P
January 14 & 21, 2015	Fourth WS	Mechanism of disaster (droughts) and mitigation measures; summary of methodology/activities of creation of hazard & risk maps, and methodology/activities of disaster risk assessment; explanation and confirmation of created hazard, vulnerability, capacity & risk maps; practical training of disaster risk assessment (preparation of matrix of disaster risk assessment); and analysis of results of disaster risk assessment and input to the regional disaster management plan

Date	Title	Content and Subject of Discussion
April 9 & 17, 2015	Fifth WS (visiting regencies/municipalities)	Checking and discussing the draft DRA part of the RDMP; advancing the draft DRA part by reviewing and comparing matrices, hazard maps and other various maps; and promoting an understanding of disaster characteristics of C/Ps' own regencies/municipalities
June 30 & July 2, 2015	Sixth WS	Confirmation of Status of Finalization of DRA part of RDMP and explanation of additional input for further improvement of the part, and practical training on preparation of tsunami disaster management maps based on hazard maps

Staff in each regency/municipality looked at disaster records on a 1:25,000 topographic map for creation of a historical disaster map. (First WS)

(Bima Municipality)

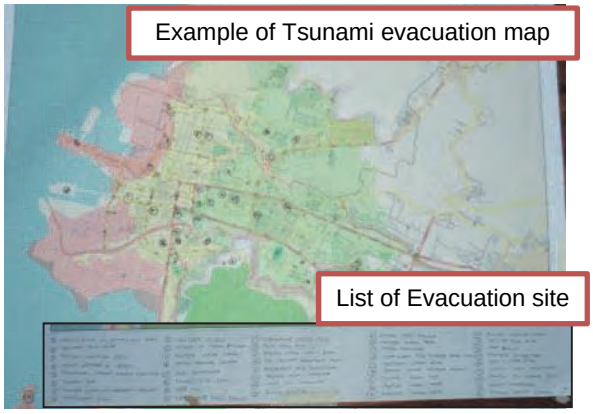
(Bima Regency)

(North Lombok Regency)

(East Lombok Regency)

(Bima Regency)

Follow-up technical guidance on creation of hazard and risk maps and collection and mapping of disaster record by the C/P was carried out by visiting BPBDs in 10 regencies/municipalities as a follow-up to the Second WS. The above pictures are examples of maps, which the C/P made out disaster records of by themselves.



Practical training for preparation of tsunami evacuation map was carried out based on the tsunami hazard map prepared in this Project. T figure on the left is an example of a tsunami evacuation map in Bima municipality, which was prepared by the C/Ps. (Sixth WS)

GIS technical training was carried out aiming at capacity development of Output 2's C/Ps in each regency/municipality and persons in charge (C/Ps of Provincial BPBD) of the GIS corner. In the training, technical transfer of GIS utilization was conducted through a basic lecture on GIS, lecture on GIS operation for creation of a historical disaster map, and digitizing work of disaster records collected by the BPBDs of regencies/municipalities. The C/Ps' interest in GIS was quite high and some of regencies and municipalities in West Nusa Tenggara Province implemented digitizing historical disaster data (preparation of GIS data) on their own. It is observed that the C/Ps try to absorb knowledge and techniques very actively.

Table 2.4.10 GIS Technical Training in West Nusa Tenggara Province

Date	Title	Content
October 2, 2014	GIS Technical WS	Explanation of the basics of GIS and basic tools of its software, lecture on GIS operation through creation of historical disaster maps, and practical training on GIS utilization (BPBD staff actually created historical disaster data using GIS software)

Pictures on lecture and practical training. Participants installed free GIS software to their own PCs and actually operated the software on their own during the WS. (GIS Technical WS)

The final version of hazard and risk maps was completed in 10 regencies/municipalities in September 2015 through continuous activities of the C/Ps and the GIS corner at the provincial BPBD. The printed maps and digital data were handed over to each BPBD in the Wrap-up WS in West Nusa Tenggara province.

Task (38): Planning provisional disaster mitigation measures (West Nusa Tenggara province)

Provisional disaster mitigation measures (inventory) needed in regencies/municipalities in the pilot province of West Nusa Tenggara Province were investigated based on hazard and risk maps prepared for each disaster type; the results of disaster risk assessment and disaster characteristics were grasped through activities and were reflected in the action plan of the regional disaster management plan.

2.5 Output 3

(1) Output: The capacity for formulation of Regional disaster management plans for regency/municipality in the target area is enhanced.

(2) Schedule of Activities:

The schedule of the activities of Output 3 is as follows:

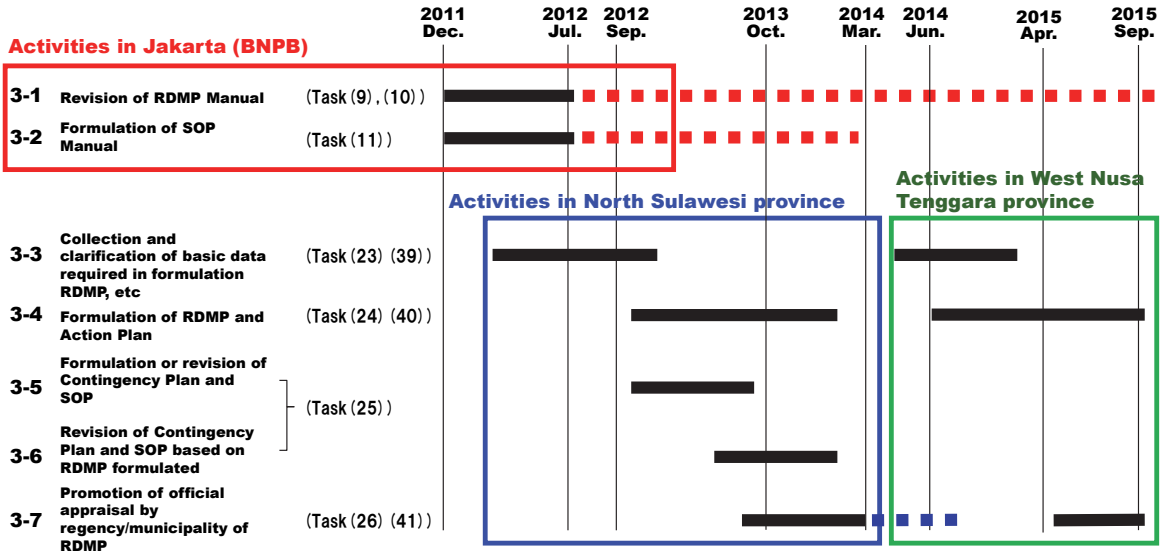


Figure 2.5.1 Schedule of Activities for Output 3

(3) Implementation Measures of Technical Transfer

Implementation measures of technical transfer for each activity of Output 3 are described below.

Task (9): Comparative examinations of "Manuals for Formulation of Regional Disaster Management Plans" formulated through the JICA Study and the one formulated by the National Agency for Disaster Management (BNPB), and establishment of manual formulation policy

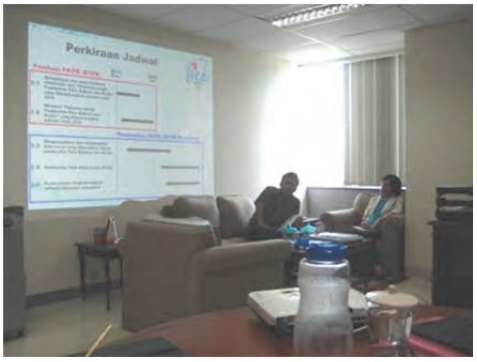
In order to formulate the Regional Disaster Management Plan, JICA Expert Team confirmed that the contents of the disaster management laws, the national disaster management plan, and the provincial Regional Disaster Management Plan have already been formulated in Indonesia. Implementation policy was considered and determined based on these materials. The implementation policy discussed with C/Ps at the workshops was agreed upon at the second JCC held on July 11, 2012.

Table 2.5.1 and Picture 2.5.1 show the summary of the workshops.

Table 2.5.1 Summary of Workshops with BNPB According to Regional Disaster Management Plan

No	Date	Contents	Appendix
1st	January 20, 2012	Necessity of RDMP	
2nd	March 26, 2012	Structure of RDMP	• Comparison of RDMP by Country
3rd	April 3, 2012	Contents of RDMP	• Comparison of DMPs in Indonesia • Comparison of Programs in NDMP and NAP-DRR • Comparison of Programs for Each Disaster in NDMP • Comparison of Programs for Each Disaster in NDMP and Japanese DMP
4th	June 28, 2012	Confirmation of Implementation Policy for Output 3-1	• Revision of Head of BNPB Regulation No. 4 • Format of Annex: Sample of RDMP

First Workshop (January 20, 2012)



Second Workshop (March 26, 2012)

Third Workshop (April 3, 2012)

Fourth Workshop (June 28, 2012)

Picture 2.5.1 Photos of Workshops for the Regional Disaster Management Plan with BNPB

BNPB has already formulated "National Disaster Management Plan 2010-2014" and provincial disaster management plans have been formulated, entrusted to local consultants with creation of

hazard and risk maps in BNPB project of 2011. Since the provincial plan is the upper level of the Regional Disaster Management Plan of regencies/municipalities that the Project targets, JICA Expert Team collected and confirmed the contents of the provincial disaster management plan of North Sulawesi province as a pilot province and the other provinces immediately after the start of this project. In addition, through the workshop, the results of comparing the structure and contents of the national disaster management plan in Indonesia, the disaster management plan formulated through the JICA Study, and the plan in the other countries were discussed. The shortcomings and needed improvements of the existing plan were also discussed. By discussing these items above, the JICA Expert Team and BNPB could share the same point of view to develop and revise the Regional Disaster Management Plan.

From the beginning of the Project, it was assumed that the Regional Disaster Management Plan manual would be revised based on the manual developed in the JICA Study. Therefore, JICA Expert Team explained the contents of the manual in the workshop on March 26, 2012.

However, at the time of regional disaster management planning of the regencies/municipalities of Indonesia, it should be subject to "Guidelines for Regional Disaster Management Planning," 2008, No. 4. Head of BNPB regulation, JICA Expert Team, and C/Ps held discussions to review the contents. This regulation includes some detailed contents on the implementation plan, but as the operation plan in the occurrence of a disaster, contents for emergency responses are limited and do not fulfill adequately the function of the operational plan, BNPB considered revising it significantly. However, BNPB determined to utilize this regulation for implementation of formulation project of regional disaster management plan for all provinces in 2011 and of 33 regencies (1 regency in each province) in 2012. Therefore, it is required to follow this regulation in the regional disaster management planning formulated in this project. However, many problems were observed, such as no classification of the contents of province and regency/municipality, lack of contents in each disaster management phase as a regional disaster management plan for regencies/municipalities, indefinite roles and responsibilities, and indefinite positioning of the action plan.

As a result of the consultation and discussion about the manual for regional disaster management plan that was formulated in the Project, it was agreed that Head of BNPB regulation No. 4 2008 should be revised. As for the revision of the Head of BNPB regulation No.4, it was decided to revise the contents based on the results of actual formulation of Regional Disaster Management Plans of regencies/municipalities in the pilot province.

In addition, the description of the Head of BNPB regulation No. 4 2008 has a shortage of content and is only an outline because one would not be able to formulate the plan by referring to the regulation. Accordingly, it was determined that the JICA Expert Team will formulate the “Technical Guideline for Formulation of Regional Disaster Management Plan for Regencies/Municipalities” and “The Sample of Regional Disaster Management Plan” as the Annex of the regulation. This document would be a major achievement.

Implementation policies of the Guideline for formulating the regional disaster management plan were agreed upon and decided in consultation with BNPB as follows: The formulation of the Guideline through the activities of the North Sulawesi province as the 1st pilot province was completed in March 2014 as a draft Version 1.0. The finalization of the Guideline for nationwide dissemination is shown in the (46).

The Original Policy

- Revision of regional disaster management planning manual of JICA Study

The Implementation Policy agreed

- Following the "Guidelines for regional disaster management planning," BNPB regulation No. 4, 2008
- Recommendation for revision of BNPB regulation No. 4, 2008
- Formulation of "The Technical Guideline of regional disaster management plan for regencies/municipalities" and "The Sample of regional disaster management plan" as the Annex of the regulation

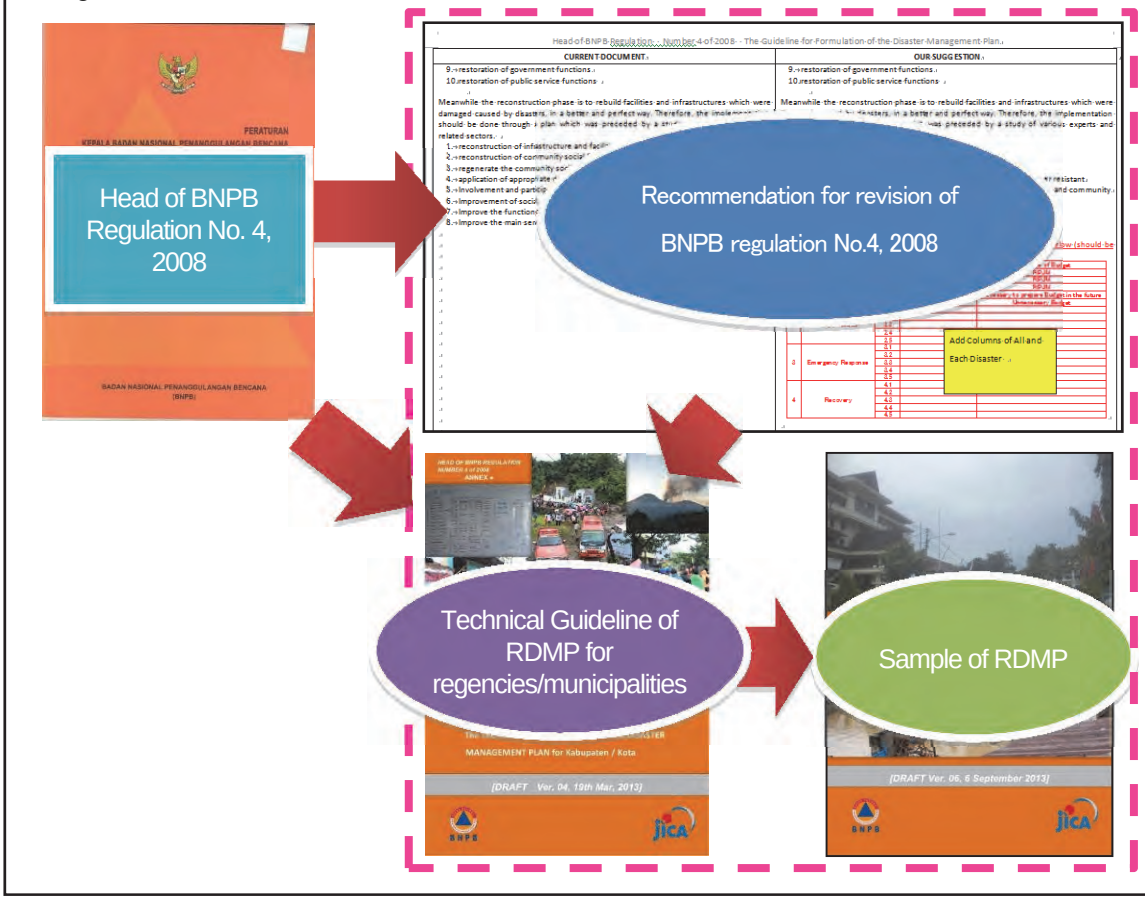


Figure 2.5.2 Implementation Policy of the Guideline for Formulation of Regional Disaster Management Plan

Task (10): Additions of other disasters to the "Manuals for Formulation of Regional Disaster Management Plans" developed through the JICA Study

At the beginning of the Project, there were assumed to be 8 disasters (earthquake, tsunami, volcanic eruption, flood, landslide, drought, destructive wind, forest fire), based on the manual for formulation of regional disaster management plan formulated in JICA Study edition for earthquake, destructive wind and flood damage, in addition to volcanic eruption, drought, destructive wind, and forest fires. However, the "National Disaster Management Plan 2010-2014" is targeting 14 disasters, as below, including man-made disasters.

Table 2.5.2 Target Disasters in National Disaster Management Plan

Natural Disaster	Man-made disaster
Earthquake	Epidemics and Disease Outbreak
Tsunami	Technological Failure
Flood	Social Conflict
Landslide	
Volcanic Eruption	
Drought	
Extreme Weather	
Forest and Land Fire	
Building and House Fire	
Extreme Wave and Abrasion	
Erosion	

Through discussions with C/Ps, since it cannot be said that "Building and House Fire" and "Erosion" are disasters, they were confirmed to be excluded from target disasters in the near future. In addition, the Regional Disaster Management Plan of North Sulawesi province has been formulated for 12 target disasters, excluding the two above-mentioned disasters.

Therefore, in order to increase versatility after the end of this project, it has been agreed that "Technical Guideline for Formulation of Regional Disaster Management Plan for Regencies/Municipalities," shown in Task (9), will cover all 12 disasters instead of 8 disasters.

The activities of each disaster are shown in Table 2.5.3 to Table 2.5.5. These contents are described in the "Technical Guidelines for Formulation of Regional Disaster Management Plan for Regencies/Municipalities." These are the contents that each regency and municipal official can discuss, considering the target disasters and selecting the activities.

Table 2.5.3 The Activities of Each Disaster（Prevention and Mitigation）

FOCUS PRIORITY	PROGRAM	ACTION		TYPE OF DISASTER											
				Earthquake	Tsunami	Volcanic Eruption	Flood	Landslide	Extreme Wave & Abrasion	Extreme Weather	Drought	Forest & Land Fire	Technological Failure	Epidemics & Disease Outbreak	Social Conflict
Enhancing the effectiveness of Disaster Prevention and Mitigation	Enhancement of institutional and community capacity in disaster prevention and mitigation	1	To socialize hazard and its impact to the community, school students and media	○	○	○	○	○	○	○	○	○	○	○	○
		2	To make tsunami inundation map from the modeling result of various earthquakes sources		○										
		3	To apply research result to build tsunami wave damper in Tsunami DM Priority Zone		○										
		4	To appoint 5 supervisors of standard implementation of water and watershed management				○								
		5	The existence of reward and punishment for officials and all levels of society in supporting the management standard of water resources and watersheds				○								
		6	To conduct training for food resilience by diversification of food in order to anticipation drought disaster in communities living in drought disaster hazard area								○				
		7	Develop cooperation between the government, production sector, and the community in the enhancement of work safety in industrial area										○		
		8	To conduct Early Detection by means of periodic surveys and regulating the eradication of Epidemic and Disease Outbreak											○	
		9	To conduct community outreach for increasing the knowledge of healthy lifestyles											○	
		10	To promote, Socialize, and Coordinate of Independent Health Care Insurance (JPKM) To reduce morbidity, health behavior, and health services to the poor and vulnerable											○	
		11	To build preparedness culture in the countermeasure of Social Conflict disaster												○
		12	To conduct socialization about Peaceful and Tolerating Living Culture to prevent Social Conflict												○

FOCUS PRIORITY	PROGRAM	ACTION		TYPE OF DISASTER											
				Earthquake	Tsunami	Volcanic Eruption	Flood	Landslide	Extreme Wave & Abrasion	Extreme Weather	Drought	Forest & Land Fire	Technological Failure	Epidemics & Disease Outbreak	Social Conflict
Enhancing the effectiveness of Disaster Prevention and Mitigation	Optimization of resource management and Spatial Planning for disaster prevention and mitigation efforts	13	To conduct simulations and activities together in the form of seminars and trainings on conflict-prone communities for Social Conflict disaster management												○
		14	To make zoning of Earthquake hazard areas and to regulate land use	○											
		15	Application of Earthquake resistant building standard down to village level which is adopted from Province Building Code	○											
		16	To apply building code regulation down to village level	○											
		17	To apply spatial planning and building permit (IMB) based on Earthquake disaster risk assessment	○											
		18	To determine the regulation related to land use and Building Permit		○	○	○	○	○	○		○			
		19	To formulate Mayor Regulation on the Standard of Water Resources and Watershed Management in Flood hazard area				○								
		20	To conduct the development and improvement of main irrigation networks and water dam				○								
		21	Increasing the capacity of catchment area in landslide disaster prone area					○							
		22	To conduct the Enforcement of Environmental Regulation related to Extreme Wave and Abrasion disaster prevention						○						
		23	To restrict construction development in Extreme Wave and Abrasion disaster hazard area						○						
		24	To implement beach reclamation beach so as to reduce the impact of Extreme Wave and Abrasion						○						
		25	To provide support, implement construction and repair of main irrigation networks, reservoirs and dams								○				
		26	To Rehabilitate of critical space into green open space or urban forest								○				

FOCUS PRIORITY	PROGRAM	ACTION		TYPE OF DISASTER											
				Earthquake	Tsunami	Volcanic Eruption	Flood	Landslide	Extreme Wave & Abrasion	Extreme Weather	Drought	Forest & Land Fire	Technological Failure	Epidemics & Disease Outbreak	Social Conflict
Enhancing the effectiveness of Disaster Prevention and Mitigation	Optimization of resource management and Spatial Planning for disaster prevention and mitigation efforts	27	To utilize the cultivated area as a green open space (RTH) and also as protected area								○				
		28	Implementing regulations on safeguarding and preservation of water resources								○				
		29	To apply the regulation of criteria and safeguarding standard of disaster management in forest area									○			
		30	To build buffer zone between forests and residential areas									○			
		31	Control and operation of production forest yield and nature tourism permits									○			
		32	To make protection and safeguarding of forest areas moisture, especially during dry season									○			
		33	Supervision of regulation implementation regarding industrial area development which more compliant to risk reduction aspect										○		
		34	To conduct Healthy and Unhealthy Environment Data Collection at RT/ RW level in each village											○	
		35	To conduct Planning and Rehabilitation of Unhealthy Environment and Slum											○	
		36	To conduct Structuring and Rehabilitation of Solid, Liquid, and Air Waste Sewer											○	
		37	To conduct restructuring of urban waste management with 3Rs principles (Re-Use, Reduce, and Recycle)											○	
	Management of disaster mitigation	38	To construct and maintain protection shelters and evacuation place	○	○	○	○	○	○	○		○			
		39	To formulate residential placement plan to reduce the population density rate in Earthquake hazard areas	○											
		40	To build an Earthquake resistant model house that can be copied by the community	○											

FOCUS PRIORITY	PROGRAM	ACTION		TYPE OF DISASTER											
				Earthquake	Tsunami	Volcanic Eruption	Flood	Landslide	Extreme Wave & Abrasion	Extreme Weather	Drought	Forest & Land Fire	Technological Failure	Epidemics & Disease Outbreak	Social Conflict
Enhancing the effectiveness of Disaster Prevention and Mitigation	Management of disaster mitigation	41	To conduct identification of government facility and public facility based on the standard of construction for Earthquake resistant building	○											
		42	Construction and retrofitting of governmental and public facilities to be safer against earthquake disaster	○											
		43	Retrofitting of infrastructure	○											
		44	To socialize the guideline of Earthquake resistant building standard down to village level	○											
		45	To development of buffer and damper zones for the impact of tsunami disaster		○										
		46	Protection of coral reef area 2-3 km from the coast in Priority Zone PB Tsunami		○										
		47	Construction of Seawall/Dike		○				○						
		48	Construction of lava flow diversion channel in settlement area			○									
		49	To install the observation equipment for volcanic eruption			○									
		50	To safeguard and preserve Water Resources through river reclamation in Flood hazard areas				○								
		51	To optimize water gates innovation with a simple and appropriate technology				○								
		52	To develop retention pool in order to accommodate and impede the water flow that has a destructive force in areas through which it passes				○								
		53	Rehabilitation of Urban Drainage Channels in regency/municipality				○								
		54	Make deep infiltration wells, shallow infiltration wells, and bio pores in Flood hazard areas				○								
		55	Construction of embankment at flood disaster prone area				○								
		56	To install the monitoring equipment of rainfall and water level				○								

FOCUS PRIORITY	PROGRAM	ACTION		TYPE OF DISASTER											
				Earthquake	Tsunami	Volcanic Eruption	Flood	Landslide	Extreme Wave & Abrasion	Extreme Weather	Drought	Forest & Land Fire	Technological Failure	Epidemics & Disease Outbreak	Social Conflict
Enhancing the effectiveness of Disaster Prevention and Mitigation	Management of disaster mitigation	57	Construction of facilities in consideration of landslide in landslide disaster prone area					○							
		58	To install the monitoring equipment of rainfall					○							
		59	To Construct and Maintain the Extreme Wave and Abrasion Controller Infrastructure						○						
		60	Cultivation of Mangroves and Coral Reefs in Extreme Wave and Abrasion hazard area						○						
		61	To conduct cleanup in watershed area at least 2 times/ year in each watershed with abrasion potential						○						
		62	To install the monitoring of tide level		○				○						
		63	To develop innovative technologies for the early detection Extreme Weather of potential and to use such technology to detect Extreme Weather hazards							○					
		64	To determine anticipative technology (ponds building, rain harvesting technology, plant pattern adjustment, and cultivation technology etc.) and water irrigation system adapted to the climate forecasting results								○				
		65	To provide a special budget for the development/ repair of climate observation networks in drought hazard areas								○				
		66	To monitor and evaluate rainfall, humidity, daily air temperature data and other information necessary to forecast the drought incidence and to identify areas included in the drought zone								○				
		67	To form fire fighting force, especially for fire early countermeasures									○			
		68	To make trenches, especially between land, plantation, farming with forest									○			
		69	To conduct heterogeneous plants replanting in areas that have been burned									○			

FOCUS PRIORITY	PROGRAM	ACTION		TYPE OF DISASTER											
				Earthquake	Tsunami	Volcanic Eruption	Flood	Landslide	Extreme Wave & Abrasion	Extreme Weather	Drought	Forest & Land Fire	Technological Failure	Epidemics & Disease Outbreak	Social Conflict
Enhancing the effectiveness of Disaster Prevention and Mitigation	Management of disaster mitigation	70	To conduct vaccination to vulnerable populations in areas with epidemics and disease outbreaks disaster risk											○	
		71	To provide contagious disease prevention and reduction services at least at the sub-district (Kecamatan) level											○	
		72	Prevention of Endemic / Epidemic Disease Transmission by conducting early detection of endemic disease progression endemic in the community, especially dengue fever, malaria, HIV/ AIDS, and Measles											○	
		73	To increase Epidemiology Surveillance and Outbreak Prevention by surveying the environment and conduct control of places disease outbreaks may flourish											○	
		74	To control licensing of crowd gathering event												○
		75	To formulate the regulation of crowd gathering event												○
		76	To place inspectors and security officer in any event that involves a lot of crowds												○
		77	To apply the rules of the criteria and security standard in Social Conflict Areas												○

Table 2.5.4 The Activities of Each Disaster (Preparedness and Emergency Response)

FOCUS PRIORITY	PROGRAM		ACTION	TYPE OF DISASTER											
				Earthquake	Tsunami	Volcanic Eruption	Flood	Landslide	Extreme Wave & Abrasion	Extreme Weather	Drought	Forest & Land Fire	Technological Failure	Epidemics & Disease Outbreak	Social Conflict
Enhancement of Disaster Preparedness and Emergency Response	Capacity Building for Disaster Preparedness	1	To conduct socialization of preparedness and knowledge about ways to be safe from disaster to school students and community in hazard area	○	○	○	○	○	○	○	○	○	○	○	○
		2	To provide socialization of knowledge of early warning systems in hazard area		○	○	○	○	○	○		○		○	
		3	To formulate regency/municipality level disaster evacuation plan in Disaster Priority Zone	○	○	○	○	○	○	○		○		○	
		4	To formulate the guidelines for standard of survival and evacuation when disaster occurred	○	○	○	○	○	○	○		○		○	
		5	To conduct evacuation training for the community in hazard area	○	○	○	○	○	○	○					
		6	To conduct regular exercise for disaster preparedness	○	○	○	○	○	○	○					
		7	To conduct first aid training on the victims of Epidemic and Disease Outbreaks disaster in Epidemic and Disease Outbreak for communities in hazard area											○	
	Accelerating the Development of Facility, Infrastructure, and Logistics in Emergency Management	8	To conduct logistics planning and provision of funds, equipment and materials needed for emergency response activities/ efforts	○	○	○	○	○	○	○	○	○	○		○
		9	To prepare sufficient logistics of medicines, infusion, oral rehydration salts, blood bags for the preparation of emergency response of Epidemic and Disease Outbreaks											○	
		10	Procurement of emergency response facilities	○	○	○	○	○	○	○	○	○	○	○	○
		11	To provide evacuation places and routes, temporary shelter, and clean water facility and infrastructure and environment sanitation/ toilet, washroom, bathroom (MCK)	○	○	○	○	○	○	○		○	○		○
		12	To install early warning system with the dissemination of early warning information to the community, media, etc.		○	○	○	○	○	○		○		○	

FOCUS PRIORITY	PROGRAM		ACTION	TYPE OF DISASTER											
				Earthquake	Tsunami	Volcanic Eruption	Flood	Landslide	Extreme Wave & Abrasion	Extreme Weather	Drought	Forest & Land Fire	Technological Failure	Epidemics & Disease Outbreak	Social Conflict
Enhancement of Disaster Preparedness and Emergency Response	Accelerating the Development of Facility, Infrastructure, and Logistics in Emergency Management	13	To prepare Flood hazard map that is equipped with the "plotting" of evacuation route, evacuation place, POSKO location, and location of the Flood debit/ water level observer post in the river that cause Flooding				○								
		14	To monitor and evaluate the data of epidemic disease sources, and occurrence of extraordinary incidents (KLB) in early detected locations											○	
		15	To prepare medical and para-medical personnel who are ready at all times to anticipate occurrence of extraordinary incidents (KLB) and emergency response of epidemics and disease outbreaks											○	
	Capacity Enhancement for Disaster Emergency Response	16	Establishment of Emergency Response Headquarters (PUSDALOPS)	○	○	○	○	○	○	○	○	○	○	○	○
		17	Information Gathering and Dissemination to public	○	○	○	○	○	○	○		○	○	○	○
		18	Disaster Rapid Damage Assessment	○	○	○	○	○	○	○		○	○	○	○
		19	Request for Support and Acceptance to Province	○	○	○	○	○	○	○	○	○	○	○	○
		20	Search and Rescue for Disaster Victim	○	○	○	○	○	○	○		○	○	○	○
		21	Support of First Aid Activities for Victim	○	○	○	○	○	○	○		○	○	○	○
		22	Support of Evacuation Activities	○	○	○	○	○	○	○		○	○		○
		23	Fire Extinguishing Activities	○	○						○	○	○		○
		24	Fulfilling the basic needs for food, clothing, shelter, health care, clean water and sanitation	○	○	○	○	○	○	○	○	○	○	○	○
		25	Managing Evacuation Sites	○	○	○	○	○	○	○			○		
		26	Treatment of Dead	○	○	○	○	○	○	○	○	○	○	○	○
		27	Protection and Support of Vulnerable Groups	○	○	○	○	○	○	○					
		28	Accepting supports of volunteers	○	○	○	○	○	○	○					
		29	Emergency recovery for the function of critical facilities & infrastructures	○	○	○	○	○	○	○					

FOCUS PRIORITY	PROGRAM		ACTION	TYPE OF DISASTER											
				Earthquake	Tsunami	Volcanic Eruption	Flood	Landslide	Extreme Wave & Abrasion	Extreme Weather	Drought	Forest & Land Fire	Technological Failure	Epidemics & Disease Outbreak	Social Conflict
Enhancement of Disaster Preparedness and Emergency Response	Capacity Enhancement for Disaster Emergency Response	30	Emergency recovery for the function of lifelines	○	○	○	○	○	○	○					
		31	Treatment for Solid Waste and Debris	○	○	○	○	○	○	○		○			
		32	Cleaning Hygiene and Epidemic Prevention Measures	○	○	○	○	○	○	○	○	○		○	
		33	Securing Transportation Network and Emergency Transportation Activities	○	○	○	○	○	○	○					
		34	Safety Control Measures	○	○	○	○	○	○	○	○	○			
		35	Panic Prevention Measures	○	○	○	○	○	○	○				○	

Table 2.5.5 The Activities of Each Disaster (Recovery)

FOCUS PRIORITY	PROGRAM		ACTION	TYPE OF DISASTER											
				Earthquake	Tsunami	Volcanic Eruption	Flood	Landslide	Extreme Wave & Abrasion	Extreme Weather	Drought	Forest & Land Fire	Technological Failure	Epidemics & Disease Outbreak	Social Conflict
Implementation of Disaster Impact Recovery	Physical Rehabilitation and Reconstruction	1	To conduct Assessment of Damage and Loss due to Disaster	○	○	○	○	○	○	○	○	○	○	○	○
		2	To formulate Action Plan for Rehabilitation and Reconstruction	○	○	○	○	○	○	○	○	○	○	○	○
		3	Recovery of public facilities and infrastructure and reconstruction of disaster victims' houses	○	○	○	○	○	○	○	○	○	○	○	○
		4	To recover/normalize the life of disaster victims	○	○	○	○	○	○	○	○	○	○	○	○
	Social Affairs, Economy, and Culture Rehabilitation and Reconstruction	5	To conduct social, economic, and cultural rehabilitation of disaster victims	○	○	○	○	○	○	○	○	○	○	○	○

Task (11): Study about revision of the Standard Operating Procedure (SOP) for regencies and municipalities, and development of "Manuals for Formulation of SOPs"

First, the initial meeting with Mr. Medi, Director of Preparedness, BNPB, was conducted. Then the consultation of formulation of contingency plan with Mr. Agus, a faciliator in charge to support the formulation of Contingency Plan in BNPB, who is in charge of Contingency Plan, was conducted, and then the workshops with C/P were conducted.

Table 2.5.6 The workshop and meeting with C/P of BNPB

	Date	Activity	Materials
1st Meeting	Feb 17, 2012	Contents of Manual of SOP (with Mr. Medi, Director of Preparedness)	• Outputs of the component • Draft contents of the SOP manual
2nd Meeting	Feb 29, 2012	About Contingency Plan Deputy 1, (with Mr. Agus in charge of Contingency Plan)	• Manual of Contingency Plan
1st Workshop	March 1, 2012	Planning for emergency response in Japan Table of contents, the SOP manual	• Introduction of Japanese planning for emergency response • Draft table of contents, the SOP manual
2nd Workshop	May 7, 2012 May 9, 2012	Contents of the manual of SOP	• Countermeasures of emergency response in Japan • Draft Contents of SOP manual
3rd Workshop (in Pilot Area)	May 14 – 15, 2012	The condition of emergency response in the province and regency/municipality	• Countermeasures of emergency response in Japan • Contents of SOP manual
4th Workshop	May 24-25, 2012	Contents of SOP manual	• Revised draft contents of SOP manual

First Meeting (Feb. 17, 2012)

Second Meeting (Feb 29, 2012)

First Workshop (March 1, 2012)

Second Workshop (May 14, 2012) (May 15, 2012)

Third Workshop (May 24, 2012) (May 25, 2012)

Picture 2.5.2 The scenes of the workshops with CP of BNPB

The following matters were found throughout the meeting and workshop.

- SOP is one of the important documents indicating emergency response, and it is desirable to formulate it in the regency/municipality that holds the disaster prone area.
- Development of SOP must be based on an integration of regulations, namely Regulation 10.

- As for Contingency Plan, the manual had been formulated, and a workshop was to be held in the regency/municipality that had an initial sign of disaster, so that this situation should be considered for the activity of this component.

The development of the manual was carried out with reference to related regulations and to the Japanese countermeasures of emergency response.

Table 2.5.7 The Law and Regulations Regarding Emergency Response

Law	Law 24, 2007	Principle, Purpose, Responsibilities and Power of Disaster Management
Regulations	Gov. Reg 21, 2008	Enforcement regulation based on Law 24, stipulating planning of disaster management
	Presi. Reg. 8, 2008	Organizational structure of BNPB
	Regulation 10 (BNPB, 2008)	The Guidelines on Disaster Emergency Response: Main contents of SOP
	Regulation 13 (BNPB, 2008)	The Guideline of Logistics and Equipment in Disaster Management
	Regulation 13 (BNPB, 2010)	The Guideline for Research, Rescue and Evacuation: Including contents of SOP
	Regulation 14 (BNPB, 2010)	The Guideline for Establishing Disaster Emergency Response Command Post: Including contents of SOP
	Regulation 24 (BNPB, 2008)	The Guideline for Disaster Emergency Operation Plan Formulation: Including contents of SOP

Through the three workshop sessions, the SOP targeted on the Command Post was assumed, since it has a crucial function in the emergency response. And then, the contents were considered with reference to regulations, especially BNPB Regulation 10 in comparison with emergency response measures in Japan. As a result, it was decided that a role of responsible organizations was clearly shown as Task and Responsibility. As for the procedure of activities of regarding organizations, it was also decided to present them in a flow chart, in which format specific behaviors can be seen easily as Work Procedure.

Table 2.5.8 The Table of Contents of SOP Manual

- Contents of Manual of SOP -
  General
  Target Disaster Scenario
  Structure of Organization and Command
  Task & Responsibility
  Work Procedure
  Responses in Chronological Order

In the Target Disaster activity, one specific disaster is selected and the greatest amount of damage is imagined in accordance with data from past disasters or a simulation. Participants can then consider the nature of the SOP in relation to the imagined damages and needs of the scenario, such as a shortage of shelter or equipment needs, as shown in the table below.

Table 2.5.9 The table showing one of contents in scenario

Target Disaster:			**Level Assumption:**	
Items		**Needs**	**Current Resources**	**Remarks for Balance**
Shelter				
Facilities	・・・			
	・・・			
Revision	・・・			
	・・・			
・・・				

For task and responsibility, the role of each organization is to be described through a process of rules derived from the relationship between organizations that comprise the Command Post, as shown in the table below.

Table 2.5.10 Example of Filling out for Task and Responsibility

No	**Unit Name (Position in ERC)**	**Task**	**Responsible To**	**Original Position**	**Original Agency**	**Regulations**
Commander						
1	Commander	1. To activate and increase the Operational Control Center (Pusdalops) to Emergency Response Command of municipality BPBD in accordance with type, location, and level of disaster. 2. To create the Field Command Post in disaster location under the command of ERC-BPBD. **Describe the task in accordance with related regulations in detail. It is also required to elaborate step by step in accordance with warning status [*1].** ・・・・・	Head of municipality BPBD *(Sekda)*	Head of Police of Tomohon Municipality	Police (Polres Tomohon)	Reg.10, 2008
2	・・ **Unit should be set in terms of division level.**		・・	・・	・・	・・

* Warning status Volcano : 1. Cautious *(Waspada)*, 2. Prepare *(Siaga)*, 3. Alert *(Awas)*, 4.Eruption

For Work Procedure, it was directed that each agency's task is to be described by utilizing the flow format as shown in the table below to understand the objective steps and necessary format easily.

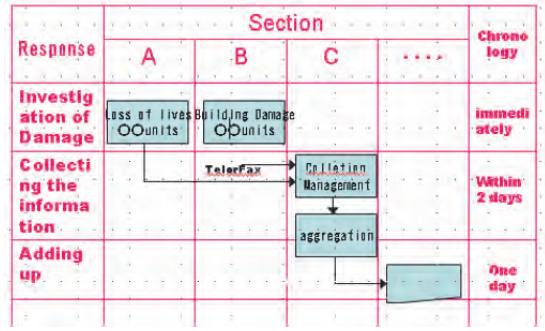
Table 2.5.11 Work Procedure

Work No.	5	Work	Operational Plan
Basis	Reg. 10		
Relating Task (No.)	12. Operation Plan		
Unit Name	Section of Operation		
Organization	Command Post	Division	
Work Description			
Chronology			
Procedure			

Response	Section
	Operation

Describe the work with related regulations in detail. It is also required to elaborate chronologically.

Describe the timing from start to end.



The following are the outputs of the Project through pilot activities

- Structure of the Manual of SOP
- Contents of the Manual of SOP

Task (23): Collection and clarification of data required in formulating the Regional Disaster Management Plans (North Sulawesi province)

In addition to what has been confirmed in Task (9) and (10), it is required that each regency and municipality in North Sulawesi collect data according to the contents of the regional disaster management plan that has been agreed upon. From the viewpoint of performance efficiency in this project, while simultaneously parallel to the work of Task (9) and (10), Task (23) was started proactively.

Below is the list from collection and clarification of data (statistical data, social data, natural data, etc.) required in formulating the regional disaster management plans in North Sulawesi province, based on the situation of recent disasters and lessons learned from past projects implemented by JICA. (Table 2.5.12, Table 2.5.13)

Specifically, JICA Expert Team explained and discussed the necessary data in the kick-off meeting that was held in this province in early December, 2011, prior to the activity in North Sulawesi province, and distributed the list to regencies and municipalities and North Sulawesi province and required data collection. The JICA Expert Team followed up continuously to check the situation of

data collection when visited this province in late January, 2012. To ensure documentation of the Regional Disaster Management Plan by collecting the necessary data for regional characteristics, advanced documentation was prepared based on the continuously collected data.

It should be noted that "Technical Guidelines for Formulation of a Regional Disaster Management Plan for Regencies/Municipalities" not only lists the required data but also describes how data is collected, allowing BPBD staff to gather the required data by regency and municipality.

Table 2.5.12 Necessary Data List for Regional Disaster Management Plan (General Information and Data)

General Information and data	
Province	General Information of Province (Nature, Land Area, Shoreline, Geology, Climate, Production, Tourism, etc.)
	General Information of Province Government
	Province Mid-term Development Plan (RPJMD)
	Organization Structure of Province and its roles and functions
	Budget of Province (APBD)
Regency/ Municipality	Regency/Municipality Mid-term Development Plan (RPJMD)
	General Information of each regency/municipality (Nature, Land Area, Shoreline, Geology, Climate, Production, Tourism, etc.)
	General Information of each regency/municipality Government
	Organization Structure of each regency/municipality, and its roles and functions (name of agencies of each regency/municipality)
	Budget of each regency/municipality (APBD)
	Regency/Municipality in Figures (latest version)

Table 2.5.13 Necessary Data List for Regional Disaster Management Plan (Information and Data for Formulation of Regional Disaster Management Plan)

Formulation of Regional Disaster Management Plans for regencies/municipalities		
Province	Organization Structure of the BPBD, its roles and functions, and no. of staff	Reference From Provincial RDMP
	Relevant Laws and Regulations related to Disaster Management	
	Budget of BPBD (past 5 years, if available)	
	List of Resources (vehicles, equipment, relief goods, etc.)	
	Recent Activities related to Disaster Management	
	Province Regional Disaster Management Plan	
	Most Recent Annual Work Plan, and Action Plans to be implemented in the future	
	Contingency Plan	
	SOP	
	Presentations or Documents related to handling past disasters in your province	
	List of Past Disasters in your province	
	Any other documents related to the Disaster Management Plan or Action Plan	
Regency/ Municipality	Relevant Laws and Regulations related to Disaster Management	
	Budget of the BPBD	
	Organization Structure of the BPBD, its roles and functions, and no. of staff	
	Disaster Management Strategy (Restra) of Each regency/municipality	
	Disaster Management Plan (if it already exists)	
	Contingency Plan	
	SOP	
	List of Past Disasters in each regency/municipality (Historical disaster record (significant disasters) in the last 5 years from each regency/municipality)	
	Presentations or Documents related to handling past disasters in each regency/municipality	
	General Information on Emergency Operations Center (Pusdalops)	
	List of Resources (vehicles, equipment, relief goods, etc.)	
	Recent Activities related to Disaster Management	
	List of Infrastructure (airports, harbors, railway stations, bridges, etc.)	
	Any other documents related to the Disaster Management Plan or Action Plan	

Task (24): Formulation of the Regional Disaster Management Plans and the Disaster Risk Management Action Plans in the pilot areas (North Sulawesi province)

The JICA Expert Team supported the formulation of the regional disaster management plans and the disaster risk management action plans in the pilot areas (North Sulawesi province) based on the above Tasks (9), (10), (23), and lessons learned from the regional disaster management planning activities in other projects and verification and confirmation of the effectiveness of the Regional Disaster Management Plan that takes into account the response to a real disaster.

Basically, in order to take a step-by-step approach to the regional disaster management planning, we held workshops divided into six sessions. Along with dividing the contents of the plan, the JICA Expert Team formulated the part of "Technical Guidelines for Formulation of Regional Disaster Management Plan for Regencies/Municipalities" (Draft) and "The Sample of Regional Disaster Management Plan (Draft)." In each workshop, the JICA Expert Team discussed with C/Ps and explained the methodology of the formulation for the Regional Disaster Management Plans and

requested each C/P to prepare his or her own plan by the next workshop. Furthermore, in the workshop, we presented a one-point lecture, such as an introduction of the emergency supplies of Japan, etc., in addition to explaining the formulation of a regional disaster management plan, to encourage continuous participation and arouse the interest of C/Ps.

How to implement the formulation of the Regional Disaster Management Plans and the Disaster Risk Management Action Plans is shown in Figure 2.5.3, the Implementation Schedule is shown in Table 2.5.14, and pictures of the workshop are shown in Picture 2.5.3.

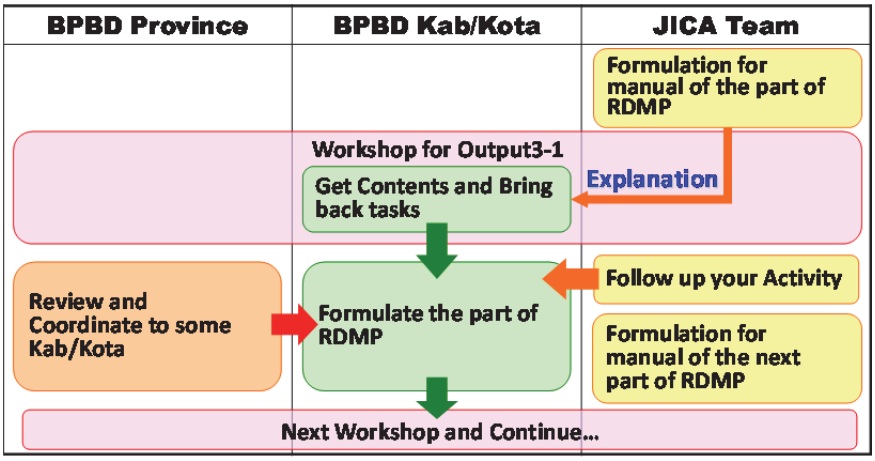


Figure 2.5.3 How to implement the Formulation of the Regional Disaster Management Plans and the Disaster Risk Management Action Plans

Table 2.5.14 Schedule of Workshops for the Regional Disaster Management Plan in North Sulawesi province

	Date	Contents
1st	October 10, 2012	Introduction: What is Regional Disaster Management Plan and its Necessity Explanation of Further Schedule and Methodology to formulate the Plan Formulation of General Chapter(1) Chapter 1-1: Introduction Chapter 1-2: Regional Overview
2nd	December 14, 2012	Formulation of General Chapter(2), and DM Activities Part (1) Chapter 1-3: Disaster Risk Assessment Chapter 1-4: Disaster Management Policy Chapter 2-1: Options for Disaster Response Action
3rd	February 14, 2013	Formulation of DM Activities Part (2) Chapter 2-2: Allocation of Tasks and Resources
4th	May 30, 2013	Formulation of Chapter3 Monitoring, Evaluation, and Reporting Selection of Activities
5th	September 5, 2013	Formulation of Action Plan Introduction of RDMP formulation Support System Risk Assessment(Introduction) Practice on Formulation of Action Plan
6th	December 18, 2013	Formulation of Action Plan Risk Assessment (Introduction) Practice on Formulation of Action Plan (Finalization of Action Plan including Demarcation of Budget)

1st WS (Oct. 10, 2012)

2nd WS (Dec. 14, 2012)

3rd WS (Feb. 14, 2013)

4th WS (May 30, 2013)

5th WS (Sept. 5, 2013)

6th WS (Dec. 18, 2013)

Picture 2.5.3 Photo of workshop for RDMP in North Sulawesi province

The JICA Expert Team supported the formulation of the Regional Disaster Management Plan through the workshops and follow-up activities. At the end of the activity in North Sulawesi Province in March 2014, 10 of 14 regencies/municipalities targeted in this project completed the formulation of the Regional Disaster Management Plan.

Furthermore, the JICA Expert Team implemented follow-up activities to complete the Regional Disaster Management Plan for all regencies/municipalities after the completion of the activity in North Sulawesi province.

Finally, all 14 regencies/municipalities targeted in this project completed the formulation of the Regional Disaster Management Plan.

Figure 2.5.4 The example of Regional Disaster Management Plan formulated in North Sulawesi province

The JICA Expert Team drafted version 1.0 of "Technical Guidelines for Formulation of Regional Disaster Management Plan for Regencies/Municipalities" and "Sample of Regional Disaster Management Plan" through the activities in North Sulawesi province.

In addition, the JICA Expert Team formulated "The RDMP Formulation Support Application" as the draft for version 1.0 so that BPBD staff could formulate the Regional Disaster Management Plans and Disaster Risk Management Action Plans efficiently and effectively.

This application is a series of systems from the selection of activities for each disaster taking into consideration the roles and responsibilities of related organizations, until creation of a format for the Action plans. By utilizing this application, the roles and responsibilities for each department of regency/municipality and related organizations are clarified.

The finalization of the Guidelines for nationwide dissemination is shown in Task (46).

Task (25): Formulation or revision of the Contingency Plans and revision of the existing SOPs (North Sulawesi province)

The activities of the formulation of SOP in North Sulawesi took on a participatory process in Manado and each regency/municipality with inputs of the Manual of SOP. In the first workshop, participants shared their understanding about the need and function of emergency procedures while touching on the emergency response measures in Japan, and were introduced to the manual of SOP. Then, because the configuration of the relevant organizations and target disaster of each regency/municipality is different, the JICA Expert Team held a discussion and presentation of issues in terms of emergency response for each.

Table 2.5.15 The Workshop in North Sulawesi

	Dates	Activity	Materials
1st Workshop (in Manado)	Oct 10, 2012	Introduction of Japanese Emergency Response Issues of Response Operation	• Countermeasures of Emergency Response in Japan • Draft of SOP manual
2nd Workshop (in Pilot Area)	Oct 18, 2012 – Feb 1, 2013	Features of Past Disasters Target Disaster of SOP Issues of Emergency Response	• Maps for Hazard Identification • Draft of SOP Manual
3rd Workshop (in Pilot Area and Manado)	Jan 30 -Aug 27, 2013	Task & Responsibility, Work Procedure	• Formats of Target Disaster, Task & Responsibility and Work Procedure
4th Workshop (in Sitaro Regency)	May 14-16, 2013	Coordination of draft SOP (Sitaro)	• Draft of SOP

First Workshop (Oct 10, 2012)

Second Workshop

in Sitaro (Oct 18, 2012)

in Manado (Oct 22)

in Tomohon (Oct 22)

in Bitung (Oct 23)

In North Minahasa (Oct 23)

in Minahasa (Oct 24)

In South Minahasa (Oct 25)

in North Bolaang Mongondow (Jan 13)

in Bolaang Mongondow (Jan 14)

in Kotamobagu (Jan 15)

In South Bolaang Mongondow (Jan 15)

in East Bolaang Mongondow (Jan 16)

in Southeast Minahasa (Jan 16)

in Talaud (Jan 21)

in Sangihe(Feb 1)

Third Workshop

in Sitaro(Jan 30)

in Manado(May 10)

in Kotamobagu(May 20)

3th Workshop in Manado

Aug 27, 2013

Fourth Workshop(May 14 - 16)in Sitaro

PU

Health

Public Relations

Dept. Policy May 15

TNI May 16

Picture 2.5.4 The Scenes of Workshops in North Sulawesi

As each regency/municipality is under different situations for threats of natural disasters in terms of geographical and meteorological conditions, the awareness to formulate the SOP for response activities of those natural disasters differed from regency/municipality BPBDs. In the case of the area in which frequent flood occurs every year, regency/municipality BPBDs' staff in those area had a critical feeling for conducting emergency operation without systematical procedures, and had necessity to formulate the SOP for clarification of cooperation between related agencies and organizations. Whereas, the area in which there were few experiences in regard to disaster response activities of natural disasters, regency/municipality BPBDs' staff in those areas did not feel a need to formulate the SOP.

However, through the several workshops held by JICA project team, regency/municipality BPBDs' staff got the opportunity to recognize the big disaster beyond their imagination may occur in own area and to learn an effect to formulate the SOP during emergency operation to deal with a contingence from information sharing about past experiences in Japan to utilize the SOP. It was confirmed that C/Ps raised their motivation to formulate the SOP by means of taking a time to understand necessity of the SOP.

All C/Ps Tried to formulate new SOP or to update existing one, and finally Sitaro Regency, Kotamobagu Municipality and Tomohon Municipality have finalize own SOP by the end of first pilot activity in North Sulawesi province.

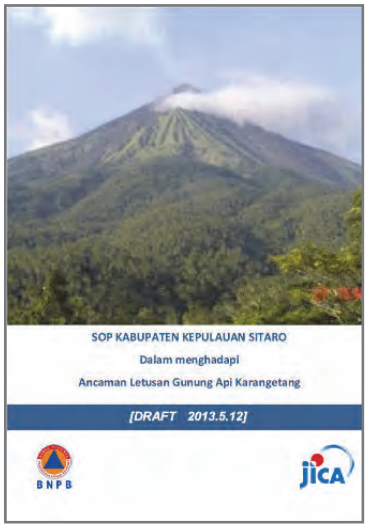


Figure 2.5.5 Cover of Draft SOP, Sitaro

Table 2.5.16 A Table of Contents of Scenarios

No	Kel/Desa (Dusun /Lingkungan)	Jumlah terancam	Dampak			
			Meninggal /hilang	Luka-luka	Me-ngungsi	Pindah /dll
1	Desa Kinali (Batuloso)	232	2	2	62	166
2	Desa Mini (Bawongpana)	217	2	2	58	155
3	Desa Namang (Lantung)	434	4	4	116	310
4	Desa Dame1 (Kawuse)	304	3	3	81	217
5	Desa Tatehadeng (Kopi)	1,113	10	10	298	795
6	Kel. Bebali (Korkora)	500	5	4	134	357
Total		2800	26	25	749	2000

No.	JENIS	SATUAN	JUMLAH		LOKASI	RASIO	KET	
			KEBUTU-HAN	TERSE-DIA	KURANG			
1	2	3	4	5	6	7	8	9
A. SEKRETARIAT POSKO								
1	Komputer PC	Set	5	2	3	BPBD	Kurang	
2	Laptop	Buah	3	2	1	BPBD	Kurang	
3	Handycam	Buah	1	1	-	BPBD	Cukup	
4	Kamera digital	Buah	1	1	-	BPBD	Cukup	
5	Mesin fotokopi	Buah	1	-	1	BPBD	Kurang	
6	Peta dinding	Buah	2	-	2	BPBD	Kurang	
7	Peta perorangan	Lbr	20	-	20	BPBD	Kurang	
8	Printer	Unit	5	3	2	BPBD	Kurang	
9	Kertas HVS	Rim	10	10	-	BPBD	Cukup	
10	Tinta printer	Buah	10	10	-	BPBD	Cukup	
11	Buku tamu	Buah	2	2	2	BPBD	Cukup	
12	Buku agenda	Buah	2	1	1	BPBD	Kurang	
13	Buku informasi	Buah.	2	1	1	BPBD	Kurang	
14	Buku bantuan	Eks.	2	2	-	BPBD	Cukup	
15	ATK	Paket	10	10	-	BPBD	Cukup	
16	Papan informasi	Buah	1	1	-	BPBD	Cukup	
17	Papan data/white	Buah	2	2	-	BPBD	Cukup	

The roles of the sections of the command post have been set up in Task and Responsibility through coordination with relevant organizations in the workshop.

Table 2.5.17 Task and Responsibility Discussed in Sitaro (Extract)

1. Tindakan awal sebagai respon terhadap situasi darurat bencana

1.1 Peringatan Dini dimasa kesiapsiagaan bencana

No	Nama Unit (Jabatan di Pos Komando TD)	Tugas	Bertanggung Jawab kepada	Jabatan Struktural	Instansi Asal	Peraturan (Dasar Hukum)	Nomor Prosedur Kerja
I	Tanggap Darurat	Segera menyebarkan informasi Peringatan Dini untuk menyelamatkan masyarakat serta memungkinkan terlaksananya proses evakuasi secara cepat	BPBD	Kepala BPBD, Kepala Bidang Tanggap Darurat BPBD	BPBD Kab. Sitaro	Perka BNPB No.10/2008	I-1

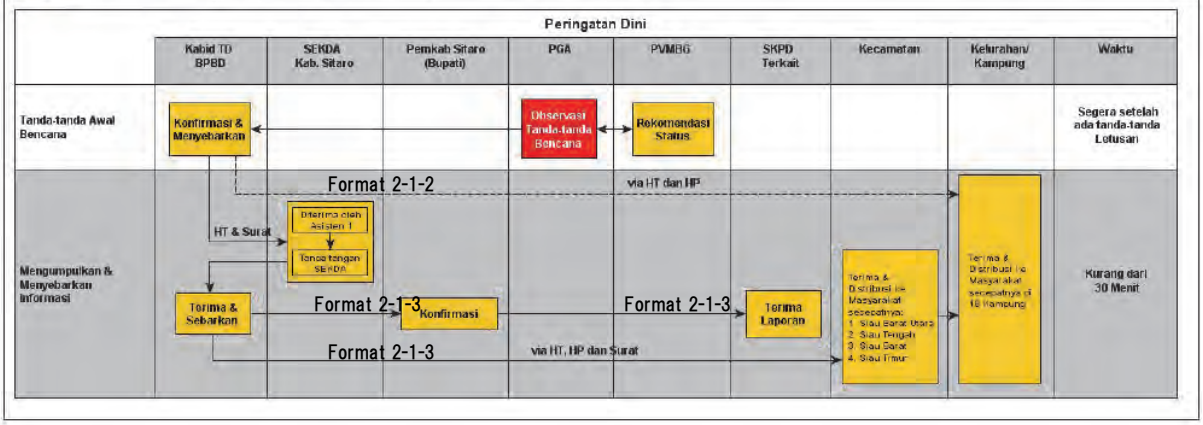
1.2 Tindakan awal untuk Pos Komando Tanggap Darurat

No	Nama Unit (Jabatan di Pos Komando TD)	Tugas	Bertanggung Jawab kepada	Jabatan Struktural	Instansi Asal	Peraturan (Dasar Hukum)	Nomor Prosedur Kerja
1-4	• Kepala BPBD • Kepala Bidang Tanggap Darurat BPBD	Pembentukan Komando Tanggap Darurat Bencana 1. Inisiasi Pembentukan Komando TD Bencana akan dimulai dalam situasi sebagai berikut: (1) Apabila sudah ada informasi dari PVMBG (Badan Geologi) bahwa Gunung Karangetang diperkirakan akan segera meletus. (2) Apabila Gunung Karangetang tiba-tiba meletus dan mengakibatkan dampak serius di pemukiman/desa sekitarnya. 2. Proses (1) Informasi awal kejadian bencana (mengacu ke prosedur 1-1) (2) Status/Tingkatan Bencana (mengacu ke prosedur 1-3). (3) Pembentukan Pos Komando TD:	Masyarakat	Kepala BPBD, Kepala Bidang Tanggap Darurat BPBD	BPBD Kab. Sitaro	Perka BNPB No.14/2010	1-4

The Work Procedure has been summarized based on the experience of the past disasters so far, and gives response procedures to be able to list through the coordination with relevant organizations.

Table 2.5.18 Contents of Work Procedures (extracted)

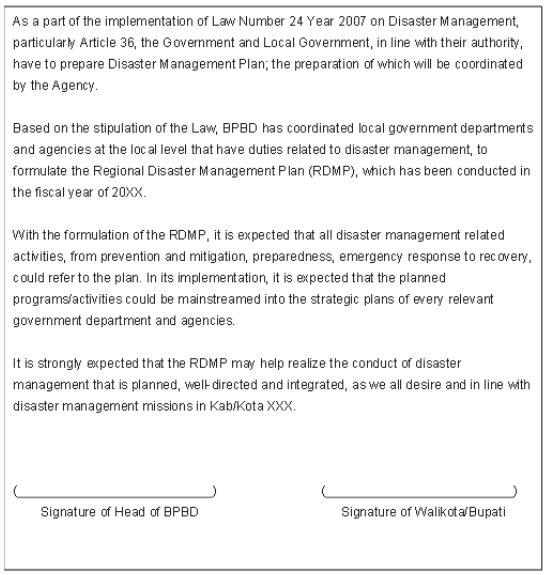
Nomor Prosedur Kerja	1	Tugas	Peringatan Dini
Dasar Hukum			
Tugas yg berkaitan (No.)			
Nama Unit Kerja			
Instansi	BPBD Kab Sitaro	Bidang	Tanggap Darurat
Keterangan Tugas			
Menyebarkan peringatan dini kepada masyarakat untuk mencegah terjadinya korban dan mempercepat proses evakuasi			
Kronologi			
Dimulai dari munculnya risiko tinggi akan terjadinya bencana hingga dimulainya proses evakuasi			
Prosedur			



Based on the result of discussions to formulate and update the SOPs in Sitaro Regency, Kotamobagu Municipality and Manado Municipality, the technical guideline for formulation of SOP has been updated from the aspect of following points.

- To update simply the description of the way to breakdown the jurisdiction of related agencies and organizations in the work procedure (Ch.5)
- To insert a flow of the time-series activities from a disaster occurs (Ch.6)
- To modify contents of the guideline to guide step by step procedure for creating SOP (All)

Task (26): Assistance to promote official approval of the Regional Disaster Management Plans (North Sulawesi province)



As a part of the implementation of Law Number 24 Year 2007 on Disaster Management, particularly Article 36, the Government and Local Government, in line with their authority, have to prepare Disaster Management Plan; the preparation of which will be coordinated by the Agency.

Based on the stipulation of the Law, BPBD has coordinated local government departments and agencies at the local level that have duties related to disaster management, to formulate the Regional Disaster Management Plan (RDMP), which has been conducted in the fiscal year of 20XX.

With the formulation of the RDMP, it is expected that all disaster management related activities, from prevention and mitigation, preparedness, emergency response to recovery, could refer to the plan. In its implementation, it is expected that the planned programs/activities could be mainstreamed into the strategic plans of every relevant government department and agencies.

It is strongly expected that the RDMP may help realize the conduct of disaster management that is planned, well-directed and integrated, as we all desire and in line with disaster management missions in Kab/Kota XXX.

(_____) Signature of Head of BPBD

(_____) Signature of Walikota/Bupati

Figure 2.5.6 (As Described in the Example of Technical Guideline) Approval of the Regional Disaster Prevention Plan

It is important that the regional disaster management plan of regencies/municipalities is issued as an official document by the mayor/governor.

Therefore, the Technical Guideline includes an example of obtaining official approval, as shown in Figure 2.5.6. The regional disaster management plan that has been duly authorized by regencies/municipalities has compelling force to ensure such things as adequate budget.

The JICA Expert Team supported the official approval of RDMPs for regencies/municipalities.

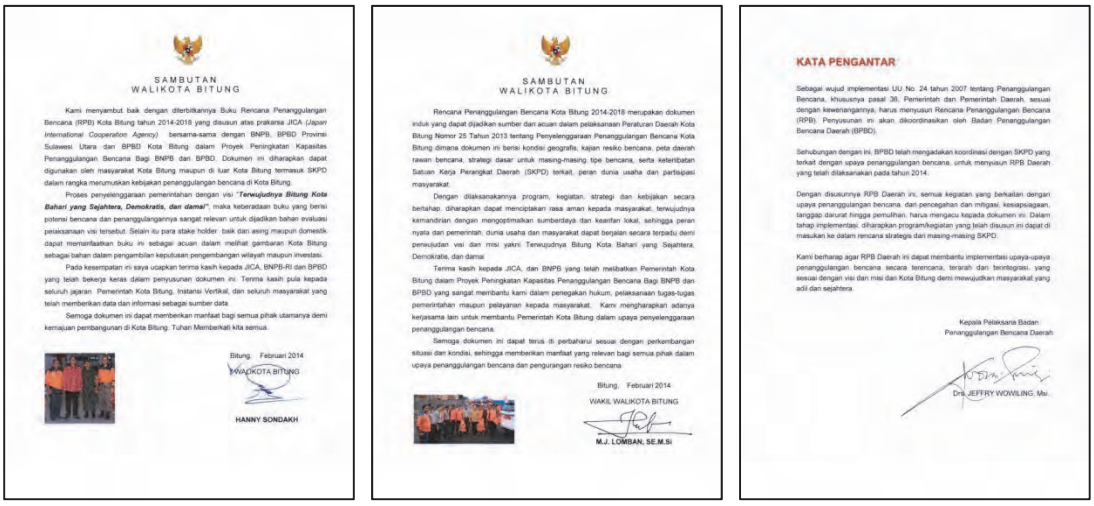
As a result, at the end of the activities in North Sulawesi, 4 of 14 targeted regencies/municipalities obtained approval by signatures.

Furthermore, the JICA Expert Team implemented follow-up activities to complete the approval for all regencies/municipalities after the completion of the activities in North Sulawesi province.

Finally, all 14 targeted regencies/municipalities obtained approval of the Regional Disaster Management Plan (9 regencies/municipalities obtained approval from the governor/mayor and head of BPBD, and 5 regencies/municipalities obtained approval from the head of the BPBD). The results of approval of the RDMP in each regency/municipality are shown in Table 2.5.19. An example of approval is shown in Figure 2.5.7.

Table 2.5.19 Result of approval of the RDMP in North Sulawesi province

Regency / Municipality	Signature(Approval)		Regency / Municipality	Signature(Approval)	
	Head of BPBD	Governor / Mayor		Head of BPBD	Governor / Mayor
Manado	○	○	Minahasa	Done by BNPB	
Bitung	○	○	North Minahasa	○	○
Tomohon	○		South Minahasa	○	
Kotamobagu	○		South East Minahasa	○	○
Bolaang Mongondow	○		Sitaro (island)	○	○
North Bolaang Mongondow	○	○	Sangihe (island)	○	○
South Bolaang Mongondow	○	○	Talaud (island)	○	
East Bolaang Mongondow	○	○			



SAMBUTAN
WALIKOTA BITUNG

Kami menyambut baik dengan diterbitkannya Buku Rencana Penanggulangan Bencana (RPB) Kota Bitung tahun 2014-2018 yang disusun atas prakarsa JICA (*Japan International Cooperation Agency*) bersama-sama dengan BNPB, BPBD Provinsi Sulawesi Utara dan BPBD Kota Bitung dalam Proyek Peningkatan Kapasitas Penanggulangan Bencana Bagi BNPB dan BPBD. Dokumen ini diharapkan dapat digunakan oleh masyarakat Kota Bitung maupun di luar Kota Bitung termasuk SKPD dalam rangka merumuskan kebijakan penanggulangan bencana di Kota Bitung.

Proses penyelenggaraan pemerintahan dengan visi "***Terwujudnya Bitung Kota Bahari yang Sejahtera, Demokratis, dan damai***", maka keberadaan buku yang berisi potensi bencana dan penanggulanganya sangat relevan untuk dijadikan bahan evaluasi pelaksanaan visi tersebut. Selain itu para stake holder baik dan asing maupun domestik dapat memanfaatkan buku ini sebagai acuan dalam melihat gambaran Kota Bitung sebagai bahan dalam pengambilan keputusan pengembangan wilayah maupun investasi.

Pada kesempatan ini saya ucapkan terima kasih kepada JICA, BNPB-RI dan BPBD yang telah bekerja keras dalam penyusunan dokumen ini. Terima kasih pula kepada seluruh jajaran Pemerintah Kota Bitung, Instansi Vertikal, dan seluruh masyarakat yang telah memberikan data dan informasi sebagai sumber data.

Semoga dokumen ini dapat memberikan manfaat bagi semua pihak utamanya demi kemajuan pembangunan di Kota Bitung. Tuhan Memberkati kita semua.

Bitung, Februari 2014
WALIKOTA BITUNG

HANNY SONDAKH

SAMBUTAN
WALIKOTA BITUNG

Rencana Penanggulangan Bencana Kota Bitung 2014-2018 merupakan dokumen induk yang dapat dijadikan sumber dan acuan dalam pelaksanaan Peraturan Daerah Kota Bitung Nomor 25 Tahun 2013 tentang Penyelenggaraan Penanggulangan Bencana Kota Bitung dimana dokumen ini berisi kondisi geografis, kajian resiko bencana, peta daerah rawan bencana, strategi dasar untuk masing-masing tipe bencana, serta keterlibatan Satuan Kerja Perangkat Daerah (SKPD) terkait, peran dunia usaha dan partisipasi masyarakat.

Dengan dilaksanakannya program, kegiatan, strategi dan kebijakan secara berlahan, diharapkan dapat menciptakan rasa aman kepada masyarakat, terwujudnya kemandirian, dengan mengoptimalkan sumberdaya dan kearifan lokal, sehingga peran nyata dari pemerintah, dunia usaha dan masyarakat dapat berjalan secara terpadu demi perwujudan visi dan misi yakni Terwujudnya Bitung Kota Bahari yang Sejahtera, Demokratis, dan damai.

Terima kasih kepada JICA, dan BNPB yang telah melibatkan Pemerintah Kota Bitung dalam Proyek Peningkatan Kapasitas Penanggulangan Bencana Bagi BNPB dan BPBD yang sangat membantu kami dalam penegakan hukum, pelaksanaan tugas-tugas pemerintahan maupun pelayanan kepada masyarakat. Kami mengharapkan adanya kerjasama lain untuk membantu Pemerintah Kota Bitung dalam upaya penyelenggaraan penanggulangan bencana.

Semoga dokumen ini dapat terus di perbaharui sesuai dengan perkembangan situasi dan kondisi, sehingga memberikan manfaat yang relevan bagi semua pihak dalam upaya penanggulangan bencana dan pengurangan resiko bencana

Bitung, Februari 2014
WAKIL WALIKOTA BITUNG

M.J. LOMBAN, SE.M.Si

KATA PENGANTAR

Sebagai wujud implementasi UU. No. 24 tahun 2007 tentang Penanggulangan Bencana, khususnya pasal 36, Pemerintah dan Pemerintah Daerah, sesuai dengan kewenangannya, harus menyusun Rencana Penanggulangan Bencana (RPB). Penyusunan ini akan dikoordinasikan oleh Badan Penanggulangan Bencana Daerah (BPBD).

Sehubungan dengan ini, BPBD telah mengadakan koordinasi dengan SKPD yang terkait dengan upaya penanggulangan bencana, untuk menyusun RPB Daerah yang telah dilaksanakan pada tahun 2014.

Dengan disusunnya RPB Daerah ini, semua kegiatan yang berkaitan dengan upaya penanggulangan bencana, dari pencegahan dan mitigasi, kesiapsiagaan, tanggap darurat hingga pemulihan, harus mengacu kepada dokumen ini. Dalam tahap implementasi, diharapkan program/kegiatan yang telah disusun ini dapat di masukan ke dalam rencana strategis dari masing-masing SKPD.

Kami berharap agar RPB Daerah ini dapat membantu implementasi upaya-upaya penanggulangan bencana secara terencana, terarah dan terintegrasi, yang sesuai dengan visi dan misi dari Kota Bitung demi mewujudkan masyarakat yang adil dan sejahtera.

Kepala Pelaksana Badan
Penanggulangan Bencana Daerah

Drs. JEFFRY WOWILING, Msi.

Figure 2.5.7 Example of signature of RDMP（Bitung municipality）

Task (39): Collection and clarification of data required for formulating the Regional Disaster Management Plans (West Nusa Tenggara province)

The JICA Expert Team supported the collection and clarification of data required in formulating the Regional Disaster Management Plans in West Nusa Tenggara province. The activity is the same as Task (23).

Task (40): Formulation of the Regional Disaster Management Plans and the Disaster Risk Management Action Plan in the pilot areas (West Nusa Tenggara province)

Similar to Task (24), the JICA Expert Team supported the formulation of the RDMP through workshops and follow-up activities. Basically, in order to take a step-by-step approach to regional disaster management planning, we held workshops divided into four sessions. Along with dividing the contents of the plan, the JICA Expert Team upgraded the part of "Technical Guidelines for Formulation of Regional Disaster Management Plan for Regencies/Municipalities" and "Sample Regional Disaster Management Plan." In each workshop, the JICA Expert Team had discussions with C/Ps explaining the methodology of the formulation for Regional Disaster Management Plans

and requested that each C/P prepare his or her own plan by the next workshop. The 2nd and 3rd workshops were held in 2 locations, Lombok Island and Sumbawa Island, taking into account the cost and travel time of C/Ps. In addition, a one-point lecture was implemented in each workshop in the same ways as the workshops in North Sulawesi province.

The Implementation Schedule is shown in Table 2.5.20, and pictures of the workshop are shown in Picture 2.5.5.

Table 2.5.20 Schedule of Workshops for the Regional Disaster Management Plan in West Nusa Tenggara province

	Date	Location	Contents
1st	June 19, 2014	Mataram	Introduction: What is a Regional Disaster Management Plan Formulation of the General Part Chapters 1-1 to 1-4 One-point Lecture: Great East Japan Earthquake
2nd	October, 23 2014	Mataram	Review of 1st WS Formulation of Chapter 2 Introduction of RDMP Formulation Support System Practice Formulating Chapter 2 One-point Lecture: CBDRM and DM Goods
	October 27, 2014	Sumbawa Barat	
3rd	January 14, 2015	Mataram	Review of 2nd WS Formulation of Chapter 3, Action Plan Introduction of Hazard, Vulnerability, and Risk Maps from Output 2 and Formulation of Risk Assessment parts (Chapters 1-3) Introduction of the Action Plan part by RDMP Formulation Support Application Practice Formulating an Action Plan One-point Lecture: Earthquake Disaster
	January 22, 2015	Bima	
4th	April 16, 2015	Mataram	Review of 3rd WS and Confirmation of Progress Main contents and revision points of New Regulation How to revise your RDMP based on the New Regulation How to finalize your RDMP Revision of the RDMP Formulation Support Application for New Regulation Practice Formulating an Action Plan Considerating a Budget for Disaster Management Activities One-point Lecture: Sediment Disaster

1st WS (June 19, 2014)

2nd WS (Oct. 27, 2014)

3rd WS (Jan. 22, 2015)

4th WS (Apr. 16, 2015)

Picture 2.5.5 Photos of workshops for the RDMP in West Nusa Tenggara province

6 of 10 regencies/municipalities in West Nusa Tenggara province had already formulated an RDMP supported by the BNPB and the local NGOs before the activities of the Project. Therefore, in particular, the JICA Expert Team decided to support the formulation of an RDMP for 4 regencies (Central Lombok regency, Dompu regency, Sumbawa regency, and West Sumbawa regency), which is not formulated yet as the first priority. However, many already-formulated RDMPs have problems, such as limited disasters targeted or the structure does not follow the BNPB regulations. Accordingly, all 10 regencies/municipalities in West Nusa Tenggara province, regardless of formulating an RDMP, were invited to workshops in order to revise their RDMPs.

The JICA Expert Team supported the formulation of the Regional Disaster Management Plan through workshops and follow-up activities. At the end of the activities in West Nusa Tenggara Province, all 10 regencies/municipalities completed formulating or revising a Regional Disaster Management Plan, including regencies/municipalities that had already formulated an RDMP before the activities of this Project.

The results of formulating an RDMP are shown in Table 2.5.21. For the 2 regencies/municipalities that decided not to revise, the necessary information was compiled so that it can be revised in the future.

Table 2.5.21 Results of formulating an RDMP in West Nusa Tenggara province

Regency /Municipality(Lombok Island)	Result of formulation		Regency /Municipality (Sumbawa Island)	Result of formulation	
	Situation before activities of this Project	Situation after activities of this Project		Situation before activities of this Project	Situation after activities of this Project
Mataram	Already formulated (BNPB project)	No revision by decision of BPBD since the structure of RDMP follows the new structure	Bima municipality	Already formulated (Local NGO)	Completion of revision
North Lombok	Already formulated (Local NGO)	No revision since the RDMP was already legislated according to regulation	Bima regency	Already formulated (BNPB project)	Completion of revision
West Lombok	Already formulated (BNPB project)	Completion of revision	Dompu	—	Completion of formulation
Central Lombok	—	Completion of formulation	Sumbawa	—	Completion of formulation
East Lombok	Already formulated (Local NGO)	Completion of revision	West Sumbawa	—	Completion of formulation

Figure 2.5.8 An example of a Regional Disaster Management Plan formulated in West Nusa Tenggara province

The JICA Expert Team upgraded "Technical Guideline for Formulation of a Regional Disaster Management Plan for Regencies/Municipalities," "Sample of a Regional Disaster Management Plan," and "RDMP Formulation Support Application" through activities in West Nusa Tenggara province based on version 1.0. "The Sample of Regional Disaster Management Plan" initially had been adopted by the RDMP of the Manado municipality in North Sulawesi province, but it was decided to change the RDMP of Dompu regency in West Nusa Tenggara province.

The finalization of the Guidelines for nationwide dissemination is shown in Task (46).

Task (41): Assistance to promote official approval of Regional Disaster Management Plans (West Nusa Tenggara province)

The JICA Expert Team supported the official approval of RMPPs for regencies/municipalities similar to Task (26).

As a result, all 8 regencies/municipalities that formulated or revised a plan for this project obtained the approval of the Regional Disaster Management Plan (7 regencies/municipalities obtained approval from a governor/mayor and head of BPBD, and 1 regency obtained approval from the head of BPBD.).

Particularly, all 4 regencies of the first priority (Central Lombok regency, Dompu regency, Sumbawa regency, and West Sumbawa regency, which is not formulated yet) obtained approval from a governor/mayor and head of BPBD.

The results of approval of the RDMP in each regency/municipality are shown in Table 2.5.22.

Table 2.5.22 Results of approval of the RDMP in West Nusa Tenggara province

Regency/Municipality	Signature (Approval)		Regency/Municipality	Signature (Approval)	
	Head of BPBD	Governor /Mayor		Head of BPBD	Governor /Mayor
Mataram	—		Bima municipality	○	○
North Lombok	—		Bima regency	○	○
West Lombok	○	○	Dompu	○	○
Central Lombok	○	○	Sumbawa	○	○
East Lombok	○		West Sumbawa	○	○

2.6 Output 4

(1) Output: The capacity for conducting Disaster management exercises at the regency/municipality in the target area is enhanced.

(2) Schedule of Activities

The schedule of the activities of Output 4-1 is as follows:

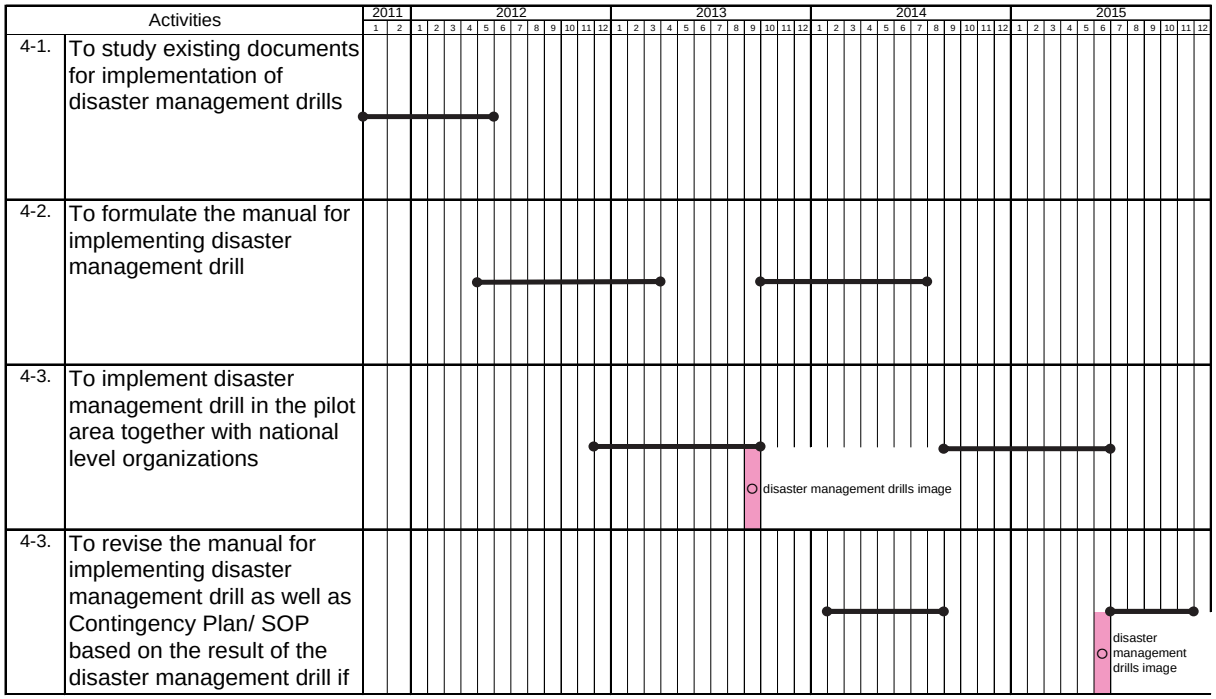


Figure 2.6.1 Schedule of Activities for Output 4-1

(3) Methodology of Implementing Technical Transfer

Task (12): Study of existing documents on recent implementation of Disaster Management Drills

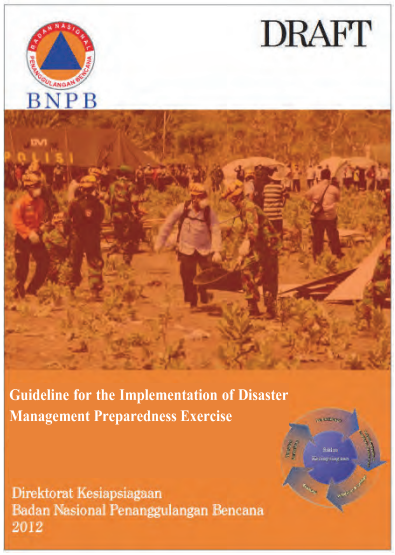
Methodology of technical transfer of the activities of Output 4 is through literature assessment and review of the plan that focuses on the exercises and details of the disaster management exercise (content, method, and scale of exercise) that have been confirmed before.

In Indonesia, the guideline, entitled "Preparedness Exercise for Disaster Management," issued by BNPB in 2012 has been made. In that guideline, the system of the disaster management exercise is classified into three levels that are divided into seven ways of exercise and also conducted regularly and continuously in terms of enhancing the preparedness capacity in prone areas. Those three levels are: training, simulation, and system testing. The training level of the exercise is conducted in the form of seminars and workshops; it is intended to deepen knowledge and understanding about disaster management. The level of simulation is conducted in the form of space rehearsal (TTX), games and drills, where the knowledge and skills of participants can be improved through exercises

using various kinds of simulation. Then on the level of system testing, which is intended to test the disaster management system, it is through practice of personal experience for post rehearsal (CPX: Command Post Exercise) and field rehearsal (FTX: Field Training Exercise) that participants can test the roles and functions of each personnel and related agency.

Table 2.6.1 Disaster Management System in Indonesia

Stages	Type of Exercise	Note
Exercise	Seminar Workshop, etc.	Exercise to deepen knowledge and understanding
Simulation	Space rehearsal (TTX) Games	Through the experience of various methods can improve knowledge and certain skills
System testing	Post rehearsal (CPX) and field rehearsal (FTX)	Test role and function of each personnel and agency



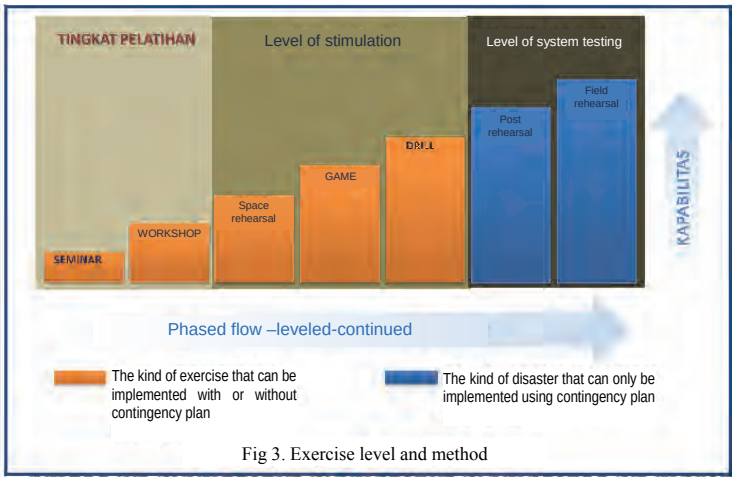
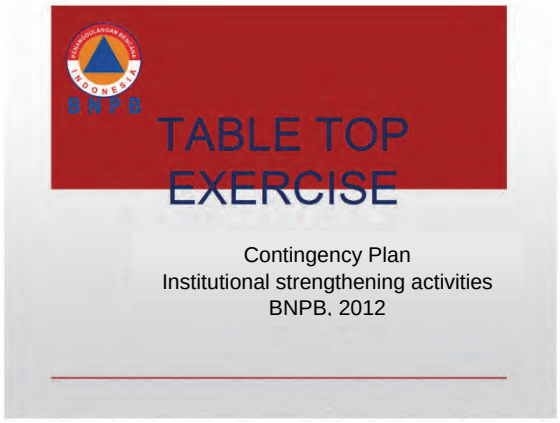
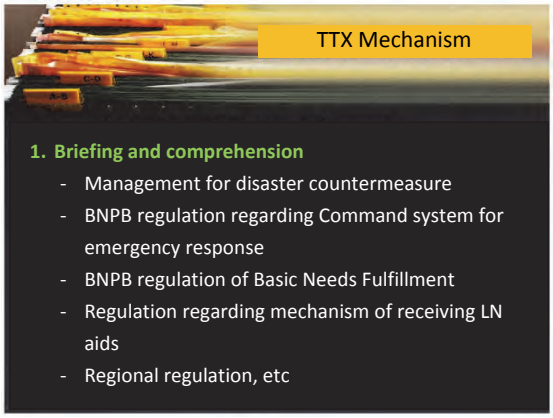


Fig 3. Exercise level and method

In the guideline, systematic exercise is given, but there is no detailed explanation about the intent of the systematic exercise. We have confirmed in a workshop with BNPB counterpart, and from collected references from the materials of TTX in Bali and CPX material in South Sumatra, but none of the materials presented about how to make exercise materials give a detailed explanation about how to implement the exercise. From the discussion with the C/Ps, it can be concluded that it is necessary to formulate a guideline in detail so that anyone can create exercise materials using the guideline and can implement their own disaster management exercise. This guideline was developed for participants who are not familiar with TTX and CPX exercises, so the content ranges from how to manufacture the material to exercise management.





(Materials for TTX Workshop in Bali)

Scenario for Post Rehearsal

No	Date	Time	From	To	Content of News	Action from Actors	Note
1	2	3	4	5	6	7	8
HAZARD CONDITION WHICH HAS CHANCE FOR DISASTER TO OCCUR							
1	40066	06:45	Recent condition of Palembang and surroundings		In Palembang region and surroundings, since a few days after occurrence, smoke due to forest fire covers several locations	BPBD Post of South Sumatera province - Noted in journal book	
2	2012/9/10	07:00	KESBANGPOLINMAS office, South Sumatra province	BPBD post, South Sumatra province	In Palembang and surroundings, forest fire occurs in several areas, watch out for smoke that covers the city of Palembang and surroundings	BPBD Post of South Sumatera province - Noted in journal book - Reported by head of Emergency Management Department - Order from head of Emergency Management Department to inform Palembang and surroundings	Telephone
3	2012/9/10	07:05	BPBD Posts	Disaster Post of Palembang City	In Semarang regency, for 2 hours it has rained with high intensity, watch out for flood in the city of Semarang	BPBD Post of Middle Java province - Noted in journal book	Telephone
4	2012/9/10	07:07	BPBD Posts	KESBANG POLINMAS post, Demak Regency	In Semarang Regency, for 2 hours it has rained with high intensity, watch out for flood in the city of Semarang	BPBD Post of Middle Java province - Noted in journal book	Telephone
5	2012/9/10	07:10	BPBD Posts	KESBANG POLINMAS post, Kendal Regency	In Semarang Regency, for 2 hours it has rained with high intensity, watch out for flood in the city of Semarang	BPBD Post of Middle Java province - Noted in journal book BPBD Post of Middle Java province - Noted in journal book	Telephone

No	Date	Time	From	To	Content of News	Action from Actors	Note
1	2	3	4	5	6	7	8
6	2012/9/10	07:12	BPBD Posts	KABID PD	It is reported, based on information from KESBANGPOLINMAS Semarang regency, in Ungaran region and surroundings it has been raining for more than 2 hours, the sky is still dark, be careful in low lying areas	BPBD Post of Middle Java province - Noted in journal book	Telephone
7	2012/9/10	07:15	KABID PD	BPBD Post	It is ordered to contact BMKG to find information on recent weather conditions	BPBD Post of Middle Java province - Noted in journal book	Telephone
8	2012/9/10	07:20	BPBD Posts	BMKG Office	Please inform about weather conditions in Ungaran and surroundings this morning until day about possibility of heavy rain above the average intensity	BPBD Post of Middle Java province - Noted in journal book	Telephone
9	2012/9/10	07:30	BMKG Office	BPBD Post	Based on observation of satellite imagery, weather conditions for Semarang and surroundings will be extreme tonight, particularly for Ungaran and surroundings, Warning will be sent using facsimile to BPBD Middle Java province	BPBD Post of Middle Java province - Noted in journal book - Reported to head of Disaster Management Department	Telephone
10	2012/9/10	07:35	BPBD Post	KESBANG Semarang Regency Post	Asking about rain condition in Ungaran and surroundings	BPBD Post of Middle Java province - Noted in journal book	Telephone
11	2012/9/10	07:40	Head of Disaster Management Department	BPBD Post	It is ordered to immediately contact SAR volunteer to come to BPBD Post	BPBD Post of Middle Java province - Noted in journal book - Immediately contact volunteer	Telephone

(CPX Materials in South Sumatra)

Learning Aspects

Learning Materials - Introduction of earthquake, Regional Disaster Management Plan, assumed earthquake victims, and early management	
Drills , field rehearsal - Operation of emergency power switch - Operation of satellite communications - Exercise emergency gathering - Exercise for the operation of information tools - Exercise of fire fighting - Exercise of emergency response - Exercises of rescuing victims - Exercise of transporting the wounded - Exercise of (mobilization) aids in wide area - Exercise of evacuation location management - Exercise of voluntary recruitment - And others	Exercise on the map (discussion-based exercise) The kind of exercise in which the participants can be individual or group, focused on discussion or thinking about disaster situation and management. Implemented with intention to deepen understanding about disaster's description, thinking about planning and guidelines, planning of related agencies and their policies • Types of exercise: Basic exercise, group work, workshop, game • Example of TTX Exercise in the form of discussion: DIG, Exercise for Situation Prediction, MEGURO method, Exercise for Disaster Management Working Group, Exercise for Post Disaster-Recovery Practice, Cross Road, etc.
Full scale exercise and integrated exercise - exercise with Field Rehearsal and Post Rehearsal	

Aspect of Integrated Exercise

Segi Geladi

Figure 2.6.2 Exercise System in Japan (Introduction to TTX Exercise: Association Study, TTX Edition)

Because it has been confirmed that the disaster management system in Indonesia is generally the same as the disaster management system in Japan the JICA Expert Team formulated the guidelines in Indonesia based on available guidelines in Japan.

Results of discussion with BNPB are as follows:

Table 2.6.2 Outline of Workshop with BNPB Related to Regional Disaster Management Plan

Workshop	Date of Implementation	Content of Discussion	Additional Materials
First	Apr 30, 2012 May 3, 2012	- introduce the exercise of disaster management in Japan - listen to the explanation about the exercise of disaster management in Indonesia	Introduce the exercise of disaster management in Japan
Second	July 2, 2012	About the guideline for management exercise that will be made	Guideline for the exercise of disaster management

First Workshop (April 30- May 3, 2012)

Second Workshop (July 2, 2012)

Task (13): Preparation of Disaster Management Exercise Implementation Guideline (Technical Guideline)

Since staff members of the C/Ps will, in the future, become the implementers of the exercises, Technical Guideline for exercise for the implementation of the TTX exercise are made to ensure continuity. These guidelines explain, among other things, how to compile exercise materials. The implementation of the TTX exercise requires careful preparation, so the making of this guideline begins with the planning phase (the selection of candidates for organization, making the rules of the exercise, determination of exercise location and equipment settings to be used, preparation of exercise scenario, and others) and proceeds through to the making of TTX implementation materials initiated by counterpart officials.

In the making of the disaster management guideline, it is implemented by observing the development of the guideline adjusted for actual situations (capacity) from C/Ps of the pilot area. Listening to the opinions of the C/Ps of the pilot area, it turns out that there is no experience in implementing the exercise on the map (TTX). Therefore, the making of the Technical Guideline is implemented by choosing the main points below, started from planning until exercise management through workshop. The content of guideline is made as simple as possible and easy to understand.

Table 2.6.3 Contents of Disaster Management Exercise Guidelines

Main Points	Content	Note
General	Because this guide is intended for beginners who do not have any experience, explanation of the exercise system and types of exercise is arranged for easy comprehension.	
Rehearsal on the map/space rehearsal (TTX)	TTX is held to discuss about ways of handling by the Disaster Management Center if disaster occurs. The content of the guideline covers how to implement exercises starting from planning up till managing the exercise and easily implementing in the form of workshop. Content is created so that inexperienced participants can easily follow the exercise, and can follow the next steps easily.	
Geladi POSKO (CPX)	The purpose of this exercise is to teach how to handle a disaster in detail, based on TTX activities. The occurrence of disaster is described in detail, settings of time and location as clearly as possible and the exercise on management is adjusted for the timescale. As in TTX, the content and management are designed to be easily implemented in the form of a workshop.	

Item	Contents	
OUTLINE OF EXERCISE	Objective	# In general, based on BNPB Guideline, there are three levels of exercise being introduced for the Disaster Management Exercise, # To gain basic knowledge about Disaster Management Exercise
	Item	○ Exercise: Seminar, workshop, are the exercises to deepen knowledge and understanding about disaster management ○ Exercise (Simulation): TTX, game, drill. Through the various drills, participants can obtain knowledge and expertise ○ System Testing: CPX and FTX; to test each function and role of each personnel and agency
step up		
TTX	Objectives	・ In TTX rehearsal, a disaster situation is arranged as generally as possible, with the assumption that this exercise is intended to discuss how Disaster Management Center handles a disaster situation ・ The time and location of the disaster situation are not specified in detail to make it easier to express ideas in discussion ・ If the time and location of the disaster situation is arranged in detail, it can be used as CPX materials ・ If participants have experience in the development of TTX rehearsal guidelines, the development of CPX material will be easier
	Item	○ Exercise Planning (settings of Objectives and Disaster Situation) ○ Determination of Victims' Situation (Determination of scenario and phase of exercise) ○ Exercise Targets (organization/agency) ○ Exercise Management (discussion) ・ Actions of every phase from each agency ・ Discussion ・ Reflected in Plans : SOP, Renkon, etc.
Step up		
CPX	Objective	・ With TTX guideline more complex exercise are incorporated. ・ The disaster situation and action of every phase from each agency is determined in TTX, starting with setting the disaster time and location, then rearranging into a new format until the materials needed in the exercise are made.
	Item	○ Exercise Methods ・ Exercise outline ・ Exercise course ・ Ways of information delivery ○ The making of exercise materials ・ Determination of exercise's objectives ・ Settings of disaster situation ・ The making of the exercise scenario ・ Information card ○ Exercise Management ・ Exercise Preparation ・ Exercise Countermeasures ・ Exercise Evaluation

Figure 2.6.3 Organizational Structure Guideline

Task (27): Preparation of Disaster Management Exercise in pilot area (North Sulawesi province)

As explained in Task (13), preparation of exercise implementation based on exercise guidelines has been held, in which regency/municipality personnel become the organizers of TTX exercises with the main objective of in-disaster management, and BPBD staffs immediately make emergency situation decisions while collecting disaster information data based on Disaster Management Plan.

In connection with the preparation of the disaster management exercise, information collection has been conducted according to the Disaster Management Plan in the region. However, in that planning there is no detailed explanation related to disaster management (where, who, what, by whom, what to do, etc.). Therefore, it is necessary to prepare for the exercise using SOP made in Output 3 with materials from C/Ps.

Moreover, the existing disaster data has not been set in every regency/municipality, so it is necessary to collect and organize these materials. About the disaster that becomes the exercise target, it is necessary to set the disaster situation used for the exercise by using a disaster hazard map (based on disaster history) made in Output 2 of the JICA Project. The process of disaster management exercise implementation can be seen in the chart below. Preparation of the exercise has been conducted related to this project. In detail, the disaster management plan is made based on the outcome of Output 3 and the type of disaster as well as the location, based on Output 2, and then is shown to C/Ps in the workshop, and materials that will be used in the disaster management exercise are compiled.

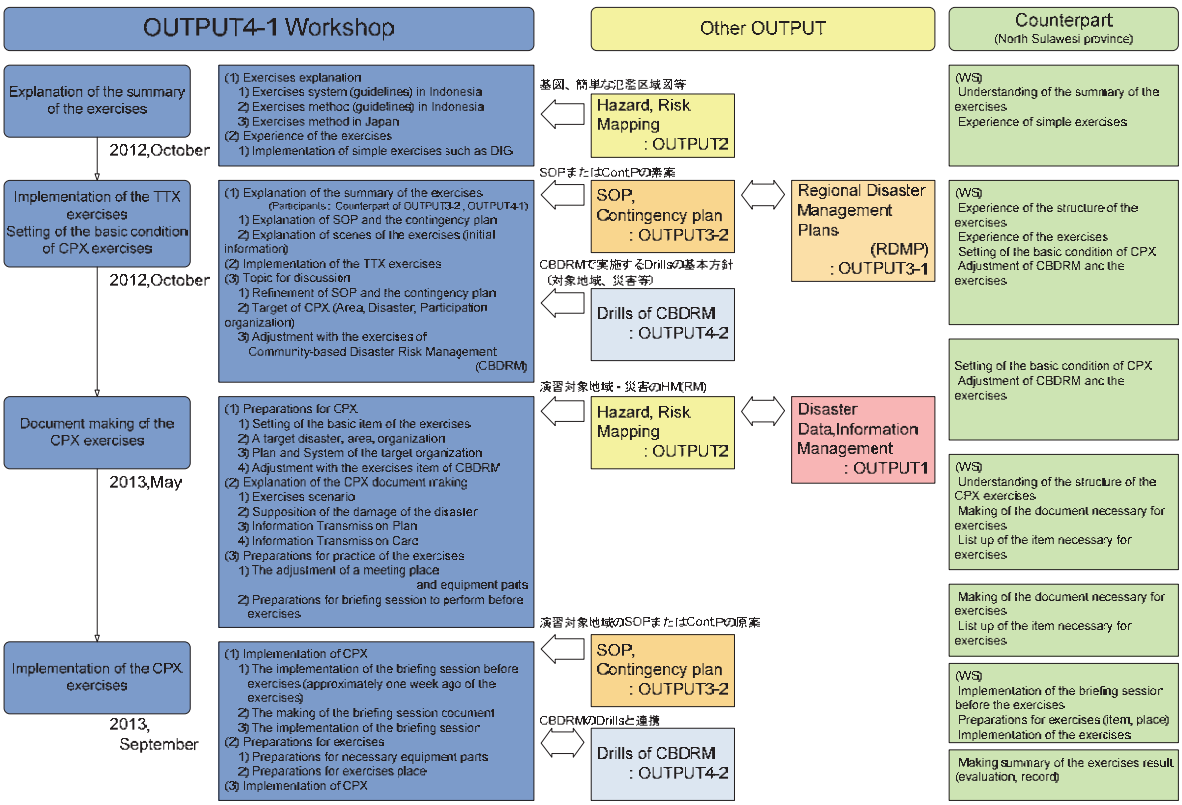


Figure 2.6.4 Exercise Preparation Process in Pilot Area

Table 2.6.4 Outline of Workshop with BNPB related to Regional Disaster Management Plan

WORKSHOP	DATE of implementation	CONTENT	ADDITIONAL MATERIALS
First	October 10, 2012	About the outline of exercise. The implementation of exercise on simple map (TTX)	Material about the outline of exercise (including introducing exercise in Japan) Exercise materials on map (TTX)
Second (held in regency/ municipality).	Oct 18, 2012 in Sitaro Oct 22, 2012 in Manado Oct 23, 2012 in Bitung Oct 24, 2012 in Minahasa Oct 25, 2012 in South Minahasa Nov 1, 2012 in BolMong and North BolMong Nov 5, 2012 in Kotamobagu and Bolmong Nov 6 2012 in Minahasa Tenggara and South BolMong Des 5, 2012 in Talaud Des 6, 2012 in North Minahasa	The Making of TTX materials (made by C/Ps in workshop)	• TTX guideline
Third	June 11-12, 2013 (2 days)	Implementation of TTX The making of CPX materials (made by C/Ps in Workshop)	• TTX materials(taken from materials made by counterpart in Workshop 2 which have been fixed) • CPX guideline (part of materials making) • CPX simulation materials (CPX implementation materials)
Fourth	Sept 11, 2013	About CPX management	• CPX guideline (part of exercise management)
Fifth (for players)	Sept 4, 2013 (BPBD Bitung)	About CPX (detailed explanation on post rehearsal)	• Explanation materials for players (CPX way and early information) • materials of CPX experienced practice (materials for the implementation of CPX practice test)
Fifth (for players)	Sept 4,12, 13, 2013 (BPBD Manado, Bitung, Sitaro)	About CPX (detailed explanation of exercise)	• Explanation materials for players (CPX way and early information) • materials of CPX practice test (particular materials for the implementation of CPX practice test)
Fifth (for players)	Sept 16, 2013 (BPBD North Sulawesi province)	About CPX (detailed explanation on exercise)	• Explanation materials for players(CPX way and early information) • materials of CPX practice test (materials for the implementation of CPX practice test)
Fifth (for controllers)	Sep,17, 2013	About the management of CPX in detail (detail explanation, task/role allocation in CPX/field exercise)	Explanation materials for controllers
(EXERCISE)	Sep. 18, 2013	Implementation of CPX	CPX Materials

First Workshop: Explanation of exercise and implementation of DIG

In this workshop, Disaster Management Exercise was introduced, with explanation centered on an exercise example in Japan. As exercise practice for the C/Ps, DIG (Disaster Imagination Game) was conducted.

(DIG Exercise)



Second Workshop: The Making of Materials for TXX Exercise

In the second workshop, exercise materials, which will be used for TTX by using the exercise guideline on a map (TTX), have been prepared. In the workshop exercise, materials have been prepared with the following points:

- Determination of type of disaster
- Settings for disaster situation

(Second Workshop in Sitaro: The Making of Disaster Situation using Workshop model)


Third Workshop: The Implementation of TTX and the making of CPX Materials

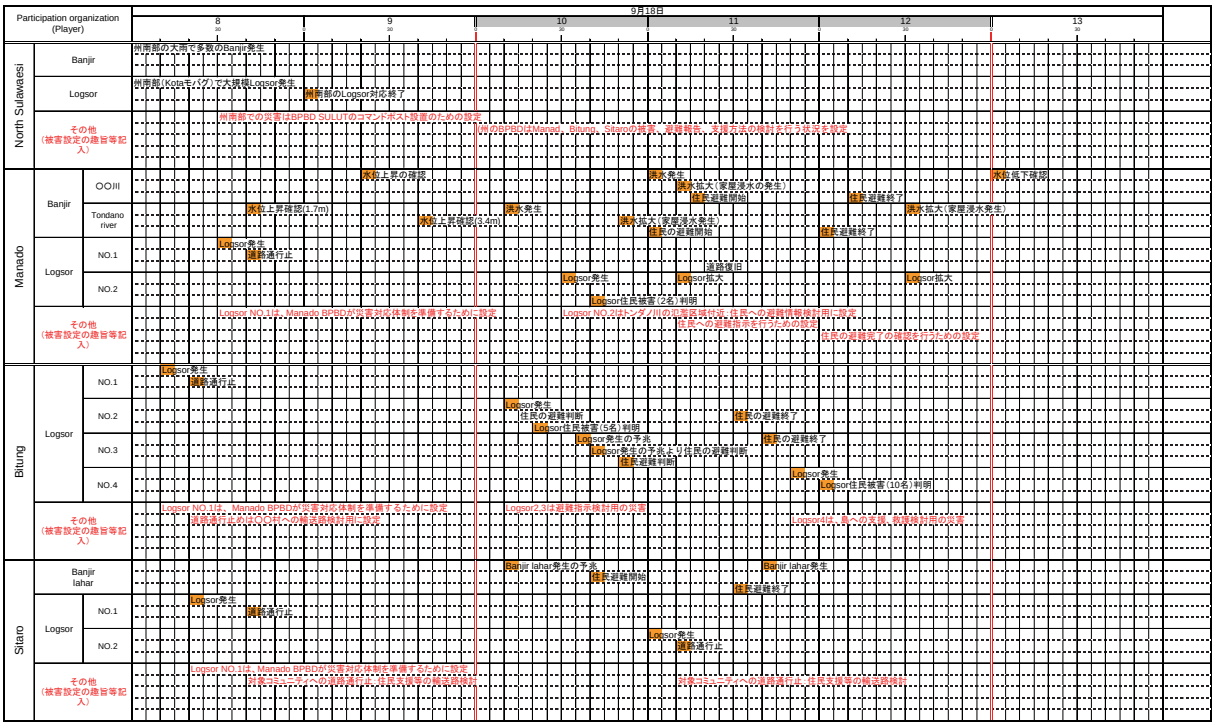
In this third workshop, TTX, using TTX exercise materials which have been made in the second workshop, was implemented. The guideline is arranged in such a way that is easy to use as CPX materials those that developed from TTX materials. Based on TTX materials, CPX exercise materials are prepared by rearranging the time and location of the disaster in detail. Below are several items from the exercise materials made by C/Ps in the workshop:

- Location point where disaster occurs
- Disaster situation (set based on chronological order)
- Action sheet (work paper that notes the actions of management when disaster occurs)
- Information sheet (work paper that notes information exchange when disaster occurs)
- Information card

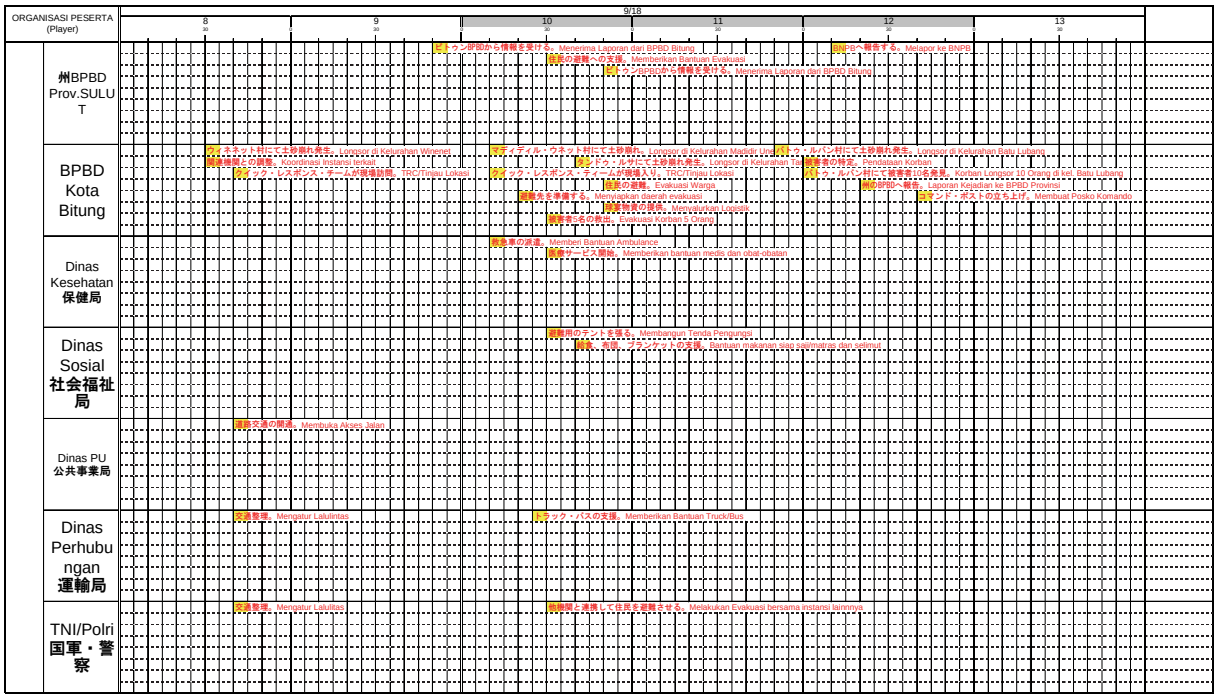
(Third Workshop: The Implementation of TTX)

(Third Workshop: The Implementation of CPX)

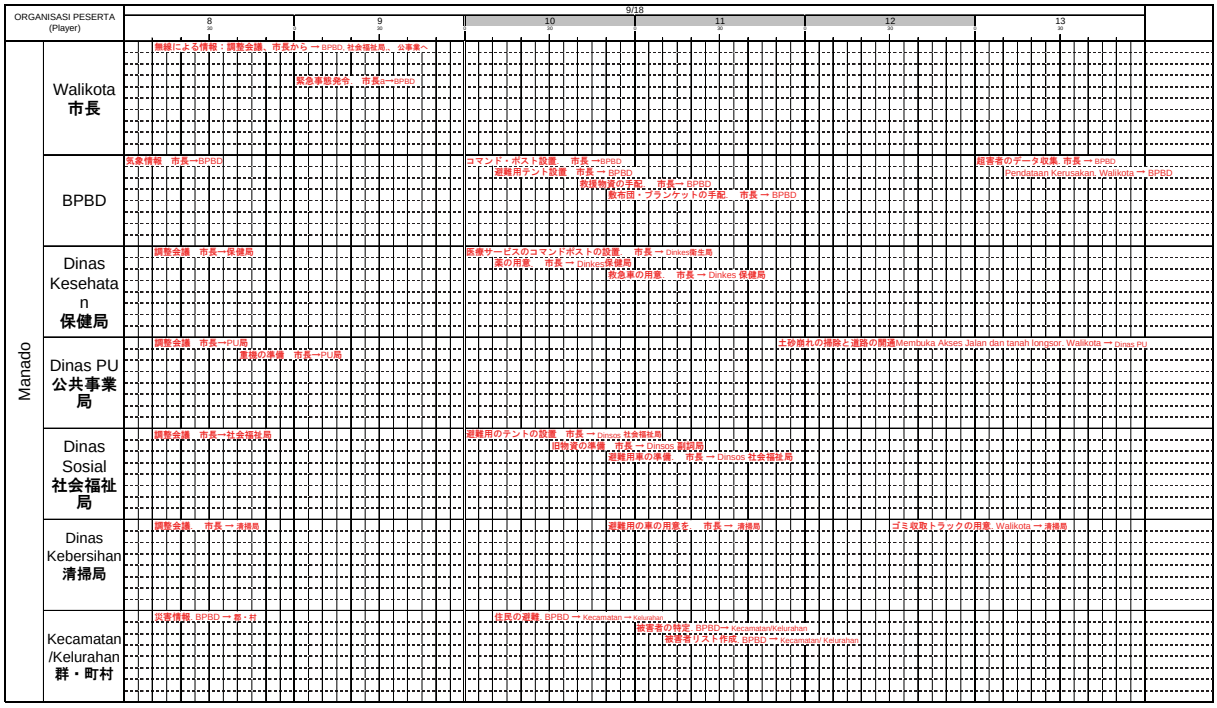
Disaster Situation (set based on chronological order)



Action sheet (work paper that notes action of management when disaster occurs)



Information sheet (work paper that notes information exchange when disaster occurs)



Information Card (every item noted on information sheet, is written on one card)

状況付与カード

付与先	衛生局	付与番号	3
		付与時間	08 ： 20
付 与 元 (付与担当)	市長	付与方法	
件　　名	洪水災害対応の調整		

【付与条件】
8:20時に市長から指示を受けた。

【付与事項】
もしもし、BMKGAとBPBDによると、現在大雨が降っていて、しばらく続いている状態だそうです。医療の支援の準備するようにしてください。また常にBPBDや関連機関と連絡を取ってください。

演習部の対応	了解です。 情報を預かります。対応しておきます。
付与の狙い	
関 連 状 況	

状況付与カード

付与先	郡・町村	付与番号	7
		付与時間	08 ： 10
付 与 元 (付与担当)	BPBD	付与方法	
件　　名	災害情報		

【付与条件】

【付与事項】
郡長・村長、こんにちは。気象庁によると、大雨が降るそうですので、状況をモニターしていただいて、直ちに報告をお願いします。
了解。進捗状況を報告しておきます。

演習部の対応	
付与の狙い	
関 連 状 況	

The 4th Workshop: Explanation of CPX Management

During the 4th Workshop, an explanation of how to manage a CPX was conducted. This explanation is based on the material of CPX that was formulated in the 3rd Workshop. Things that are needed in CPX are an explanation about pre-exercise orientation for the participants, a controlling organization, and the management of exercises (schedule and activities for the controller team).

THE 4TH WORKSHOP (CPX MANAGEMENT)




The 5th Workshop: The Explanation of Pre-CPX

In the 5th workshop, an explanation about the implementation of CPX for both participants and controller teams are given. Considering that the players do not all come from the workshop participants, the explanation must be held separately between the player organizations (BPBD of North Sulawesi, BPBD of Manado, BPBD of Bitung, and BPBD of Sitaro) and controller. Things that need to be explained can be seen below:

- The outline of the exercise
- The Rules
- Exercise Management (Particularly for the controller)
- Disaster Situation

Pre-exercise explanation (For Player)


Pre-exercise explanation (For Controller)

Task (28): The Implementation of Disaster Management Exercise in Pilot Area (North Sulawesi)

The Disaster Management Exercise has been implemented based on the preparation in Task (27). The model of the exercise on a map (TTX) for regency/municipality and national levels has been conducted in a form of role-playing. This kind of model simulates an exercise scenario similar to the real disaster situation, where the Controller Group (controller: institution of Disaster Management Center, etc.) delivers information to the Player Group (Player: various agencies related to disaster management, community, and tourists) as exercise receiver group and when players receive information, action will be taken to manage the emergency situation as when they face a real disaster situation. In the disaster situation, information will be filled with content from the Contingency Plan, SOP (Standard Operating Procedure), disaster hazard map, and will continue with community-based exercise as in Task (30).

The exercise program, particularly the process of coordinating control, which is the point of items requested by ISO22320, has been implemented by considering the following circle of activity: information collection, decision making, sharing information about decisions, decision implementation, feedback and coordination, and situation management. About the scale of the disaster, the Exercise Plan has been prepared with the flood and landslide disaster situations of Manado and Bitung after discussing with C/P and related agencies.

(Overview of the drill)

○ Methodology of the drill

- CPX (Japanese method of preparing the drill document—Output 4-1)
- Community disaster management drill (Output 4-2)

○ Organizations that participated in the drill:

Table 2.6.5 Participant Organization

Group	Agency	Exercise Location
Players (The Trained Group)	BPBD Of North Sulawesi BPBD of Manado BPBD of Bitung	Manado (Granpuri Hotel)
	BPBD of Sitaro	Sitaro (Community)
Controller (Grop that trains the participants)	BNPB OUTPUT4-1 C/P JICA	Manado (Granpuri Hotel)

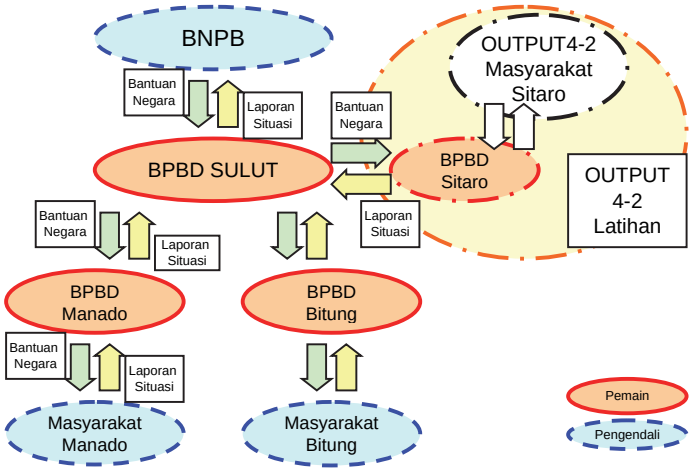


Figure 2.6.5 Structure of drill

○ Time table of the drill

Time	Contents		Place
9:00-9:15	Pre-explanation	Confirmation of condition before starting the drill and rules of the drill	Place for observers
Players and controllers move to each drill venue			
9:20-9:50	Coordination by each organization	Confirmation of the condition and role of each organization before starting the drill and confirmation of the response policy and other coordination	Venue of the drill
10:00-13:00	Implementation of the drill		Venue of the drill
13:00-14:00	Lunch time		Lobby
14:00-15:00	Evaluation session	Feedback about the drill (by leader of the evaluators) Lessons learned from the drill (participants and controller)	Place for observers

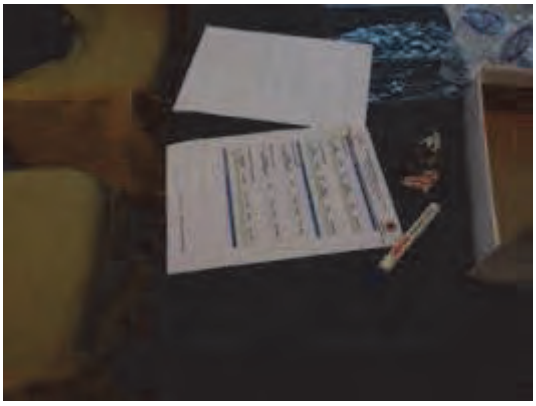
Beginning of the drill (Leader of controller)

Training (of participants)

Training (of participants)

Assessment by Evaluation Team

Situation of Information Team



Report from the participants

Impression and suggestions from the players

Impressions and suggestions from the players in the evaluation meeting

(The explanation of assessment results by the Evaluation Team)

- Response for the information is way too quick. Participants should not have given their responses but instead shared information to all team members before giving feedback.
- The coordination with related agencies sent by the players is not good enough.
- There is no Quick Response Team (TRC) considering that TRC is an important element of collecting data in a disaster location.

(The Leader of the Information Team)

- In General, the exercise ran well. Yet, the distribution of roles to information teams is not balanced. Some people are too busy, such as the people who act as Lurah in the community, but others are not busy. This must be organized before starting the exercise.
- Response from the participants is slow, particularly the responses from each agency. Some agencies have a quick response while others do not.

(Controller Team from Manado)

- Communication with agencies is not good enough. In this case, asking for help from agencies is very crucial.
- Participants must be more active in collecting information by calling other agencies.

(Controller Team from Bitung)

- Delivery of information to the participants is already based on a scenario, yet the response from participants is not thought out beforehand.
- The participants are not active in collecting data, which makes their disaster management goes slower. BPBD should have done a better job collecting data.

(BPBD of Sitaro)

- BPBD Sitaro
  BPBD of Sitaro feels that the staff is inadequately skilled to manage disasters. We want to have those skills through experiences like this. This exercise teaches us more valuable and beneficial things.

(Bitung of BPBD)

- This exercise must be conducted more often.
- In this exercise, we sent the actual staff for an emergency. We have had one skill that we can apply for disaster management.
- We hope that the same activity can be implemented in Bitung. We do hope that JICA can help us to implement our activity in Bitung.

POLDA (REGIONAL POLICE)

- This exercise is a lesson for BPBD to make decisions in emergency situations.
- It needs to be known that the fastest elements that move while disaster occurs are TNI (Army) and POLICE. Hopefully, BPBD can actively coordinate with TNI and POLICE.
- BPBD of Bitung has done their role properly and actively.

(BPBD OF NORTH SULAWESI)

- In this exercise, the response from each BPBD and personnel are varied. A plan to standardize disaster management is much needed.
- Question and Answer with related agencies needs to be improved.
- Recording disaster information takes time. The format must be prepared beforehand.

(TNI)

- This kind of exercise is aimed at making decisions and also improving for communication skills (information). We see that data collection and information distribution are not good enough.
- In our observation, the reporting and asking for information are not good enough. The reporting to the related agency must be done every 10 minutes.
- The Mayor makes decisions based on the situation and available information. When the information is not sent, the mayor cannot make a decision.
- This exercise is for BPBD Staff, but the information is not only for BPBD. It needs to be considered to make some coordination with Police and SAR, for equipment and personnel.

(RAPI/AMATEUR RADIO ORGANIZATION)

- In general, this exercise runs well but some things need to be fixed.
- The communication goes too fast.
- On communication (collecting and disseminating information), we need to know the information in a very detailed situation.
- In the Command Post there must be an exercise that teaches the personnel how to make decisions. This exercise is much needed.

(Recapitulation of Exercise Result)

Suggestions and input from the meeting evaluation can be summarized as follows:

Problems/cases	Causes	Solution
Lack of coordination with related agencies	• The allocation of tasks among related agencies and the BPBD is not clear. • Task Allocation in the BPBD is not clear. • The steps for Disaster Management are not clear.	• A Disaster Management Plan and Planning System need to be formulated. • The allocation of tasks between the BNPB and other agencies as well as internally must be clear. • There must be a plan that shows detailed steps about the SOP and Contingency Plan.
Ability to make decisions and to collect information	• The Process of Making decisions cannot be taken because there is no clear allocation for tasks. • The lack of experience for disaster management makes the personnel unable to manage the whole situation. • The formulation of a scenario is very hard because the allocation of tasks between BPBD and related agencies is not clear.	• Give experience to the staff about how to manage a disaster. • Clear the allocation of tasks through the plan. • Make the decision-making process better through seminars and other trainings.
Preparation of exercise	• In this exercise, a scenario has been repeated, but the action from each agency is different.	• Need to make a standard action plan and repeat it in the exercise scenario. • Need to make an SOP and Contingency Plan (the result of the exercise will be reflected in the next plan).

(Recapitulation of the Recorded Action of Disaster Management)

The records of disaster information during the exercise are summarized as the action of disaster management that we can see below. This record will be used as the materials for revising the SOP and Contingency Plan in each agency.

Jam	Dari/Kepada	Player	Isi	Respons	Keterangan
11:33	BMKG	BPBD Bitung	Informasi tentang cuaca: Hujan mengguyur sampai sore.		記録用紙
10.20	BPBD Bitung	Dinas Sosial	Laporan Kedisiapan bantuan Logistik (Kelurahan Tandu rusa)	Informasi sudah diterima oleh BPBD Kota Bitung 10.05 bantuan disalurkan melalui BPBD kota Bitung	INFO CARD
10.30	BPBD Bitung	Dinas Kesehatan	Laporan Pengiriman Ambulan ke Kelurahan Tandu Rusa	BPBD Kota Bitung meminta bantuan medis dan mobil ambulan (10.25)	INFO CARD
10.40	BPBD Bitung	Dinas PU	Laporan pengerahan alat berat (Kel. Tandu Rusa)	10.40 BPBD Bitung meminta bantuan kepada dinas PU untuk membersihkan tanah dengan alat berat 10.45 informasi dari POLRESTA Kota Bitung untuk alat berat yang digunakan untuk membersihkan jalan yang tertimbun	INFO CARD
10.00	BPBD Bitung	Seorang Warga Kelurahan Madidir	Laporan Fenomena pertanda akan terjadinya tanah longsor	BPBD akan hubungi Lurah	INFO CARD
10.55	BPBD Bitung	Dinas Perhubungan	laporan Persiapan kendaraan untuk evakuasi warga (Kel. Madidir)	10.19 BPBD Bitung minta bantuan Dishub untuk mengatur lalu lintas 10.55 Bantuan kendaraan/Petugas di Lokasi Bencana	INFO CARD
11.00	BPBD Bitung	TNI/POLRI	laporan Persiapan kendaraan untuk evakuasi warga (Kel. Madidir)	Laporan dari BPBD Bitung Bahwa telah terjadi longsor di kelurahan tandu rusa 12.35 Laporan BPBD Bitung Kelurahan Batu lubang terjadi longsor 1. Bantuan PAM 2. Bantuan Alat Berat	INFO CARD
11.30	BPBD Bitung	Seorang Warga Kelurahan Batu Lubang	Laporan Fenomena pertanda akan terjadinya tanah longsor	Secepatnya akan diinformasikan	INFO CARD

(Record of action during the drill, organized after the drill)

The Implementation of CPX independently by the counterparts

Based on the guideline of CPX that was made in workshops and trainings, CPX has been implemented independently by the counterpart itself. The short picture about the exercise that has been implemented by each agency can be seen below.

Date	Implementer	Participants	Items
Sept. 25, 2013	BPBD of North Sulawesi	TNI and other related agencies	Disaster Management exercise that focuses on flooding in Manado and the building of a POST
Sept. 27 2013	BPBD of Bitung	Related agencies	Disaster Management Exercise that focuses on landslides

CPX implemented by BPBD North Sulawesi Province

CPX implemented by BPBD Bitung Regency

Task (31): Re-examination of manuals for Disaster Management Drills, Contingency Plans and SOPs, based on the result of Disaster Management Drills (North Sulawesi province)

The technical guideline for implementation of disaster management drills has been updated to make it easier to use for actual practices of disaster management drills by adding the content of plan-making workshops for disaster management drills at the pilot area explained in Task (28) into the guideline and by attaching explanatory materials to Players/Controllers and information giving cards as reference for drills. And after implementation of the drills, the SOP has been also updated by C/Ps of OUTPUT3-2, who tried to formulate the contingency plan and the SOP for own regency/municipality, based on the experience of disaster management drills.

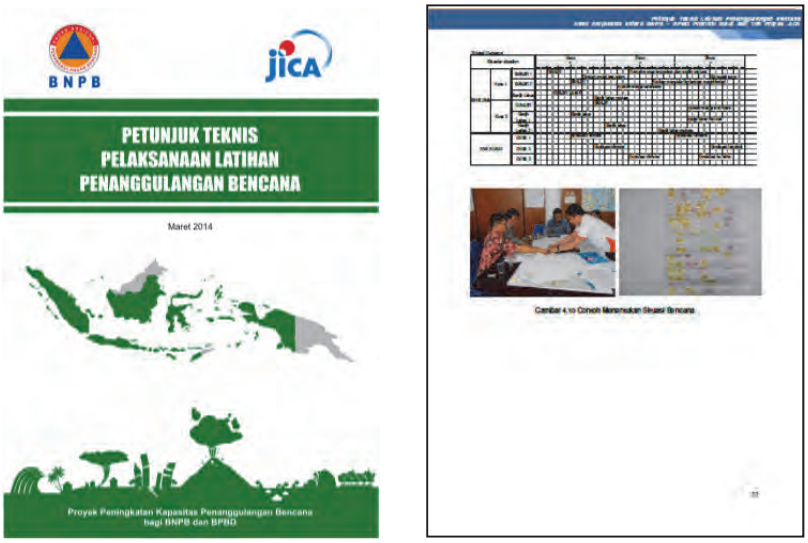


Figure 2.6.6 The technical guideline for implementation of disaster management exercise

Output 4-2

(1) Output: The capacity for conducting Disaster management exercises at the regency/municipality in the target area is enhanced.

Activity 4-5: To conduct activities on community-based disaster risk management (CBDRM) to empower disaster management capacity utilizing output formulated through the Project

(2) Schedule of Activities

The schedule of the Output 4-2 is as shown below.

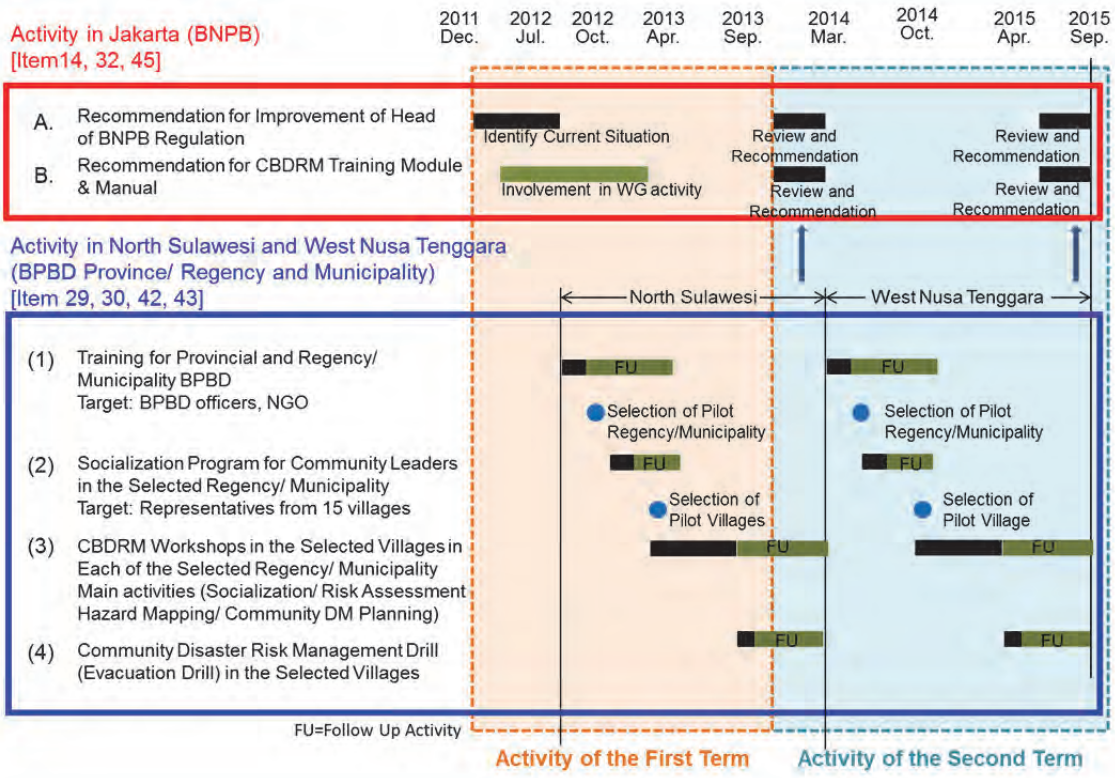


Figure 2.6.7 Schedule of Activities for Output 4-2

(3) Method of Technical Transfer

The method of the technical transfer for the activities of Output 4-2 is as follows.

Task (14): Formulation of "Manuals for Community-based Disaster Risk Management (CBDRM)" by reviewing "Guidelines for CBDRM Activities" developed through the JICA Study

The National Disaster Management Agency (BNPB) has enacted "Head of BNPB Regulation Number 1 Year 2012 on General Guideline of Disaster Resilient Village" at the beginning of 2012, which became effective in April 2012. The BNPB decided to conduct pilot activities based on this guideline, and prepared "Technical Guideline for Facilitating Community Empowerment towards Disaster Resilient Village" (Refer to Table 2.6.6). The target of the pilot activities is the selected communities in each of the 21 provinces which are prone to tsunami.

Table 2.6.6 Contents of Technical Guidelines for Facilitating Community Empowerment towards Disaster Resilient Village

Forward Table of Contents Acronyms **Chapter 1: Introduction** A. Background B. Purpose C. Target D. Legal Foundation **Chapter 2: Principles and Indicators of Disaster Resilient Village** A. Principles B. Indicators **Chapter 3: Program Implementation** A. Preparation B. Socialization and Briefing C. Village Selection D. Facilitator Selection E. Preparation and Meeting at District F. Meetings/FGD in Villages G. Consultation with National Level H. Budget Allocation for Province	**Chapter 4: Detailed Activities to Achieve Program Indicators in Village** 1. Map and Analysis of Community Disaster Risk 2. Map and Analysis of Community Vulnerability 3. Map and Assessment of Community Capacity 4. The Draft Disaster Management Plan 5. The Draft Community Action Plan 6. Disaster Volunteer (including DRR Forum) 7. Community-based Early Warning System 8. The Draft Contingency Plan 9. Economic Resilience Model **Chapter 5: Program Implementation Organizations** A. National B. Provincial C. District D. Village **Chapter 6: Monitoring, Evaluation and Reporting** A. Monitoring B. Evaluation C. Reporting **Chapter 7: Closing** Annexes

Table 2.6.7 Comparison of the Contents with CBDRM Guideline/Manual in Japan

General Guideline "Desa Tangguh Bencana" (Head of BNPB Regulation 2012-No. 1) (BNPB, Indonesia)	**Technical Guideline for Facilitating Community Empowerment towards "Disaster Resilient Village" (BNPB, Indonesia)**	**Guideline for Community Voluntary Disaster Management (DM) Organization (FDMA, Japan)**	**Manual for Facilitators of Voluntary DM Organization: Establishment of Voluntary DM Organization and CBDRM Activity**
January, 2012 (effective on April, 2012)	**March, 2012**	**March, 2011 (revised)**	**March, 2007**
A. Community Risk Assessment (Hazard, Vulnerability, and Capacity) B. Community Disaster Management Plan, Contingency Plan C. Community Disaster Management Forum D. Capacity Building of Community and Officials in DM E. Integration of DRR into Village Development Plan and Legalization F. Implementation of the DRR in the Village (Details will be introduced in the technical guideline) G. Monitoring, Evaluation, and Reporting	A. Maps and Analysis of Disaster Threat (District/municipality Level) B. Map and Analysis of Community Vulnerability C. Map and Assessment of Capacity and Potential Resources D. Disaster Management Plan (Risk Assessment, Measures in DM Cycle, Allocation of Roles) E. Community Action Plan for DRR (2-3 years) F. Disaster Volunteer (incl. DRR Forum) G. Community-based Early Warning System H. Contingency Plan I. Economic Resilience Model	A. Establishment of Voluntary Disaster Management Organization (Legislation, Allocation of Roles) B. Disaster Management Plan (Activities in Normal Time and Emergency Time), Annual Activity Plan, Review of Activity C. Financial Arrangement (Fundraising, Substitute, etc.) D. Human Resource Development (Leaders, Next Generation) E. Implementation of Disaster Management Activity (Public Awareness of DM Knowledge, Risk Awareness, Disaster Management Exercise, Stockpiling)	A. Establishment of Organization B. Analysis of Present Status of Community (Human & Material Resources, Risk, Vulnerability) C. Disaster Management Plan (Normal time & Emergency Time), Annual Plan D. Implementation of DM Activity (Formulation of Organization, Emergency Response System, Information Management System, Public Awareness, Evacuation Support System, Procurement, Evacuation Place Management) E. Evaluation and Improvement of Plan

The guidelines were newly formulated as a national policy in 2012 and include most of the activities in the "Guidelines for CBDRM Activities" developed through the JICA Study as well as in the manual developed by Fire and Disaster Management Agency (FDMA), Japan (refer to the Table 2.6.7). Therefore, it was decided that a new manual would not be prepared, and the project activities would be conducted based on the guidelines. Then recommendations and suggestions for improving the guideline will be presented based on the result of the project activities.

The BNPB conducted the second two-day training for facilitators (target: eastern area) of the pilot activities based on the guideline on April 25-26, 2012. (The first training targeting the western area was already conducted in March, 2012.) The project team participated in the training as observers. The training was organized along with the contents of the Technical Guideline and focused on the explanation of the nine indicators to be accomplished in the activities. Most of the training was comprised of conceptual explanation with fewer concrete examples. Also, the training was not conducted using participatory methods that participants do in some exercises. Therefore, most of the trainees seemed to feel anxious about how to conduct the proposed activities after the training.

Considering this situation, the AIFDR (Australia–Indonesia Facility for Disaster Reduction) provided a 3.5-day follow-up training for the four target provinces for their pilot activities (East Java, NTT, West Sumatra, and South Sulawesi) on July 3-6, 2012. In the training, the AIFDR provided practical exercises, including many group activities that have the participants fully think about the contents of the guideline. The training was very useful for understanding the indicators of the activities and provided the answers for the questions about the contents of the technical guideline (Refer to Table 2.6.6). The project activities drew on the lessons learned in the training programs conducted by BNPB and AIFDR, and on documents and educational materials used in the training.

Table 2.6.8 Training Program for "Disaster Resilient Village" by BNPB and AIFDR

Training for Facilitators (March & April, 2012)	**Follow-up Training for the AIFDR Pilot Areas by AIFDR**
➢ Disaster Management System ➢ Outline of "Disaster Resilient Village" ➢ To Be Good Facilitators ➢ Indicators of "Disaster Resilient Village" Activities ➢ Community DM Plan ➢ Development of Disaster Risk Map ➢ Establishment of DRR Forum ➢ Outline of DM Volunteer ➢ Community Early Warning System ➢ Community Action Plan ➢ Community DM Activities	➢ Session 1: "Disaster Resilient Village" Program ➢ Session 2: Risk Analysis (Lecture and Discussion) ➢ Session 2-2: Group Work for Risk Analysis ➢ Session 2-3: Plenary Session for Group Presentation and Discussion ➢ Session 3: Community Action Plan and Economic Resilience (Lecture and Discussion) ➢ Session 3-2: Group Work for Community Action Plan ➢ Session 3-3: Plenary Session for Group Presentation and Discussion ➢ Session 4: Early Warning System and Evacuation Plan (Lecture and Discussion) ➢ Session 4-2: Group Work for Early Warning ➢ Session-4-3: Plenary Session for Group Presentation and Discussion ➢ Evaluation of the Training

Further, the BNPB has been formulating training modules for activity areas of the BNPB in line with the plan of the establishment of education and training centers for DRM in 2013. "Training module for basic disaster risk management" was formulated at first in early 2012 by BNPB and AIFDR. Following this module, eight training modules were supposed to be formulated by working group activities by September, 2012. One of them is the training module for community-based disaster risk management (CBDRM). Considering the situation and to avoid duplicating work, it was decided to use the developed training module in the project activities, rather than making a new manual. However, due to preparation work for the Asian Ministerial Conference on Disaster Risk Reduction (AMCDRR), hosted by BNPB in October, 2012, the working group activities were delayed and the training modules were not completed by October, 2012, when the project activities started in the first pilot area. As a result, the module could not be used in the project activities. Therefore, it was decided to provide suggestions for the improvement of the developed module based on the results of the project activities.

Furthermore, a workshop titled "BNPB-JICA Joint Workshop on Good Practices of CBDRM" was conducted on June 19, 2012 to gain perspective on current CBDRM activities in Indonesia. Representatives of government agencies, universities, and NGOs that have actively conducted CBDRM activities in Indonesia were invited to the workshop. Thirty persons from 22 organizations attended the workshop, and actively discussed the further development of CBDRM activities with presentations by leading CBDRM experts in Indonesia. The outline of the workshop is as follows. (Refer to the workshop report for details.)

<Presentations>

- The Concept of Disaster Resilient Village (Dr. Sigit Padmono Dewo, BNPB)
- Brief Introduction of JICA Project for Enhancement of DRM Capacities (Ms. Miki Kodama, JICA Expert Team)
- Safer Community through Disaster Risk Reduction (SC-DRR) in Yogyakarta Experience and Learning from Lingkar (Ms. Ninil Miftahul Jannah, Perkumpulan Lingkar)
- Understanding the Journey of CBDRM - Disaster Research Education and Management on CBDRM (Dr. Ir. Eko Teguh Paripurno, Universitas Pembangunan Negara)
- Integrated Community-Based Disaster Risk Reduction (Ms. Bevita Dwi Medityawati, Palang Merah Indonesia (PMI))
- Learning from Japanese Efforts (1): case of Japanese lessons (IKC & Bokomi) in Indonesian context - UGM and CBDRM (Dr. Ikaputra, Universitas Gajah Mada)
- Learning from Japanese Efforts (2): CBDRR some unmistakable lessons - Community Preparedness - Compress (Ms. Irina Rafliana, Lembaga Ilmu Pengetahuan Indonesia (LIPI))

<Main points of discussion>

- Importance of transferring the knowledge and lessons to the next generation
- Indigenous knowledge related to disasters should be further studied
- Need to consider raising awareness of disaster preparedness at family level
- Various guidelines on CBDRM were already made. The CBDRM actors should make optimal use of the existing guidelines, instead of making new ones
- The role of local government is very important
- Sociological aspect of a community is one of the challenges in conducting CBDRM
- BNPB's concept of resilient village will be proposed to private sector to ensure its sustainability
- Next workshop will be conducted by BNPB to complete its database on CBDRM activities, conducted by various parties in Indonesia

Picture 2.6.1 BNPB-JICA Joint Workshop on Good Practices of CBDRM

In addition, through the project activities, information on the major CBDRM activities, relevant documents, and recent documents on CBDRM in Indonesia were collected. Major information and documents are shown in Table 2.6.9 and Table 2.6.10.

Table 2.6.9 Major CBDRM Activities and its Relevant Documents in Indonesia

UNDP	PMI	MPBI (NGO in Jakarta)	Yayasan IDEP (NGO in Bali)
Component IV: Safer Communities through Disaster Risk Reduction (SC-DRR) in Development	Integrated Community-based Risk Reduction (ICBRR)	National Conference on CBDRM	CBDRM Activity in Bali Utilized 3 Modules (Facilitators' guidelines, framework, and practical use manual)
Since 2007	Since 2002	Annually since 2004	Since 2002
8 provinces: West Sumatra, Bengkulu, Central Jawa, DI Yogyakarta, Bali, East Nusa Tenggara, North Sulawesi, and Maluku. 1 city: Palu, Sulawesi 	13 provinces; Lampung, West Sumatra, NAD, North Sumatra, West Java, DKI Jakarta, Central Java, Yogyakarta, South Kalimantan, Bali, South Sulawesi, West Sulawesi, and North Sulawesi. 	2004: Yogyakarta, 2006?: Jakarta, 2007: Jakarta, 2008: Denpasar, 2009: Makasar, 2010: ?, 2011: Sleman 	11 villages in 5 districts in Bali (development of CBDRM manual "Guidebook for development of Community-based DM Plan funded by WB 

Table 2.6.10 Recent Documents on CBDRM Activities in Indonesia

UNESCO	LIPI JICA-JST Project	AIFDR	Consortium for Disaster Education
Depositories of Awareness, Preparedness, and Education Materials in Indonesia, Thailand and the Philippines	A guidebook for Disaster Prevention used Town Watching Method	Youthspeak Insert (a monthly insert of the Jakarta Post) – Be Alert Not Alarmed	A framework of school-based disaster preparedness
Published in 2011	Published in 2012	Published in 2011	Published in 2012
Information as depository of tsunami awareness and education available in Indonesia in the categories of book, booklet, comic, poster & leaflet, sticker, CD/DVD, game, and others 	Step-by-step guidebook for disaster awareness upgrading program using people's participatory approach 	A brochure to help students better understand the type of disasters that may occur in Indonesia. It also outlines the role students and their community can play in disaster preparedness 	A guideline to raise awareness of disaster risk reduction for all stakeholders in the education sector, both individually and collectively, as an effort to encourage schools to develop disaster preparedness 

Through the discussion with the relevant stakeholders in Jakarta and through collection of information, the implementation policy of the CBDRM activities in the Project was decided as shown in the below image.

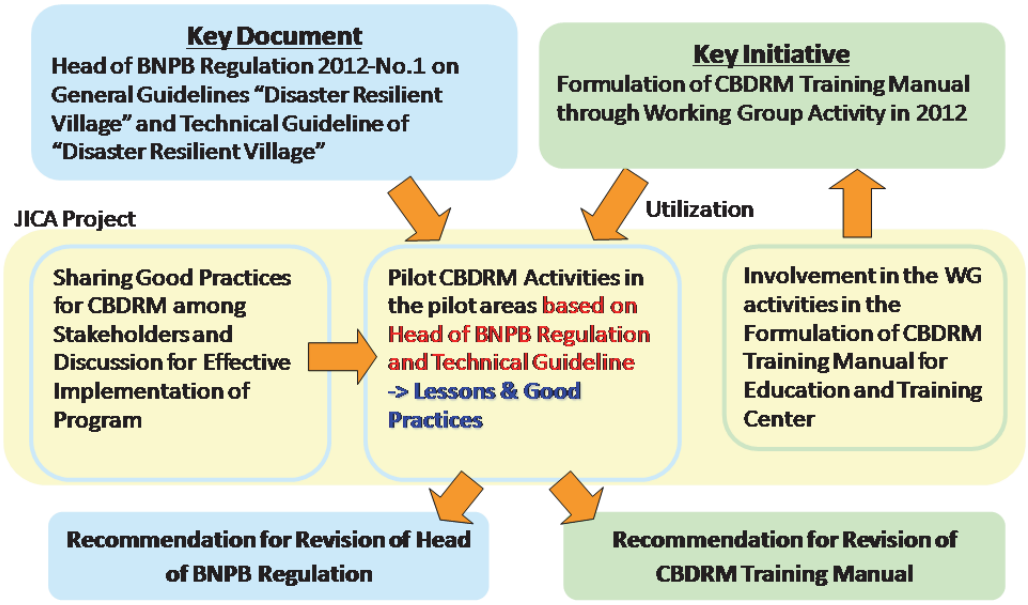


Figure 2.6.8 Image of the Implementation Policy of CBDRM Activities

Picture 2.6.2 Discussion with BNPB C/Ps

Task (29): Implementation of CBDRM Activities (North Sulawesi province)

1) Workshop on CBDRM for Province and Regency/Municipality Officers

Based on the implementation policy discussed in Task (14), the CBDRM activities in North Sulawesi province (the first pilot area) started in October, 2012. At first, a workshop on CBDRM for province and regency/municipality officers was conducted October 10-12, 2012, aiming at grasping the degree of understanding on CBDRM activities of province and regency/municipality BPBD as well as promoting CBDRM activities. Two officers from the provincial BPBD and each of 15 regency/municipality BPBDs were invited to the workshop. Around 50 persons including BPBD officers, NGO staff members, and representatives from the media attended the workshop. In the workshop program some practical activities were included to help participants better understand the

contents of the guidelines for "Disaster Resilient Village." An overview of the workshop is as follows. (Refer to the workshop report for details.)

<Lectures>

Orientation

- Introduction to CBDRM Activities in the JICA Project and Disaster Impact & Disaster Management in Japan (Miki Kodama, JICA Expert Team)
- Introduction to the History of Disaster in Each District/City (Participants from 15 Regency/Municipality BPBDs)
- Important Role of Leadership for CBDRM: Lessons learned from educational tsunami story "Inamurano-hi" in Japan (Miki Kodama, JICA Expert Team)

Lectures and Group Works

- Concept of Disaster Resilient Village (Eny Supartini, BNPB)
- Disaster Risk Assessment in the Community: Hazard, Vulnerability, and Capacity (Percy Lontoh, Red Cross)
- Community-Based Early Warning System and Evacuation Plan (Benny Usdianto, GIZ)
- Community Participatory Risk Assessment Tool: Town Watching and Hazard Mapping (JICA Expert Team)
- Community DM Plan and Action Plan (Buttu Ma'dika, AIFDR)
- DM Volunteers in the Community (Eny Supartini, BNPB)

Picture 2.6.3 CBDRM Workshop for Province and Regency/Municipality BPBD Officers

<Evaluation of Workshop>

- In each regency/municipality, CBDRM activities have not yet been actively conducted. It was the first time for some of the participants to have this kind of training. Some participants requested follow-up training for further understanding.
- Some participants mentioned they could enhance understanding on the CBDRM activities but they need some support to conduct the CBDRM activities by themselves.
- In the current budget of the regency/municipality, only limited awareness activities can be conducted. Additional budgetary support is required to conduct the activities described in the guidelines. In some regencies/municipalities, community awareness activities had already been conducted.
- The PMI (Red Cross Indonesia) in North Sulawesi province has conducted CBDRM activities in the 5 pilot regencies/municipalities. They suggested more active participation of BPBD officers in the pilot activities by PMI. Also, they mentioned they were willing to support a training program for BPBD officers at the provincial level.

2) Discussion on the Implementation Procedure of CBDRM Activities (incl. Budget and Human Resources)

Based on the information obtained through the CBDRM workshop for province and regency/municipality officers, and on discussion with the C/Ps of provincial BPBD, it was decided to implement the CBDRM activities in the Project as shown in the below image. Basically, the pilot regency/municipality BPBD C/Ps conduct the activities in the communities, and provincial BPBD staff members and JICA Expert Team support their implementation. Also, for promoting the CBDRM activities in other regencies/municipalities, other regency/municipality C/Ps are invited to participate in the pilot activities as observers. Further, for enhancing the network for future activities, the project activities will get the cooperation of PMI (province, and regency/municipality offices), which has already been conducting the CBDRM activities.

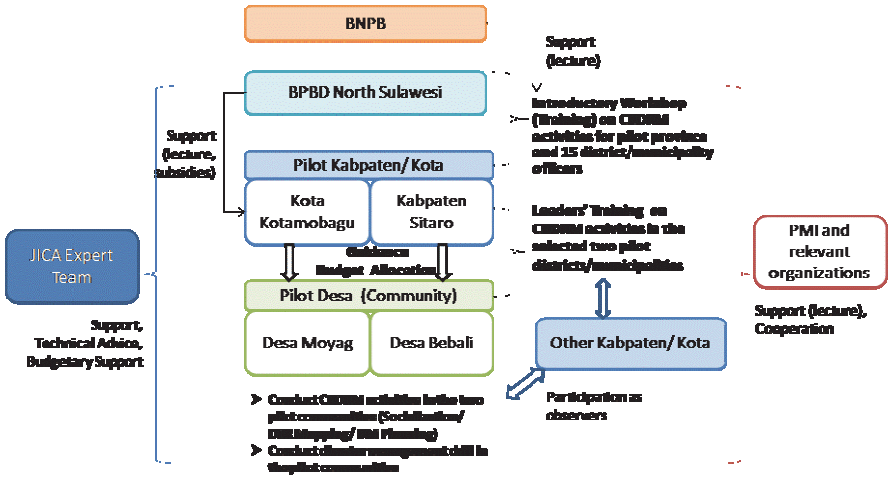


Figure 2.6.9 Implementation Procedure of CBDRM Activities in North Sulawesi Province

3) Selection of the Pilot Regency/Municipality for CBDRM Activities in the Project

The survey and information collection for selecting the pilot regency/municipality was started in mid-October, 2012. The results of the participants' review of the CBDRM workshop on October 10-12, 2012, were compiled and the current situation of CBDRM activities and relevant information in each regency/municipality were summarized through the interviews of C/Ps during the visit to each regency/municipality office. Further, for the selection of the pilot regency/municipality for the Output 4-1, conducting the disaster management drill in collaboration with the activities of Output 4-1 was also considered.

Participants were asked the following seven questions for the review of the CBDRM workshop. The criterion for the selection of candidate regencies/municipalities was their willingness to actively implement the CBDRM activities based on the knowledge and techniques learned through the CBDRM workshop.

<Questions on the review of the CBDRM workshop>

- Was the training useful for your work?
- What did you learn during the training that you anticipate using in your work?
- Was there anything you did not understand during the training? Please provide specific topics.
- What is the most valuable thing you learned during the training?
- Will the action plan for the implementation of a "Disaster Resilient Village," which you developed during the training, be feasible as your planned activities?
- Do you need any specific support for conducting activities in the action plan (except budget)? Please provide specific items and/or information.
- Any other comments?

The following information on the current situation of CBDRM activities and other relevant information were summarized.

- [Basic information] Population
- [Basic information] Date of establishment of Regency/Municipality BPBD
- [Disaster risks in the area] Major natural disasters
- [Social impact] CBDRM activities in the past
- [Leadership] Willingness of the regency/municipality BPBD office to conduct CBDRM activities
- [Recognition of importance of CBDRM Activities] Willingness of C/Ps for CBDRM activities
- [Leadership] Interest of the mayor of regency/municipality BPBD
- Other comments

- Requests/Expectations for the JICA Project
- Transportation conditions to the area

The JICA Expert Team discussed the above information with the provincial BPBD C/Ps and selected the following six regencies/municipalities as candidates; Tomohon municipality, Minahasa regency, Kotamobagu municipality, Bolaang Mongondow regency, Talaud regency, Sitaro regency. And then, Kotamobagu municipality and Sitaro regency were finally selected as the two pilot regencies/municipalities under the following conditions: to select two regencies/municipalities with different characteristics, consideration of the target areas of Output 4-1 activities, and some other information on the situation of the activities of other project outputs.

4) CBDRM Training Program for Community Leaders in the selected regency/municipality

The CBDRM activities in the two selected pilot regencies/municipalities were started in February, 2013. At first, considering the importance of the leaders' roles in the CBDRM activities, 2-day CBDRM training programs for community leaders were conducted in each of the selected regencies/municipalities (on February 21-22 in Kotamobagu municipality, and on February 26-27 in Sitaro regency). The training was attended by around 50 persons including representatives of selected disaster prone residencies (Kecamatan) and villages (Desa/Kelurahan), BPBD staff members, and NGOs. With the view that the regency/municipality BPBD C/Ps can conduct the next activities in the communities by themselves, the lectures of the training were done by regency/municipality BPBD C/Ps as much as possible. And some lectures and follow-up were conducted by the provincial BPBD and JICA Expert Team. Overview of the training program is as follows. (Refer to the training report for details.)

<Outline of Training Program in Kotamobagu Municipality>

- Introduction (Mr. Saleh Zulhadji, Head of BPBD Kotamobagu)
- Opening Remarks (Mr. Isoda, JICA Expert Team and Mr. Dra. Djumati Makalag, Secretary of Kotamobagu Municipality)
- The Disaster Management Planning (Mr. Dery Uso, BPBD North Sulawesi)
- The Concept of Disaster Resilient Village (Mrs. Joklin, BPBD North Sulawesi)
- Regional Disaster Management System and Implementation in Kotamobagu (Mr. Budi, BPBD Kotamobagu)
- History of Disaster in Kotamobagu (Mr. Abdul Muis, BPBD Kotamobagu)
- Hazard-Vulnerability-Capacity Assessment and Participatory Rural Appraisal (Mr. Lucky, PMI Kotamobagu)
- Town Watching and Hazard Mapping (Mr. I Wayan Dharma, BPBD Kotamobagu)
- Community-Based Early Warning System (Mujiburrahman, JICA Expert Team)
- Contingency Planning (Mrs. Elis Lismayani, BPBD Kotamobagu)

<Outline of Training Program in Sitaro Regency>

- Opening Remarks (Ms. Yoko Ota, JICA Expert Team and Representative of the Mayor of Sitaro)
- Disaster Management Planning (Mr. Jimmy Mokolengsang, BPBD North Sulawesi)
- The Concept of Disaster Resilient Village (Mr. Dery Uso, BPBD North Sulawesi)
- Regional Disaster Management System and Implementation in Sitaro, (Mr. Eliseur Posumah, BPBD Sitaro)
- History of Disasters in Sitaro (Mr. Herians Kaumbur, BPBD Sitaro)
- Hazard Vulnerability Capacity Assessment and Participatory Rural Appraisal (PRA) (Mr. Percy Lontoh, PMI Sitaro)
- Town Watching and Hazard Mapping (Mrs. Wulan Marrgaret, BPBD Sitaro)
- Community-Based Early Warning System (Mr. Mujiburrahman, JICA Expert Team)
- Contingency Planning (Mr. Rusli Bawotong and Mrs. Winny Masala, BPBD Sitaro)


Picture 2.6.4 CBDRM Training for Community Leaders in Kotamobagu Municipality (Left) and Sitaro Regency (Right)

<Evaluation of the Training>

Results of the evaluation after the training were as follows.

- Most of the participants evaluated the training as useful and expressed willingness to conduct the activities based on the knowledge learned in the training.
- The participants understood most of the contents of the training. However, they felt that formulating a disaster management plan in the village was a bit difficult.
- Also, most of the participants expressed that further training or technical support would be required for conducting the activities in the village.
- Most of the participants mentioned that they would start from what they can do due to the limitation of the budget. Many of them said that they would like to initiate the organization of disaster management volunteer groups at first.
- Further, they indicated the difficulties for raising awareness of community people on disaster preparedness since most of the people still think that a disaster will be responded to after the occurrence.

5) Selection of the pilot villages for the CBDRM activities in the pilot regency/municipality

Based on the results of the review of the 2-day CBDRM Training Program for Community Leaders, selection of the pilot villages was conducted in each of the pilot regencies/municipalities. JICA Expert Team suggested the following selection criteria: willingness of the leaders who participated in the training to conduct CBDRM activities, disaster risk in the area, and past experiences of CBDRM activities. Four villages were selected based on the criteria in each of the pilot regencies/municipalities through consultation between the JICA Expert Team and provincial BPBD. Then, in consultation with the pilot regency/municipality, two candidate villages were selected from the four villages in each of the pilot regencies/municipalities. Lastly, with the examination of detailed data and discussion among the JICA Expert Team members, Moyag village in Kotamobagu municipality and Bebali village in Sitaro regency were selected as pilot villages (Desa/Kelurahan).

6) Implementation of CBDRM Activities in the selected pilot villages

CBDRM Activities in the pilot villages were started in April, 2013. In consultation with the pilot regencies/municipalities, the activities were conducted with the flow as shown in the below table.

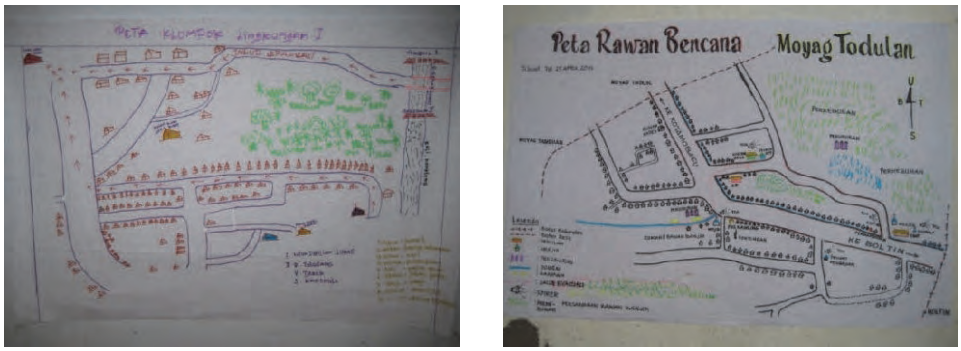
Table 2.6.11 Flow of the CBDRM Activities in the Pilot Villages

Date		Contents of Activities
April, 2013	First Workshop (2 days)	➢ Awareness Program ➢ HVC (Hazard, Vulnerability, Capacity) Assessment ➢ Community-Based Disaster Management(DM)Mapping
May-June, 2013	Follow-up Activities	➢ Finalizing Community-Based DM Mapping
July, 2013	Second Workshop (meetings among relevant persons)	➢ Formulation of Village DM Plan
July-August, 2013	Follow-up Activities	➢ Compiling Village DM Plan
End of August-September, 2013	Third Workshop	➢ Consultation on Planning of DM Drill based on DM Plan ➢ Practical Exercise for the Techniques Required for DM Drill
September, 2013	Disaster Management Drill	➢ Implementation of DM Drill
October, 2013	Review Meeting	➢ Review of DM Drill and Consultation for Revision/Improvement of DM Plan based on the Result of DM Drill
October, 2013 -	Follow-up activities	➢ Finalizing of DM Drill

At first, in each pilot village, a 2-day community workshop was conducted as a first activity (on April 17-18 in Bebali, Sitaro regency and on April 24-25 in Moyag, Kotamobagu municipality). Thirty persons and 50 persons attended the workshops in the respective villages. The activities of the workshop included an awareness program on knowledge of disasters and disaster risk management, discussion on disaster risks, vulnerabilities, and resources for disaster management in each area, a field visit for considering disaster risks, and evacuation and DM mapping. Basically the workshop was organized by the pilot regency/municipality. Through the workshop in October, 2012, and the training for community leaders in February, 2013, the capacity for the implementation of BPBD C/Ps has been enhanced and they could manage the community workshop well, guiding community people. (Refer to the workshop report for details.)

Picture 2.6.5 The First CBDRM Workshop in Bebali, Sitaro Regency (Upper) and Moyag, Kotamobagu Municipality (Below)

After the first workshop, the follow-up activities were conducted for finalizing the community DM map drafted in the workshop. The draft maps developed through group work in the workshop were combined and integrated into one map for the villages. The integrated map will be finalized and digitalized using the map data developed in the Output 2 activities.



Picture 2.6.6 Samples of Community DM Maps Developed in the Workshop

In July, 2013, activities for formulating village DM plans were started as a second CBDRM activity in the pilot villages. For this activity, a template for DM plans was prepared in consultation with provincial BPBD C/Ps, and with reference to the template developed for DM Plan by Output 3 of the Project. (Figure 2.6.10 and Table 2.6.12)

Then, the explanation and consultation meetings were conducted among the major relevant persons in the community, including heads of the villages. Using the results of the discussion in the first community workshop and collecting further information, the formulation of the DM plan has proceeded.

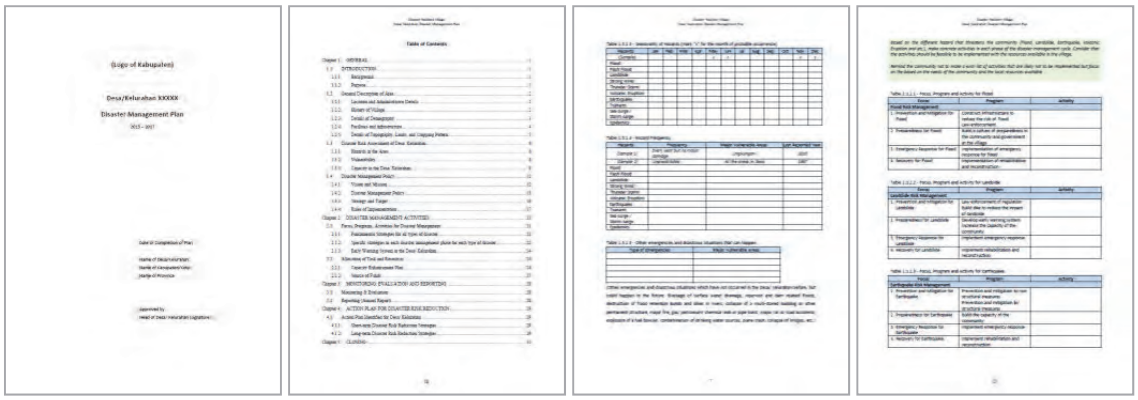


Figure 2.6.10 Template of Village DM Plan

Table 2.6.12 Contents of Village DM Plan

Chapter 1: General 1.1 Introduction 1.1.1. Background 1.1.2. Purpose 1.2 General Description of Area 1.2.1. Location and Administrative Details 1.2.2. History of Village 1.2.3. Details of Demography 1.2.4. Facilities and infrastructure 1.2.5. Details of Topography, Lands, and Cropping Pattern 1.3 Disaster Risk Assessment 1.3.1. Hazards in the Area 1.3.2. Vulnerability 1.3.3. Capacity in the Area 1.4 Disaster Management Policy 1.4.1. Vision and Mission 1.4.2. Disaster Management Policy 1.4.3. Strategy and Target 1.4.4. Rules of Implementation	Chapter 2: Disaster Management Activities 2.1 Focus, Programs, Activities for Disaster Management 2.1.1. Fundamental Strategies for All Types of Disasters 2.1.2. Specific Strategies in Each Disaster Management Phase for Each Type of Disaster 2.1.3. Early Warning System in the Village 2.2 Allocation of Tasks and Resources 2.2.1. Capacity Enhancement Plan 2.2.2. Source of Funds Chapter 3: Monitoring, Evaluation, and Reporting 3.1 Monitoring & Evaluation 3.2 Reporting (Annual Report) Chapter 4: Action Plan for Disaster Risk Reduction 4.1 Action Plan Identified for Village 4.1.1. Short-term Disaster Risk Reduction Strategies 4.1.2. Long-term Disaster Risk Reduction Strategies Chapter 5: Closing

Following the DM plan formulation activities, preparatory workshops for conducting disaster management drills to check the plan was held on August 29 in Moyag village, Kotamobagu municipality and on September 5 in Bebali village, Sitaro regency. In the preparatory workshop, roles of the community members, information flow, and actions to be taken in case of disaster occurrence were reviewed and discussed. Also, the practical exercises to learn techniques for first aid and setting up of tent were provided.

Picture 2.6.7 Third Community Workshop in Moyag, Kotamobagu Municipality

Task (30): Implementation of Disaster Management Drills at community levels in accordance with the CBDRM activities in the pilot areas (North Sulawesi province)

Based on the plan discussed in the preparatory workshop in Task (29), disaster management drills were to be conducted in the two pilot villages (on September 10 in Moyag village, Kotamobagu municipality and September 18 in Bebali village, Sitaro regency). The evacuation drill in Sitaro regency was implemented in conjunction with the CPX training at the regency/municipality level under the Task (28) activities. The flow of the disaster management drill in the communities was planned as shown in the below figures and table.

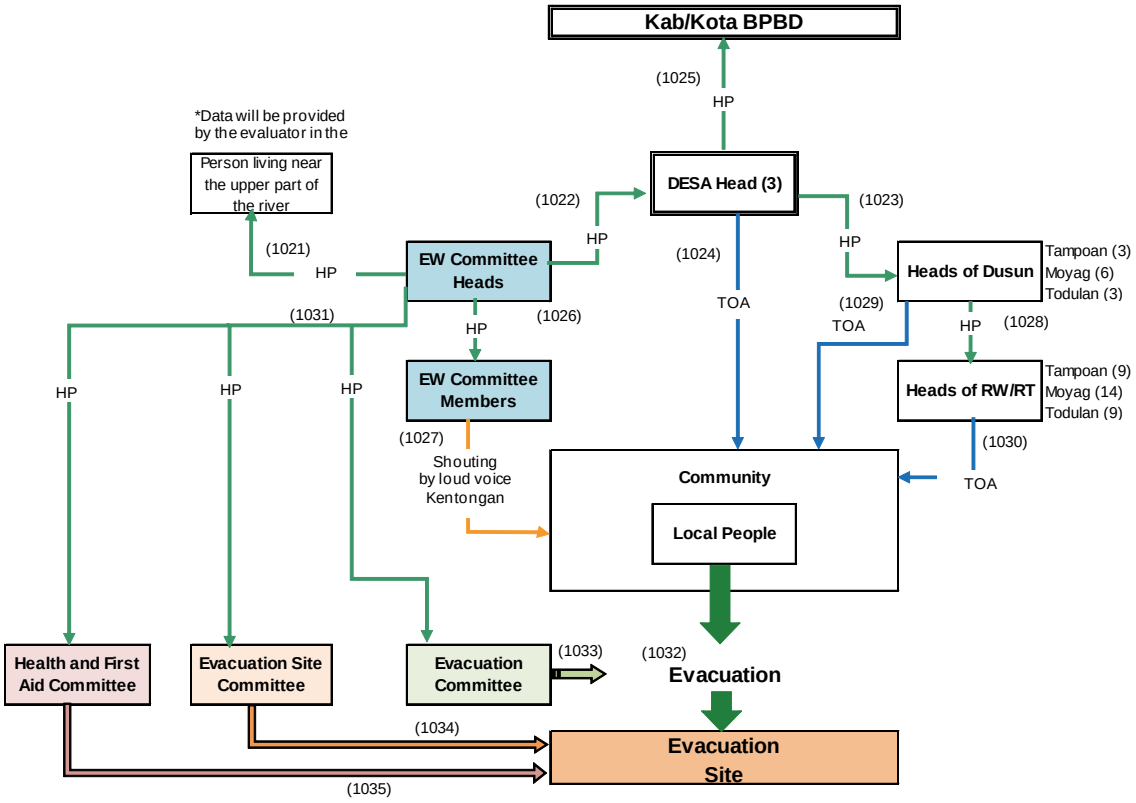


Figure 2.6.11 Information Flow of the DM Drill in Moyag Village, Kotamobagu Municipality

Table 2.6.13 Flow of the DM Drill in Moyag Village, Kotamobagu Municipality

Time (Estimated)	General/Others	Village Head	Early Warning Group	Evacuation Group	Shelter Group	Health and First Aid Group
10:00-10:03	(1021) Pretending people living near the upper river informs risk situation of river on the phone		(1021) Head of EW Committee calls to the person living near the upper river and gets information of risk of banjir bandang			
10:03-10:05		(1022) Village head receives risk situation of river water level from head of EW Committee	(1022) Head of EW Committee calls to the Village head and consults for evacuation advice to the community people			
10:06	Evacuation advice to gather at the designated tentative meeting point of each village	(1022) Village head decides to inform evacuation advice to community				
10:06-10:09		(1023) Village head calls to heads of all Dusun to inform the heads of all RW/RT as well as inform to the community using TOA	(1026) Head of EW Committee calls to the members and instructs to disseminate information to community by Kentongan, etc.			
10:08-10:10			(1031) Head of EW Committee calls to the head of other 3 Committees to mobilize the members for actions with the advice of evacuation	(1031) Head of Evacuation Committee receives information on issues of evacuation advice	(1031) Head of Evacuation Site Committee receives information on issues of evacuation advice	(1031) Head of Health and First Aid Committee receives information on issues of evacuation advice
10:10-10:15		(1024) Village head announces EW advice to the community using TOA at village office		(1033) Head of Evacuation Committee mobilize members to the meeting point for supporting evacuation and SAR	(1034) Head of Evacuation Site Committee mobilizes members for establishing evacuation site	(1035) Head of Health and First Aid Committee mobilizes members for providing health and first aid service at evacuation site

Time (Estimated)	General/Others	Village Head	Early Warning Group	Evacuation Group	Shelter Group	Health and First Aid Group
10:15-10:20	(1028)(1029) Dusun head calls to RW/RT and announces using TOA (1030) RW/RT announces using TOA (BPBD) Prepare and deliver 2 tents to the evacuation site based on the request from evacuation site committee	(1025) Village head calls to BPBD office for reporting of the evacuation advice to the community people	(2001) EW Committee members check and ensure the announcement of evacuation advice to the community	(3001) Head: Prepare vehicles, if necessary Team 1: Allocate team members for giving directions to the evacuation site to evacuees Team 2: Visit the houses of vulnerable people to help their evacuation Team 3: Visit the risk areas to search and rescue people in trouble and provide first aid service, if needed	(4001) Team 1 starts preparation for receiving the evacuees Teams 2 & 4 start to prepare for establishing tents Team 3 calls to BPBD for providing tents Teams 5 & 6 start preparation for equipment and facilities for evacuation site and tents	(5001) Prepare necessary facilities and equipment in collaboration with Evacuation Site Team
(around 10:20-10:35)	(1032) Community people prepare “Emergency Bag” and go to the designated tentative meeting point of each village	Move to evacuation site and check the situation of preparation for receiving evacuees	Move to the tentative meeting point, same as evacuees	Team 1: Ask community people to wait before moving to the evacuation site		
10:35				(3002) Head: Get information from evacuation site team on the preparation of the site	(4002) Team 2 informs head of evacuation committee on the evacuation site	
10:35-10:50	Community people start moving to evacuation site under the direction of Team 1 of Evacuation Committee			(3003) Team 1: Give directions to the community members to evacuate to the evacuation site Team 2: Support the evacuation of vulnerable people by vehicles, etc. Team 3: Search and Rescue activities	(4003) Team 1 records the evacuees information of head counting and makes a report Teams 2-6 continue activities for preparing evacuation site	(5003) Teams 1-5 start services for evacuees
10:50-			Continue Activities			

The activities in the disaster management drill were conducted as shown in the Picture 2.6.8 in Moyag Village, Kotamobagu Municipality and in the Picture 2.6.9 in Bebali Village, Sitaro Regency. Community's DM Volunteer group members tried to follow the designated plan for the activities and guided the community people for safe evacuation in the drill.

Some of the activities of DM Volunteer groups in both of the pilot villages were missing or conducted without any confirmation with the designated people, however, they could complete the village people's evacuation without any big confusion. Through the experience, each of DM Volunteer groups could review or reconsider their actions to be taken in case of emergency.

In the DM Drill in Sitaro, a representative from BPBD Sitaro participated in the CPX held in Manado and acted as a main contact person of the headquarters of BPBD Sitaro. The participants of the DM exercise were requested to contact to the person when they need to contact to BPBD Sitaro. It made the actions to be taken by head of Village a bit complicated; however, the head could manage the coordination with the BPBD Sitaro.

Picture 2.6.8 DM Drill in Moyag Village, Kotamobagu Municipality

Picture 2.6.9 DM Drill in Bebali Village, Sitaro Regency

After the drill in Sitaro, an evaluation meeting was conducted among DM Volunteer Group members in the Bebali village office. The major comments and recommendations for future improvement of the activities were as follows.

- The exercise was basically successfully conducted with the cooperation of the people involved
- The Early Warning Volunteer Group's actions were very good. For the future improvement to provide the information quickly, radio communication equipment should be provided to the person in charge in Kola Kora area. Also, more speakers should be installed.
- The activities conducted by the Health and First Aid Volunteer Group were also very good. They could properly utilize know-how leaned in the preparatory workshop. In the real situation, the ambulance is not stand-by for us. Good coordination with the relevant agencies is required.
- The Evacuation Support Volunteer Group had some wrong actions. They should have helped the community people to get on the tracks; however, they themselves rode on the trucks first and did not help others. While some of the members did traffic control for the safe evacuation of the people. In the village, the arrangement of the tracks are easy, however, we also need to consider the utilization of buses for the aged or vulnerable people.
- The Shelter Volunteer Group could conduct head counting of the evacuees properly at the temporary gathering point; however, they did not do the counting when we reached to the evacuation site. Some people used their own vehicles to go the evacuation site and returned to

their home earlier than the all the activities were completed without informing to anybody. So, there was some confusion when providing support items. It is required to make good management of the people go in and out by the Shelter Volunteer Group.

- Preparation of the "Emergency Bag" is necessary for us. At least the member of the DM Volunteer Group should prepare properly the necessary equipment and items in the bag. The members of the Evacuation Support Volunteer Group should prepare the touch light for supporting evacuation at night.
- At the evacuation site, it is required to prepare toilet facilities. However, around the designated evacuation site, there are many houses. We can think about pre-coordination with them for the utilization of toilet in case of evacuation.

Based on the points mentioned above and some other findings, the draft Village DM Plan will be revised and finalized in the follow-up activities in the Project. In Kotamobagu, a review meeting for the exercise will be conducted and the draft DM Plan will be revised and finalized based on the review.

♦ Review and Revision of Community DM Map and Village DM Plan

Based on the points mentioned in the review meeting of the Evacuation Drill and some other findings, the draft Community DM Map and Village DM Plan was reviewed and revised through the discussion among DRR Forum and DM Volunteer members.

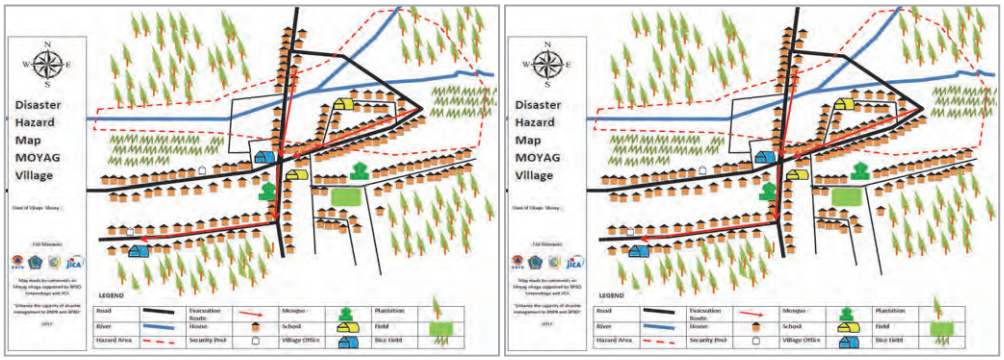


Figure 2.6.12 Community-based DM Map (Left: Kotamobagu/ Right: Sitaro)

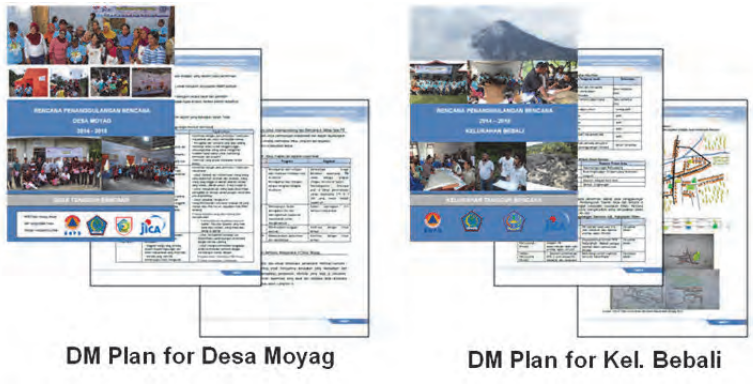


Figure 2.6.13 Village DM Plans ((Left: Kotamobagu/ Right: Sitaro)

Task (32): Re-examination of "Manuals for CBDRM" (North Sulawesi province)

As mentioned in the task (14), considering the situation that the BNPB stipulated the General Guideline on the CBDRM in 2012 when the Project was initiated and had promoted the community activities with the issuance of the Technical Guideline based on it, originally planned activities in the Project to formulate the Manuals for CBDRM has been changed. Instead, the team decided to conduct the CBDRM activities in the pilot areas based on the General Guideline and Technical Guideline and propose suggestions to improve the guidelines based on the review of the results of the activities. With this idea, the team compiled the activities in the North Sulawesi province, the first pilot area, as good practices titled "Activities for Disaster Resilient Village Program – as a good practice model – (first draft)". The report was to utilize in the CBDRM activities in the second pilot area of the Project and the BNPB training programs for the BPBD officers, and to finalize based on the result of the use.

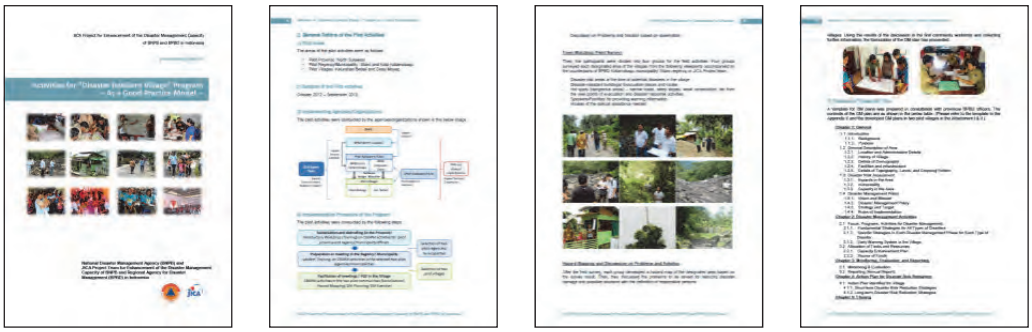


Figure 2.6.14 Compilations of Good Practices (First Draft)

Task (42): Implementation of the CBDRM activities (West Nusa Tenggara province)

1) Implementation of the CBDRM Training for Officers in Provinces and Regencies/Municipalities

Following the afternoon session of the Kick-off Workshop held on June 19, 2014, the CBDRM training program for the BPBD officers in charge of the CBDRM in BPBD Province and BPBD Regencies/Municipalities (2 officers each) in West Nusa Tenggara was conducted on June 20. The training provided basic knowledge for conducting CBDRM activities in each area of responsibility through lectures on the BNPB General Guideline on a "Disaster Resilient Village," Community Risk Assessment, Community-based Early Warning System, Community-based DM Mapping, Formulation of a Village DM plan, and action plan. Also, practical exercises and discussions were conducted to facilitate deep understanding of the above topics. A booklet compiling good practices and a video of the DM exercise in North Sulawesi were also distributed for reference of future activities. The outlines of the activities are as follows. (Please refer to the reports of the training for details.)

<Program of Activities>

Orientation

- Introduction to the JICA Project and Brief Outlines of the DRM in Japan (Miki Kodama, JICA Project Team)
- Tips for disaster risk reduction for various disasters (NHK Video)

Lecture/ Group Work

- Outline of the "Disaster Resilient Village" Program (Mujiburrahman, JICA Project Team)
- Community Disaster Risk Assessment (hazards, vulnerabilities, and capacity) (Sahabudi Kusuma, PMI West Nusa Tenggara)
- Community Early Warning System and Evacuation Plan (Arya Akhsani Takwim, Konsepsi)
- Participatory Risk Mapping (Ridho Ahyana, BPBD West Nusa Tenggara Province)
- Community DM Plan and Action Plan (Totok Rudjito, Koslata)

Picture 2.6.10 CBDRM Training for BPBD Officers in Provinces, Regencies/Municipalities

2) Discussion of the Implementation and Promotion Procedure for CBDRM Activities (including budget and resources)

Based on the information gained through the CBDRM training for the BPBD officers in the province and regencies/municipalities and discussion with BPBD counterparts of the pilot province, the procedure of the CBDRM activities was decided as shown in the figure below. As is the case in North Sulawesi, basically the counterparts of the regency/municipality BPBDs are in charge of implementing and guiding the activities in the community and the counterparts of the Province BPBD and JICA Project team support them. Then, each party prepared a required budget and resources based on the procedure.

Further, to promote the CBDRM activities in regencies/municipalities other than the selected pilot regency/municipality, the team decided to request BPBD officers of other regencies/municipalities to attend the pilot activities as observers. Although due to the time limitation, some regencies/municipalities could not attend the workshop, more than half of C/P officers have participated in the workshops. Also, to facilitate the building network with the

relevant resources, the activities would be conducted with the support of the PMI (province or regency/municipality level) and NGOs which have experience with CBDRM activities.

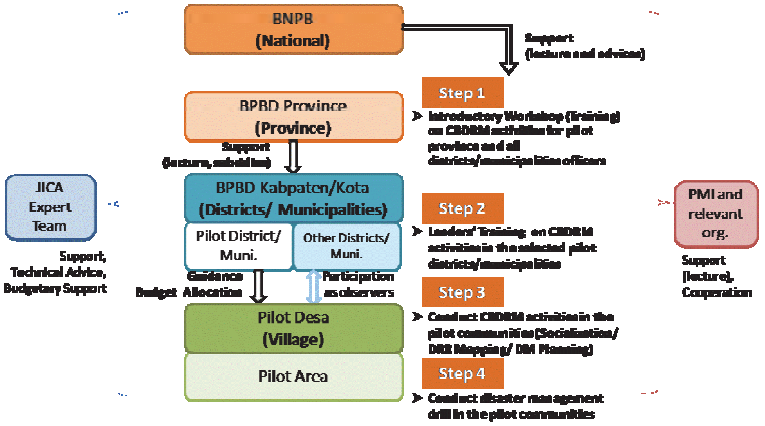


Figure 2.6.15 Implementation Procedure of CBDRM Activities in West Nusa Tenggara

3) Selection of the Pilot Regency/Municipality

Through discussion with the JICA and BNPB on implementation polity for the activities in the second term of the Project, the following points were decided for the implementation of the CBDRM activities: the pilot activity would be conducted in one community in Lombok Island (the island which has five regencies/municipalities of the ten in Nusa Tenggara), and the disaster risk management exercise would be conducted with the view of tourism DRR and participation of the tourism sectors considering the local characteristics of the Lombok Island. Further, the tsunami was selected as the target disaster in the second pilot area, considering target disasters in the first pilot area, i.e., flood and debris flow triggered by heavy rain.

(a) Current Situation of Tourism in West Nusa Tenggara

At first, the current tourism situation in West Nusa Tenggara was studied. As indicated in Table 2.6.14, the number of tourists (both foreign and domestic) has been increasing and the number of hotels and restaurants has also increased with this trend. As shown in Table 2.6.15, the hotel and restaurant industry has been gradually growing and is expected to grow further in the near future.

Table 2.6.14 Number of Tourists in West Nusa Tenggara

	Number of Tourists		
	2010	2011	2012
Foreign Tourists	282,161	364,196	471,706
Domestic Tourists	443,227	522,684	691,436
Total	725,388	886,880	1,163,142
Rate of Increase (year-over-year)		1.22	1.31

(Source: "NUSA TENGGARA BARAT IN FIGURES 2013")

Table 2.6.15 Proportion of GDP by Industry in West Nusa Tenggara (%)

		2010	2011	2012	Rate of Increase in 2012 (compared to 2010)
1	Agriculture	20.23	23.26	25.69	1.27
2	Mining and Quarrying	36.4	26.48	18.63	0.51
3	Manufacturing Industry	3.3	3.6	3.91	1.18
4	Electricity, Gas, and Water Supply	0.41	0.47	0.51	1.24
5	Construction	6.45	7.45	8.26	1.28
6	Trade, Hotels, and Restaurants	12.61	14.76	16.76	1.33
7	Transportation and Communication	6.59	7.3	7.69	1.17
8	Finance, Real Estate, and Business Services	4.35	5.04	5.8	1.33
9	Services	9.66	11.64	12.74	1.32

(Source: "NUSA TENGGARA BARAT IN FIGURES 2013")

Table 2.6.16 Tourism in West Nusa Tenggara by Regencies/Municipalities (Numbers of Travel Agencies, Hotels, and Restaurants)

	Regency/ Municipality	Travel Agencies	Hotels with star rating	No-star Hotels	Restaurant
Lombok Island	West Lombok	61	22	64	115
	Central Lombok	47	1	45	101
	East Lombok	6	0	36	129
	Mataram	223	9	75	177
	North Lombok	24	4	427	281
Other Islands	Sumbawa	1	3	31	203
	Dompu	5	0	16	15
	Bima Regency	0	0	11	27
	West Sumbawa	0	1	27	66
	Bima Municipality	9	0	12	31
	Total	376	40	744	1,145

(Source: "NUSA TENGGARA BARAT IN FIGURES 2013")

Table 2.6.16 shows the current situation of tourism in each regency/municipality by the number of travel agencies, hotels, and restaurants. Tourism in Lombok Island is one of the important industries.

(b) Current Situation of CBDRM Activities in Lombok Island of West Nusa Tenggara

Based on the survey of mapping the CBDRM activities in Indonesia conducted by the BNPB in cooperation with the AIFDR, the team conducted an interview survey of relevant individuals and identified that past CBDRM activities in Lombok Island in West Nusa Tenggara were conducted in Mataram Municipality, North Lombok Regency, West Lombok Regency, and East Lombok Regency by OXFAM, PMI (Red Cross), and GIZ, and that the target area of the BNPB activities for the "Disaster Resilient Village" program in 2014 is North Lombok Regency. Also, the team learned that only the introductory awareness activity was conducted in Central Lombok Regency by NGO World Neighbors.

(c) Tsunami Risk in West Nusa Tenggara

The assessment of the tsunami risks in the Project was scheduled after the selection of the pilot regency/municipality; the outline of the tsunami risk was studied using available past data provided by the University of Mataram and others (Table 2.6.17). As shown in the table below, there is a possibility that the areas in West Lombok Regency, Central Lombok Regency, and East Lombok Regency would be affected by a tsunami with a height of 10 meters within 20 minutes after the occurrence of an earthquake.

Table 2.6.17 Tsunami Risk Assessment in West Nusa Tenggara

	Regencies/Municipalities	Maximum Tsunami Height (meters)	Tsunami Arrival Time (minutes)
Lombok Island	West Lombok	10	20
	Central Lombok	10	20
	East Lombok	10	20
	Mataram	7	27
Other Islands	Sumbawa (Sumbawa Besar)	12	5
	Bima Regency	12	5
	West Sumbawa (Taliwang)	8	39
	Bima Municipality	2	59

Based on the situation mentioned from (a) to (c), the team selected Central Lombok Regency as the candidate for a pilot regency with the conditions that the CBDRM activities had not been actively conducted, tourism is one of the important industries, and the tsunami risk is relatively high. Counterparts of the BPBD of West Nusa Tenggara province agreed with the selection of the pilot regency and decided to conduct the CBDRM activities in Central Lombok Regency.

4) CBDRM Training for Community Leaders in the Selected Pilot Regency

CBDRM Training for Community Leaders in the selected regency, Central Lombok Regency, was conducted on October 29 & 30, 2014. Representatives from twelve villages in the coastal areas of Central Lombok Regency attended the training program and learned basic knowledge of the implementation of CBDRM activities introduced in the Guidelines of the "Disaster Resilient Village" program as well as the potential tsunami risks in the area. Further, they had an increased understanding of the necessity of disaster preparedness and the importance of dissemination of disaster information in a tourist spot where further growth of tourism is expected and assurance of safety is essential. In addition, the representatives of the villages discussed together the disasters and disaster risk reduction in their area and had a willingness to take leadership for reducing the impact of disasters in their area.

To enhance awareness of the tsunami risk in the area, the draft tsunami hazard map being developed by the Output 2 activity in the Project was introduced to the participants. Also, Dr. Eko Pradjoko from the Civil Engineer Department, Faculty of Engineering of University of Mataram, who had been conducting research on tsunami risk in Central Lombok Regency, was

invited as a lecturer and provided an explanation of the mechanism of tsunami of occurrence and risks in the area.

Meanwhile, the most immediate disaster threat for the participants was drought due to the continued shortage of rain at the time of training. Therefore, many participants raised the issue of drought in the discussion. Also, a landslide triggered by deforestation due to illegal mining and tourism development was actively discussed as one of the important problems to be solved. The outline of the training program is as follows. (Please refer to the training report for details.)

<Outline of the Program>

- Opening Address (Secretariat, BPBD Central Lombok Regency)
- Introduction to the CBDRM including importance of DRR in tourist areas, outline of the JICA Project, and Tsunami disasters in Japan (Miki Kodama, JICA Project Team)
- Tsunami Risks in Central Lombok Regency (Eko Pradojoko, University of Mataram)
- History of Disasters in Central Lombok Regency (Eru Julianto, BPBD Central Lombok)
- Outlines of "Disaster Resilient Village" Program (Anny Isgiati, BNPB)
- Community Disaster Risk Assessment (hazards, vulnerabilities, and capacity) (Putra Adi, PMI)
- Participatory Community Risk Mapping (Mustofa, BPBD Central Lombok)
- DRR Forum and DM Volunteer (Ridho Ahyana, BPBD West Nusa Tenggara Province)
- Community DM Planning (Rujito, Koslata)
- Community Action Plan for DRR (Sahabudin, BPBD Central Lombok)
- Community Early Warning System (Arya, Konsepsi)

In the training program, the officers of the Province and Central Lombok Regency gave a lecture based on their learning in the workshop in June 2014. With an introductory explanation before the training as well as some support during the training by the Project team, they could successfully deliver the lectures and enhanced their capacities through the experience, although there was some insufficient information. Further, the participation of Ms. Anny Isigiati, the counterpart of the BNPB increased awareness of the importance of CBDRM activities. BPBD officers of the regencies/municipalities other than the pilot regency also attended the program and learned how to conduct the CBDRM activities. (Please refer to the training report for details.)

Picture 2.6.11 CBDRM Training for Community Leaders

5) Selection of the Pilot Community to Conduct CBDRM Activities in the Pilot Regency

Through the discussion in the training for community leaders held October 29-30 in Central Lombok Regency, Kuta village was identified as the only area that needed to consider tsunamis in regards to tourists. After the discussion with BPBD Province and the BPBD Central Lombok, Kuta village was selected as a pilot village for the Project activities.

6) CBDRM Activities in the Pilot Community

The CBDRM Activities in the Pilot Community was started in November 2014. The flow of the activities is shown in Table 2.6.18 according to a discussion with the BPBD Province and BPBD Central Lombok. The activities are outlined below. (Please refer to the workshop reports for details.)

Table 2.6.18 Implementation Flow of the CBDRM Activities in West Nusa Tenggara

Date		Contents of Activities
Nov. 2014	First Workshop (2 days)	Socialization HVC (hazards, vulnerabilities, capacity) Assessment Community-based DM Mapping
Nov.-Dec. 2014	Follow-up Activities	Finalization of Community DM Map
Jan. 2015	Second Workshop	Discussion of Community DM Plan
Jan.-Mar. 2015	Follow-up Activities	Formulation of Community DM Plan
Apr. 2015	Third Workshop	Discussion of Implementation of DM Exercise based on Draft DM Plan Practical Exercise of the Skills required for the DM Exercise
Apr. 2015	DM Exercise	Implementation of DM Exercise
Apr.-Sep 2015	Follow-up Activities	Review of the Result of the DM Exercise and Discussion of Finalization of the DM Plan based on the review

♦ The First Community Workshop on CBDRM

The first community workshop on CBDRM in the selected pilot village, Kuta Village, was conducted over two days, November 10-11, 2014. The residents who play important roles in community activities and are considered to become members of the DRR Forum or DM Volunteers such as religious leaders, leaders of women's groups, and leaders of youth groups were invited as participants. The participants learned basic knowledge of tsunamis, reviewed the current disaster risk management system and situation in the community (Community Risk

Assessment), conducted a field survey and community-based hazard mapping, and discussed an early warning system for the community. In the workshop, the BPBD Central Lombok played leading roles in organizing the event and facilitating the program.

Since the participants did not have much information or knowledge of tsunamis and experiences for the DRR activities in the community before joining the workshop, they felt hesitant to join the discussion and activities at the beginning. Through various discussions, they enhanced the understanding of the DRR and became more active during the latter part of the 2-day workshop.

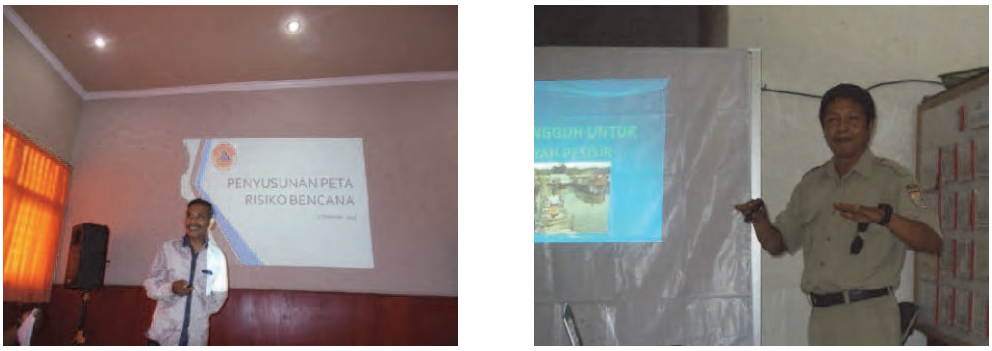
The facilitating and lecturing done by the officers of BPBD Central Lombok made their best efforts to coordinate the workshop, although there are still some points that need to be improved. Through the experience, they enhanced their knowledge and technical skills to promote future CBDRM activities in their areas.

Since not many officers from the BPBD regencies could join the workshop as observers, the team decided to conduct a follow-up training for them.

Picture 2.6.12 First Community Workshop on CBDRM (West Nusa Tenggara)

♦ Training of Trainers on CBDRM for BPBD Officers

The Training of Trainers on CBDRM for BPBD Officers was conducted on December 11 for the BPBD in Lombok Island and the 23rd-24th for the BPBD in Sumbawa and Bima Islands. The review of the CBDRM activities in West Nusa Tenggara and the technical advice for facilitators was presented to the participants. In addition, each of the participants was requested to conduct a trial lecture by themselves using the lecture materials that were used in the actual programs and received advice and pointers about how to improve their teaching and leading an active discussion.



Picture 2.6.13 Training of Trainers for BPBD Officers

The program, which was not conducted in North Sulawesi, was very effective in enhancing the capacity of the BPBD officers to conduct the CBDRM activities since the program was conducted after some community activities and the participants could have more practical awareness of the topics.

♦ The Second Community Workshop on CBDRM

The Second Community Workshop on CBDRM was conducted on January 19, 2015, at Kuta Village. Many of the people who joined the workshop in November 2014 attended the workshop and actively joined the discussion. As observers, the counterpart officers of Output 4 from nine BPBD regencies/municipalities participated in the event. Ms. Anny Isgiati also came from Jakarta to join the workshop. In the morning session, the lecture on formulation of a community DM plan and action plan was provided, and in the afternoon session, the participants discussed a DM plan and action plan for Kuta Village in groups.

Picture 2.6.14 Second Community Workshop on CBDRM (West Nusa Tenggara)

♦ Installation of Tsunami Evacuation Sign Boards and Development of the Poster for Announcement of the DM Exercise

In January 2015, the residents of Kuta village and the counterpart officers of the BPBD Central Lombok had a discussion regarding the installment of tsunami evacuation sign boards to be utilized in the DM exercise scheduled in April. Next, since the planned locations for installing the signboards were on private property or land along public roads, they started the necessary coordination for the installment. As for private property, the head of the village negotiated with

the owners for installation; and as for the land along the public roads, they applied to the Integrated Service Department of the Central Lombok Regency for approval of the installation. Further, they discussed the installation and management of the signs with the tourism association.

After they could get all the required approval, they made signboards for ten locations and installed them in the designated places in early April.

Picture 2.6.15 Installation of Tsunami Evacuation Signboard (Left and Center)/Locations of the Sign Boards (Right)

Also, posters and leaflets to announce the implementation of the DM exercise to residents who are not joining the event were developed.

♦ The Third Community Workshop on CBDRM

The third community workshop on CBDRM was conducted on April 13, 2015, at Kuta Village. The workshop aimed to review and finalize the community DM plan, including an early warning system, a community hazard map, and the roles and responsibilities of the DRR Forum and DM Volunteers. Also, it was intended to enhance the coordination capacity of the stakeholders and raising awareness of tsunami risk of the residents of the community. The participants provided the lectures on the implementation of a community evacuation exercise and discussed preparation for the exercise. 28 residents who are the members of the DRR Forum or the DM Volunteers, 8 officers from the BPBD Central Lombok, 2 officers from SAR, and individuals from hotels attended the workshop and enhanced their understanding of the evacuation exercise. They also practiced skills related to the exercise and discussed the procedure of the activities in the exercise.

In the morning session, the lectures by the JICA Project team and BPBD West Nusa Tenggara province were provided for understanding the purpose of the evacuation exercise, items to be considered and discussed for the implementation of the exercise, and preparation of emergency supplies to be taken along in case of evacuation. In addition, the video of the evacuation exercise conducted in the Project activities in North Sulawesi was shown to facilitate further understanding of the participants. Then, after the explanation of the flow of the exercise to be conducted, the participants started the group discussion on the activities to be done by each DM

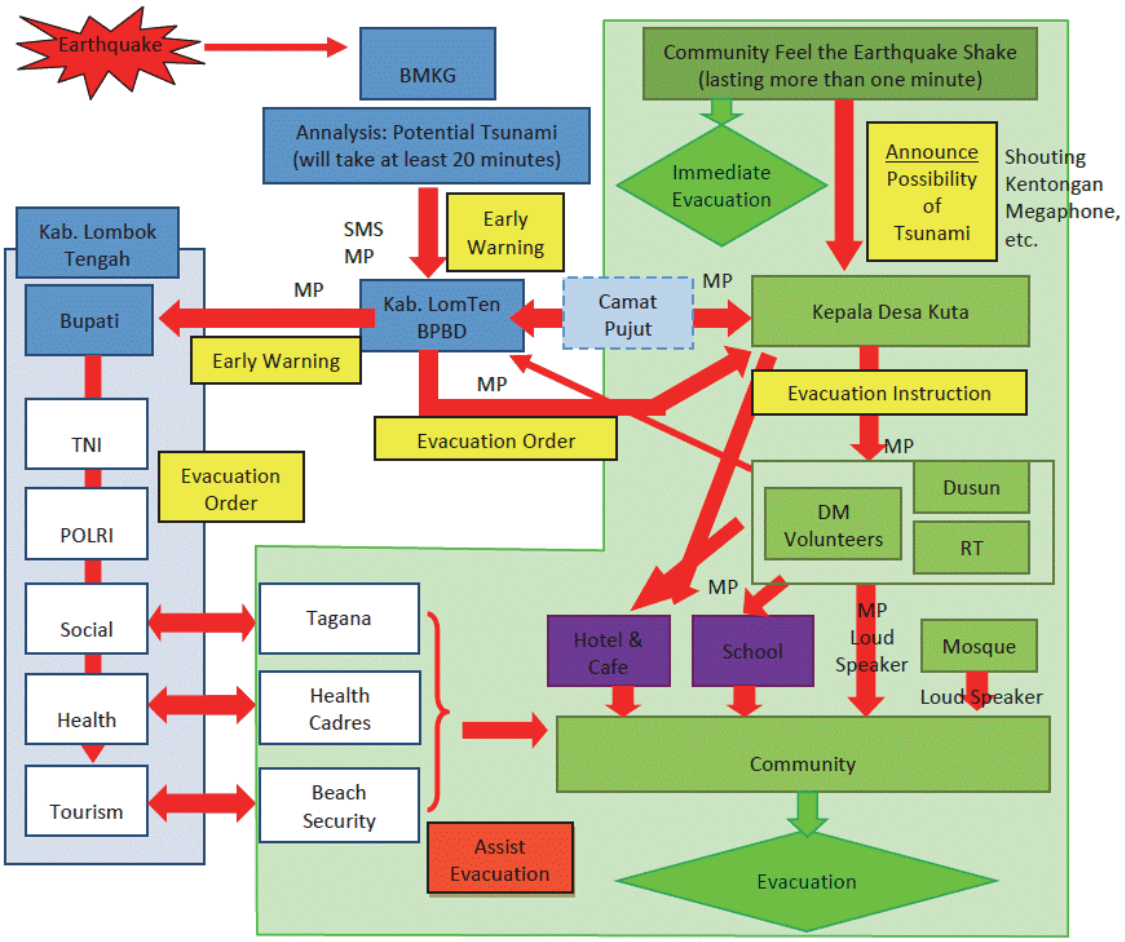
Volunteer group (early warning, evacuation support, management of the shelter, and first aid and medical support).

In the afternoon session, the activities of each DM volunteer group were finalized and each group presented the results of the discussion. Finalized flow charts and procedures of the activities are shown in Figure 2.6.16, Table 2.6.19, and Table 2.6.20. Following the presentation, lectures and practical exercises on first aid in order to learn the medical treatment necessary in an emergency was conducted by the lecturers of the Red Cross. Also, the members of the TAGANA (emergency operation volunteer team), which was organized by the Social Department, made a demonstration of the establishment of the family tent and gave a practical explanation for setting up the tent.

At the end of the workshop, posters and leaflets to announce the evacuation exercise to the residents were distributed. The participants from the village were asked to widely announce the event to residents by the date of the exercise.

Picture 2.6.16 Third Community Workshop on CBDRM (West Nusa Tenggara)

Picture 2.6.17 Signboard (Left) and Poster (Right) for Announcing the Tsunami Evacuation Exercise



1. At 10.30 community and tourists in the southern part of Lombok feel the large and long lasting earthquake shake (Magnitude 8.0). Tsunami will hit 20 minutes after the first quake and second and thrid quake will come every 10 minutes.
2. BMKG takes at least 20 minutes to issue early warning for tsunami potential.
3. Head of village and DM Volunteers will immediately start to evacuate to designated evacuatation sites
4. DM Volunteers inform the community as they evacuate by shouting, megaphones, kentongan, and others.
5. Other community members, tourist and hotel/restaurant staff start to evacuate immediately
6. Tagana Volunteers, Health Caders, Beach Security and Police who are living in the village also assist evacuation of people, especially for vulnerable people in the course of evacuation sites using police sirene, ambulance sirens and loud speaker.
7. Head of Village report to the BPBD about the evacuation process and request support for the evacuation
8. Local government officers will be arriving at the evacuation site after people's arrival in the evacuation site due to the disance from Praya to Kuta.
9. Local government officers support for providing health services and food distribution to the community
10. BMKG issues a end of Tsunami warning (*only the drill purpose, usually the warning will be released after a day) and search and rescue activities will be started.

Figure 2.6.16 Information Flow for the Evacuation Exercise in Kuta Village

Table 2.6.19 Flow of Activities in Evacuation Exercise in Kuta Village (1)

	General/ Others (Situation)	BPBD Lombok Tengah (Headquarters and Quick Response	Head of Kuta Village	Early Warning Volunteers + Beach Security	Evacuation Volunteers + Police	Shelter Volunteers	Health and First Aid Volunteers + Health Cadres from local Health Clinic
Time (estimated)							
	<Pre-Condition 1> Increase of seismic activity in the south of Lombok						
	<Pre-Condition 2> Domestic and international tourists visit Kuta beach for holiday and strong concentration of people in the coastal area.						
8:00 – 9.00	(Registration)						
9.00 – 9.30	(9:00 – 9:30 Opening of the DM Drill at the Pasar Seni in Kuta and Briefing of the Drill for the final check of the procedure)						
9:30- 10.30	BPBD and other relevant organizations (Social dept, Health Dept, PMI) start preparation for the evacuation site at Temporary Evacuation					(by 10:00 Food Preparation)	
10.00 – 10.30			Return Back to the Village Office	Return Back to House/ Work Place for Stand	Return Back to House/ Work Place for Stand	Return Back to House for Stand By	Return Back to House/ Work Place for Stand
10:30-10:32	<MC and some speakers at the Announcement of occurrence of earthquake magnitude		Head of Village feels the earthquake	Feel the earthquake	Feel the earthquake	Feel the earthquake	Feel the earthquake
10.32 – 10.50			Head of Village asks DM Volunteers to immediately take evacuate actions using mobile phone	After the Shake stops, Early Warning Volunteers start to immediately evacuate while disseminating evacuation advice by shouting, using kentongan, loud	After the Shake stops, Evacuation Volunteers with police start to immediately evacuate while spreading the evacuation advice by shouting and using sirens (police).	After the Shake stops, Shelter Volunteers start to immediately evacuate while spreading the evacuation advice by shouting, using kentongan along the	After the Shake stops, Health Volunteers and Cadres start to immediately evacuate while disseminating the evacuation advice by shouting, using ambulance sirens
			Head calls to Heads of Sub village (Dusun) at the risk areas		Based on the pre-arrangement, help vulnerable members. (make sure the time is limited and no time to go to the places far		
				Beach Security in the coastal areas informs to the tourists in the coast about the evacuation advices		Prepare the evacuation Site ready to evacuees once they arrive at the evacuation site	Prepare for providing first aid services to the evacuees at the evacuation site
			Head informs to BPBD for unusual earthquake shake at the Kuta		Urge hotels and restaurant staff to immediately evacuate		
		BPBD receives a call from Head of Kuta Village about the unusual long lasting					
10:50 -10:52	First Tsunami Wave Hits the coastal area (2-3 minutes reach the maximum inundation point)						
10.50 – 10.52		BPBD receives a call from Head of Kuta	Head calls to BPBD on the evacuation situation			Make sure the evacuation site is	
10.50 – 11.00	BMKG issues an early warning for Tsunami and send the SMS to relevant BPBD	BPBD receives information from BMKG on the risk situation of "Tsunami Potential" at Kuta Beach		Early Warning Volunteers inform community not to leave the evacuation sites because second	Evacuation Volunteers and police prohibit anyone to enter the tsunami zone and leave the evacuation site	Shelter volunteers starts to count the number of evacuees and vulnerable people	Health Team and Health Cadres provide First Aid to Injured victims due to earthquake in evacuation site
	<MC> Announcement of the Issuance of the Tsunami early warning by BMKG	BPBD Office decides to issue evacuation orders to Kuta Village after the consultation		Gathering information from BMKG on the earthquake and Tsunami		Collecting information of the needs of the evacuees	
			(Head of Village move to Evacuation Site)				

Table 2.6.20 Flow of Activities in Evacuation Exercise in Kuta Village (2)

	General/ Others (Situation)	BPBD Lombok Tengah (Headquarters and Quick Response Team)	Head of Kuta Village	Early Warning Volunteers + Beach Security	Evacuation Volunteers + Police	Shelter Volunteers	Health and First Aid Volunteers + Health Cadres from local Health Clinic
Time (estimated)							
11.00 – 11.02	Second Tsunami Wave Hit the Coastal Area <MC> Announcement of the Second Tsunami Wave						
11.02 – 11.10		BPBD receives call from head of village on the needs for the support and orders to the relevant	The head of village informs the Head of BPBD the number of Evacuees that needs support in evacuation			Provide Data of number of evacuees to Head of Village	Continue to provide support to evacuees who are injured and sick
11.10 – 11.12	Third Tsunami Wave Hit the Coastal Area <MC> Announcement of the Third Tsunami Wave						
11.15 – 11.20	BMKG Issue the end of the tsunami warning <MC> Announcement of the Release of	BPBD informs to head of village on the release of Tsunami warning	The head of village receives the information on the release of the Tsunami	Confirm the information on the release of warning of Tsunami	Prepare for search and rescue		Prepare for supporting search and rescue activities
	General/ Others (Situation)	**BPBD Lombok (Headquarters and Quick Response**	**Head of Kuta Village**	**Early Warning Volunteers**	**Evacuation Volunteers**	**Shelter Volunteers**	**Health and First Aid Volunteers**
11.15 – 12.15		Start Search and Rescue for Victims of Earthquake and Tsunami by joint government rapid response team in collaboration with Evacuation and					
11:15		Search for Victims and Rescue community and tourists in tsunami affected area		Early Warning Volunteers supports other volunteer teams in evacuation site	Assist the local government in search and rescue activity	Establish field kitchen for food distribution	Health Volunteers assist the local government in search and rescue for the
12.05		BPBD Lombok Tengah Collect Information – Rapid Assessment	Head of village support BPBD in verifying the total damage in Kuta village		Evacuation Volunteers assess the damages in the village in gives information to the head of village	Shelter volunteers assist the preparation of the food distribution and distribution of relief items by local	Health volunteers assess the health and environment conditions in the village in gives information to the head
12.1	Making Rapid Assessment Report	BPBD Quick Response Team reports to BPBD Lombok Tengah on the damage situation				Make situation in the evacuation site calm	Coordinate with hospital to send serious inured victims
		BPBD Lombok Tengah reports to BPBD Province on the completion of the evacuation of the				Receive an data relief items from local government	Provide further health services in the evacuation site
12:10-12:15		BPBD Lombok Tengah reports to Head of Kab/Kota (Mayor) and BPBD Province on the report (*By -> End of Actions					
12.15 – 12.30	Distribution of Food and relief supplies (Family Kits and others)						
12:30-13:00	12:30 – 13:00 Closing Ceremony of the DM Drill at the Evacuation Site (@Pasar Seni) to review the actions of community people						
13:00-14:00	Evaluation Meeting among DRR Forum Members						

Task (43): Implementation of Disaster Management Drills at the community level in accordance with the CBDRM activities in the pilot areas (North Sulawesi province)

♦ Preparation Meeting for the Evacuation Exercise

On April 17, 2015, the final preparation meeting for the evacuation exercise was conducted with the participation of the officials of the relevant departments of the Central Lombok Regency, members of the DRR Forum and DM Volunteers of Kuta village, and others from NGOs, etc. As uniforms for the exercise, team T-shirts for DM Volunteers and working vests for the officials from BPBD and other relevant organizations were distributed. Also, name tags to identify roles and responsibilities in the exercise were provided to them. Further eco-friendly bags with an illustration of the emergency supplies were handed out to the 150 residents who joined the evacuation exercise.

In addition, the practical exercise of first aid which some of the participants couldn't have enough time to practice in the previous workshop was conducted. A dry run of the first part of the exercise was also done to confirm the flow of activities.

Picture 2.6.18 T-shirt for DM Volunteers and eco-friendly bags for Participants (Left)/working vests for Local Government Officers (Right)

♦ Evacuation Exercise

Beginning at 9 a.m. on April 18, 2015, the tsunami evacuation exercise for the coastal areas of Kuta Village was conducted. Around 150 residents, 52 elementary school students, 10 staff members from the hotels located in the Kuta beach, 67 local government officials from Central Lombok Regency, 10 officials from BPBD West Nusa Tenggara province, 2 officials of BMKG, 4 officials of the SAR Department, and 15 members of the Red Cross participated in the exercise. As observers, 15 officials from other BPBD regencies/municipalities, 5 people from the University of Mataram, 4 people from JICA Terminal Evaluation Mission Team, and 14 people from the JICA Project team joined the event. Besides the invited participants from the village, some foreign tourists who were at the beach joined the evacuation activity.

The exercise was started by the opening remarks by the head of BPBD Province, and the representative from the JICA Terminal Evaluation Mission Team, and the Vice Mayor of the Central Lombok Regency. After some precautions were delivered and the participants moved to the locations of the respective starting points, the actions were started with the announcement of the

occurrence of the earthquake at 10:30 a.m. The process of the activities in the exercise was as shown in the pictures below. Almost all the planned activities were carried out smoothly. (Refer to the report of the exercise for details.)

Picture 2.6.19 Process of the Activities in the DM Exercise in Kuta Village

The evacuation actions were completed ahead of schedule, and the exercise program was concluded early. In the closing ceremony, the representative of the JICA Terminal Evaluation Mission Team made comments on the following points: it is important not to run; instead, walk at a quick pace when evacuating in order to avoid injuries and accidents. Additionally, the program for children at the shelter was very effective in order to keep the children there and not make them nervous. He mentioned that he also learned good practices in the exercise.

After the closing ceremony, the evaluation meeting for the actions of the DM Volunteers was conducted. The comments for improving future actions made by the evaluators were as follows:

- Delivery of the tsunami early warning was properly done using various tools. Children also evacuated with loud announcing to the residents.
- It was dangerous when the participants, especially school students, ran to the evacuation site. To avoid accidents and injuries, we need to walk at a quick pace when evacuating.
- There were a few volunteers who helped vulnerable people such as old persons. We should take care of them.
- The village office was crowded with many cars and people. We need to properly coordinate and distinguish routes and places for cars and people.
- Communication methods and tools for the head of the village were not prepared. We need to ensure clear methods and tools for him.
- The format for confirming the number of the evacuees and injuries was not prepared. To avoid missing information, a proper format should be prepared in advance.
- Distribution of food and water should be done at one time to ensure equal treatment of the evacuees and avoid complaints.
- In the exercise, the tent by the Health Department was established in advance, which made medical treatment available to evacuees arriving earlier than scheduled. In case of a real disaster, we need to take care of them only by community members at the first stage. We need to think about the case and prepare well.
- It was great for the person who continued the research of tsunami risk reduction in the area that the tsunami evacuation exercise was realized. Based on the lessons learned in this exercise, we would like to support further establishment of a tsunami DRR system.

It was the first large-scale tsunami evacuation exercise for residents and stakeholders, aiming at teaching the importance of self-evacuation actions by the residents at the start of the exercise (occurrence of the earthquake) and identifying required actions for safe evacuation. The officials in the BPBD regency and relevant government organizations had a preconceived notion that the evacuation action would be taken after the official evacuation order as the same as other types of disasters and took time to understand the idea of this exercise as well as made some confusion during the exercise. Through this experience, they could learn the importance of evacuation before the official evacuation order in case of a tsunami in this area. The exercise also provided opportunities to identify the points to be improved, such as safety considerations for evacuation actions and necessity of assurance of communication methods and tools for the head of the village.

♦ Review and Finalization of the Community Hazard Map and Village DM Plan

Based on the comments of the evacuation exercise and other findings through the community activities, the draft community hazard map and DM plan were reviewed and finalized by the members of DRR Forum and DM Volunteers. (Figure 2.6.17, Table 2.6.21)

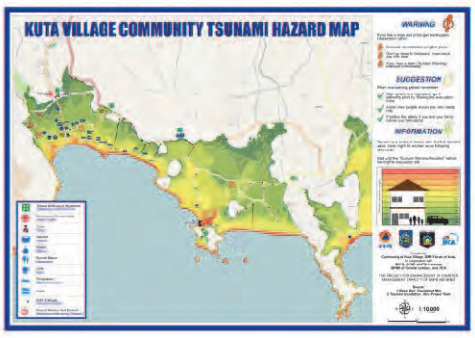


Figure 2.6.17 Finalized Community DM Map

Picture 2.6.20 Installed Map

Table 2.6.21 Finalized Kuta Village DM Plan

	**Contents** Chapter 1: General Chapter 2: General Description of Disaster Chapter 3: Disaster Risk Assessment Chapter 4: Disaster Management Policy Chapter 5: Priority Focus and Program Chapter 6: Community Action Plan Chapter 7: Monitoring, Evaluation, and Revision Chapter 8: Closing	**Attachments** I: Village Disaster Risk Map II: Members of Disaster Risk Reduction Forum in Kuta Village III: List of Disaster Management Volunteers in Kuta Village IV: Emergency Phone Numbers in Kuta Village V: Important Phone Numbers in Central Lombok VI: Community-based Early Warning System

Task (45): Re-examination of "Manuals for CBDRM" (West Nusa Tenggara province)

Based on the CBDRM activities done in West Nusa Tenggara, the compilation of good practices drafted using the experiences in the Project activities in North Sulawesi as mentioned in task (32), was reviewed, edited, and finalized as "Activities for 'Disaster Resilient Village' Program: As a Best Practice Model for BPBD Practitioners" taking into consideration easy utilization by the BPBD officers (Table 2.6.22). The files of reference documents were saved in DVDs and attached to the document.

Table 2.6.22 Contents of Compilation of Good Practices of the Activities for "Disaster Resilient Village" Program

	**CONTENTS** Chapter 1: Introduction 1. Introduction 2. General outline of the pilot activities in the JICA project Chapter 2: Outlines of the activities in each step 1. Step 1: Introductory workshop on CBDRM activities/disaster resilient village program 2. Selection of the pilot regency/municipality 3. Step 2: CBDRM training for community leaders in the selected regency/municipality 4. Selection of the pilot villages 5. Step 3: CBDRM activities in the selected pilot villages Chapter 3: Outlines of each session/activity 1. The concept of a "disaster resilient village" 2. History of disasters and/or disaster risk management system in the regency/municipality 3. Hazards, vulnerabilities, and capacity assessment (HVCA) 4. Community-based hazard mapping with the town watching activities 5. Community-based early warning system 6. The DRR forum and DM volunteers in the village 7. Disaster management (DM) planning at the village 8. Contingency planning for the village 9. Disaster management exercise (DM exercise) 10. Revision/improvement of the DM plan & hazard map (follow-up activity) 11. Additional lectures for CBDRM workshops in the JICA project
	DVD-1 Folder-1: Regulations, Template of DM Plan, Sample DM Plans, and Sample Maps Folder-2: Sample Presentations and Explanation Documents Folder-3: Administrative and other relevant documents for community workshops Folder-4: Reference Books and Documents for CBDRM DVD-2 DM Exercise in North Sulawesi DM Exercise in West Nusa Tenggara DM Exercise in West Nusa Tenggara (short version)

2.7 Output 5

(1) Nationwide dissemination activities are implemented.

(2) Method of Technical Transfer

The method of the technical transfer for the activities of Output 5 is as follows:

Task (46): To improve Technical Guideline for formulation of the RDMP to be utilized as a reference document for the BNPB

The JICA Expert Team finalized the Technical guideline for formulating the RDMP as Version 2.0 through the activities in Output 3 for nationwide dissemination.

Version 1.5 of the Technical Guideline was completed in August 2014 by revising version 1.0 of the guideline which was formulated through the activities in North Sulawesi province. However, at the same time, BNPB was about to revise the "Guidelines for Regional Disaster Management Planning," 2008, No. 4. Head of BNPB regulation, and formulate a "National Disaster Management Plan 2015-2019" to be the basis of the Regional Disaster Management Plan. Because of the above, the Technical Guideline for formulating an RDMP was necessary to adapt to the structure and contents of the Head of the BNPB regulation and National Disaster Management plan. Therefore, the Guideline was revised again and finalized in September 2015 based on the discussion with BNPB and the document related to the revision of the Head of the BNPB regulation and National Disaster Management plan.

A finalized Technical Guideline is positioned as the Annex of the "Guidelines for Regional Disaster Management Planning," 2008, No. 4. Head of BNPB regulation, with Foreword by Head of BNPB, and was distributed and explained for nationwide dissemination in the disaster risk reduction month events of October 2015, which is shown in Task (47).

The summary of the “Technical Guideline for Formulation of the Regional Disaster Management Plan for Regencies/Municipalities” is shown as follows:

The Technical Guideline consists of a main document and a CD. In the CD, the RDMP of Dompu regency as “The Sample of Regional Disaster Management Plan” and an Excel file of “RDMP Formulation Support Application” are stored. Contents are shown in Table 2.7.1.

Table 2.7.1 Summary of Technical Guideline for the Formulation of a RDMP

Component		Contents
Technical Guideline for Formulation of a Regional Disaster Management Plan for Regencies/Municipalities	Technical Guideline for Formulation of a Regional Disaster Management Plan for Regencies/Municipalities	The following contents are included based on the contents of the actual RDMP so that BPBD staff can formulate a plan for themselves. • Contents of description • Method and procedure of description (How to get information, etc.) • Example of description • Notes and reference information for description, etc.
	Sample Regional Disaster Management Plan	This document is the actual Regional Disaster Management Plan formulated based on the Technical Guideline. This document helps for understanding the overall picture of the RDMP.
	RDMP Formulation Support Application	This is the application to consider necessary activities, roles, and responsibilities, and to create a format to formulate the RDMP and Action plan. It is created in Excel file so that BPBD officials can utilize it easily.

The summary of the Technical Guideline is shown in Figure 2.7.1; the summary of the RDMP Formulation Support Application is shown in Figure 2.7.2.

Figure 2.7.1 Summary of the Technical Guideline for formulation of the RDMP

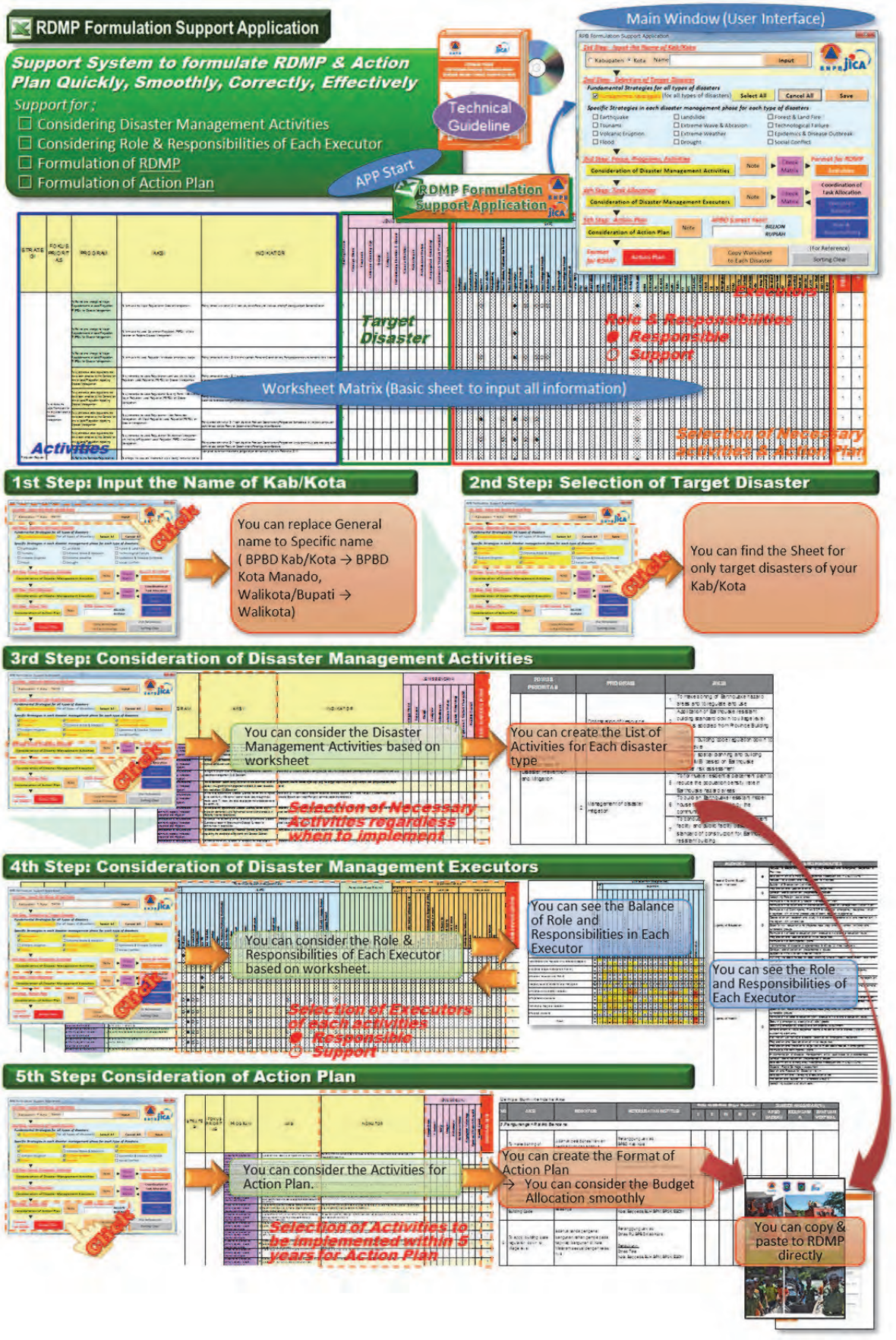


Figure 2.7.2 Summary of the RDMP Formulation Support Application

Task (47): To participate in events hosted by the BNPB to explain effective utilization of the Technical Guideline for formulation of the RDMP

The JICA Expert Team participated in and presented at four events to explain the effective utilization of the Technical Guideline for formulation of the RDMP.

The list of events in which the JICA Expert Team participated is shown in Table 2.7.2. The JICA Expert Team not only made the presentation for the Technical Guideline but also implemented the dissemination activities by the explanation of overall activities of this project as part of the nationwide dissemination of these events.

Table 2.7.2 List of events for the Technical Guideline for formulation of the RDMP

Date	Location	Event	Contents
March 19, 2014	Padang, West Sumatra province	Sub-event of a large-scale field training exercise	Introduction of Project activities, presentation of lessons learned from the activities in the pilot areas
October 15, 2014	Bengkulu province	DRR month event of BNPB	Introduction of Project activities, presentation of best practices, the Technical Guideline for formulation of the RDMP
January 8-9, 2015	BNPB Sentul Office	Training of Facilitators on the Technical Guideline for formulation of the RDMP	Explanation and practice of the Technical Guideline for formulation of the RDMP
October 17, 2015	Solo, Central Java province	DRR month event of BNPB "Workshop on the Formulation of RDMP"	Explanation and demonstration of RDMP formulation by utilizing Technical Guideline for formulating the RDMP

Training of Facilitators on the Technical Guideline for formulating the RDMP was held for the BNPB staff for 2 days: January 8-9, 2015. About 30 staff members participated from several departments of the BNPB. On the 1st day, the JICA Expert Team explained the Technical Guideline, RDMP Formulation Support Application, and implemented the practice on how to utilize them. The 2nd day implemented group training. Specially, a target disaster was determined for each group, and the group tried to formulate the main part of RDMP by utilizing the Technical guideline and application, and then each group made a presentation about the result that was formulated. In the presentation, the effectiveness of the guideline and application was shown as well as comments for improvement. The JICA Expert Team revised the guidelines according to these comments in the process of finalization which is shown in Task (46).

Picture 2.7.1 Photos from the Training of Facilitators on Technical Guideline for formulation of RDMP (January 8-9, 2015)

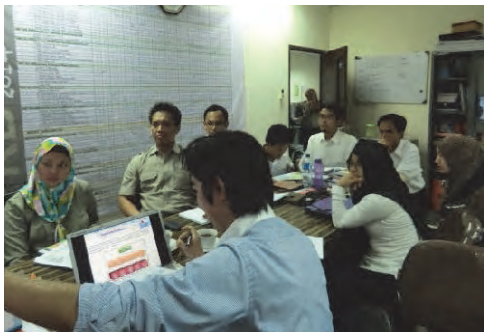
"Workshop on the Formulation of RDMP" was implemented for all BPBD officials in all of Indonesia at the DRR month event of BNPB as the main event for nationwide dissemination on October 17, 2015, in Solo. The capacity of the venue was 60 people, but more than 130 people from BPBDs and other related organizations participated in the workshop. In the workshop, the JICA Expert Team gave a presentation about the introduction and utilization of the Technical Guideline and disaster risk assessment for RDMP and demonstrated the RDMP Formulation Support Application. In addition, Mr. Alfindo, Head of Sub Div: Finance, BPBD Bitung in North Sulawesi province gave a presentation about the good practice for the implementation of RDMP.

Furthermore, the finalized Technical Guideline was distributed to BPBDs. The JICA Expert Team distributed it to about 215 BPBDs in this event, and for the BPBDs in the rest of Indonesia, the BNPB will follow-up for distribution.

Picture 2.7.2 Photos of Workshop on the Formulation of RDMP (17th October, 2015) and Distribution of TG

Task (48): Support for preparation of general guideline for disaster risk assessment for regencies/municipalities level

The updating of the general guideline for disaster risk assessment prepared by the BNPB is currently underway in order to fit regencies/municipalities level disaster risk assessment. There is the past background that the existing general guideline was prepared mainly for the national and province level and did not consider the regencies/municipalities level. Based on the existing general guideline, the scale of mapping for regency/municipality level indicated as 1:25,000 or 1:50,000 and the minimum requirement of disaster risk assessment are indicated up to the village level. However, actually, it is difficult to accurately follow the methodology based on the existing general guideline for implementing regency/municipality-level disaster-risk assessment, because there are no 1:25,000 or 1:50,000 scale hazard maps prepared by responsible agencies for a few types of disaster. And in some cases, it is not easy to gather the village-level statistical data, depending on the targeted area. Therefore, the BNPB requested that the JICA expert team to input the technical advice to deal with countermeasures for above issues based on the actual experiences through the pilot activities.



The status of information sharing about considerations and concreate countermeasures for regency/municipality-level disaster-risk assessment based on the results of the pilot activity.

In April 2014, the meeting with BNPB for information sharing about considerations and concrete countermeasures related to gathering the necessary data and processing spatial data with GIS software based on the results of the disaster-risk assessment to be implemented by the JICA expert team in North Sulawesi province was held at the BNPB office. And since June 2014, the JICA expert team has periodically updated the new knowledge and experiences to be achieved through the second pilot activity in West Nusa Tenggara province for additional technical advice. Those inputs from JICA expert team were utilized for updating activities of the general guideline by BNPB.

The technical method of disaster risk assessment that was applied by the JICA expert team through the two pilot activities was summarized systematically in the latter half of the technical guideline for creation of hazard and risk maps for the regency/municipality level (Ver.2.0) as a reference for implementing disaster risk assessment by regencies/municipalities' BPBDs staff in Indonesia The part of disaster risk assessment in this technical guideline is divided into seven chapters made up of one introduction and six technical explanations in consideration of the main flow of the disaster risk assessment procedure: (1) Collecting necessary data for DRA, (2) setting a mesh-grid for disaster risk analysis using spatial data, (3) quantification of hazard, vulnerability and capacity data, (4) disaster risk mapping, (5) estimation of the amount of population and facilities inside of high risk area, and (6) development of a matrix of disaster risk assessment for clarification of high risk villages. Each chapter contains significant technical advice about how to obtain necessary data and how to process spatial data with GIS software on the assumption that GIS engineers can implement disaster risk analysis by themselves without detailed instruction from the BNPB. The contents of this technical guideline was introduced to provincial and regency/municipality BNPBs at the special session for Introduction and Training on Technical Guideline for formulation of a Regional Disaster Management Plan and Action Plan for an annual disaster day event to be held by BNPB in Solo on October, 16, 2015.

Technical guideline for creation of hazard and risk maps for regencies/municipalities level (Ver 2.0)

Task (49): Utilization of the methodology for creating earthquake hazard maps to be implemented for task (8) under the Output 2 activity

Since there was difficulty utilizing large-scale earthquake hazard maps prepared by Team 9 (one of the main authorities for earthquake hazard in Indonesia) for regency/municipality-level disaster risk assessment, the JICA Expert Team proposed a new methodology for creating 250 m mesh earthquake hazard map based on the topographical classification and estimation of AVS30 distribution for each topographical class. At the request of BNPB, JICA's proposed method to estimate AVS30 distribution for an earthquake hazard map was introduced at the third International Earthquake Management Symposium to be held in Yogyakarta in December 2013 as the first opportunity to explain it to authorities for earthquakes in Indonesia. After this symposium, the BNPB indicated their intent to utilize an earthquake hazard map based on JICA's proposed method as one of input data for regency/municipality-level disaster-risk assessment, and they suggested involving authorities for an earthquake hazard in Indonesia in series of discussions and consultations so that JICA's proposed method would be established as one of the standard methods to create an earthquake hazard map for regency/municipality-level disaster-risk assessment.

Form June 2014, several workshops and individual meetings with authorities for earthquake hazards in Indonesia were implemented continuously in order to deepen the understanding of JICA's proposed method for key Indonesian individuals. Table 2.7.3 summarizes major activities to be implemented by the JICA Expert Team.

Through those activities, the JICA Expert Team gained agreement from Prof. Dr. Ir. Masyhur of Institute Teknologi Bandung, who is the team reader of Team 9 and the person in charge in Badan Geologi, to utilize the distribution map for shaking intensity at the surface in the entirety of Indonesia, based on JICA's proposed method as the input data for regency/municipality-level disaster-risk assessment. The detailed methodology of calculation of shaking intensity at the surface is explained in the chapter for earthquake hazards of the Technical Guideline for creation of hazard and risk maps for regencies/municipalities (Ver. 2.0).

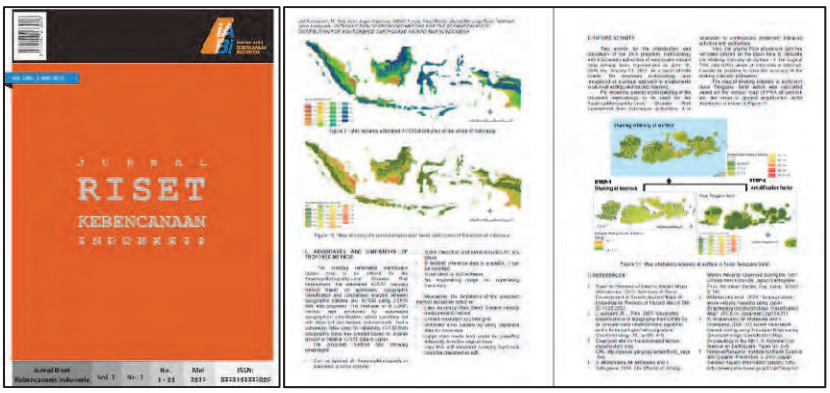
Table 2.7.3 Major Activities to deepen understanding of JICA's proposed method for key Indonesian individuals

Date	Contents	Details
Dec. 18, 2013	Participation of the third international earthquake management symposium	As requested by BNPB, the JICA Expert Team participated in the third international earthquake management symposium in which a number of experts for earthquake disaster in Indonesia attended, and JICA's proposed methodology was introduced to them. The JICA Expert Team had the opportunity to discuss the proposed method with Prof. Mashur (ITB) who is a key person for developing an earthquake hazard map in Indonesia and team reader of Team 9.
Jun. 16, 2014	Focus group discussion for earthquake hazard assessment	To introduce JICA's proposed method to Estimate AVS30 Distribution for Earthquake Hazard Map to the related agencies and authorities for earthquake hazards in Indonesia, a focus group discussion for earthquake hazards assessment was held in Bandung, hosted by the BNPB. Prof. Mashur (ITB) introduced his latest study for micro-zonation in Jakarta Metropolitan City. Mr. Lilik (BNPB) indicated his intention to utilize the distribution map for shaking intensity at surface developed based on JICA's proposed method for the input data for regency/municipality-level disaster-risk assessment.
Jul. to Dec. 2014	Follow-Up Meetings with authorities in Indonesia	The JICA Expert Team set individual meetings with ITB (Team 9), BG, and other key Indonesian individuals to discuss JICA's proposed method to estimate AVS30 distribution for an earthquake hazard map and get necessary feedback.
Jan. 13, 2015	Technical Workshop For JICA Proposed Method	To deepen key Indonesian individuals' understanding of not only a theory of method but also spatial data processing of JICA's proposed method, the technical workshop was held in Jakarta to invite almost all national authorities for earthquake hazards in Indonesia (BG, BMKG, UGM, BPPT, PU, universities). As a result of this workshop, the main participants for national authorities and the BNPB decided to implement an internal meeting of all national authorities to discuss how to utilize the earthquake hazard map based on JICA's proposed method for the future.
May 2015	Publication of the Technical Paper for Proposed Method	The technical paper for JICA's proposed method prepared with the BNPB was published by the IABI Journal.
May 26 to 28, 2015	Earthquake WS in Yearly Scientific Meeting	As requested by the BNPB, the JICA Expert Team participated in annual earthquake workshop and scientific meeting as an observer. JICA's proposed method became one of the subjects of this workshop and it was confirmed that this method was widely recognized as one effective method for regional-level earthquake hazard mapping by participants from national authorities and several universities in Indonesia.
Jun. to Jul. 2015	Follow-Up Meetings with authorities in Indonesia	The JICA Expert Team gained agreement with Prof. Dr. Ir. Masyhur (ITB) and the person in charge from Badan Geologi to utilize the distribution map for shaking intensity at the surface all of Indonesia developed, based on JICA's proposed method as the input data for regency/municipality-level disaster-risk assessment.

The implementation status of Focus Group Discussion for Earthquake Hazard Assessment (Jun. 16, 2014)

The implementation status of follow-up meetings with authorities in Indonesia
Left: The status of discussion with Prof. Mashur (ITB). Right: The status of discussion with BNPB

The implementation status of the Technical Workshop For JICA's Proposed Method (Jan. 13, 2015).
After this workshop, the main participants for national authorities and BNPB discussed implementation at an internal meeting



The technical paper for JICA's proposed method prepared with the BNPB was published by the IABI Journal.