The Kingdom of Thailand
Department of Disaster and Mitigation, Ministry of Interior
Ministry of Education

The Project on Capacity Development in Disaster Management in Thailand (Phase-2)

FINAL REPORT

MAIN REPORT

APRIL 2014

Japan International Cooperation Agency
IDEA Consultants, Inc.
Earth System Science Co., Ltd.

GE
JR
14-110

The Kingdom of Thailand
Department of Disaster and Mitigation, Ministry of Interior
Ministry of Education

The Project on Capacity Development in Disaster Management in Thailand (Phase-2)

FINAL REPORT

MAIN REPORT

April 2014

Japan International Cooperation Agency

IDEA Consultants, Inc.

Earth System Science Co., Ltd.

LOCATION MAP

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ANNEXES (1/2)

ANNEXES (2/2)

ABBREVIATIONS

A	ADPC	Asian Disaster Preparedness Center
	ADRC	Asian Disaster Reduction Center
	AIT	Asian Institute of Technology
C	CA	Capacity Assessment
	CBO	Community Based Organization
	CD	Capacity Development
	C/ P	Counterpart
	CBDRM	Community Based Disaster Risk Management
	CDV	Civil Defence Volunteer
D	DDPM	Department of Disaster Prevention and Mitigation, MOI
	DIG	Disaster Imagination Game
	DMR	Department of Mineral Resources
	DOLA / DLA	Department of Local Administration, MOI
	DOPA	Department of Provincial Administration, MOI
	DPM	Disaster Prevention and Mitigation
	DPMA	Disaster Prevention and Mitigation Academy, DDPM
	DPMAC	Disaster Prevention and Mitigation Administrative Center
	DPM-Act	Disaster Prevention and Mitigation Act, 2007
	DPM-AP	Disaster Prevention and Mitigation Action Plan (= LAO DPM-AP)
	DPM Plan	Disaster Prevention and Mitigation Plan (National-/ Provincial-DPM Plan)
	DPMPO	Disaster Prevention and Mitigation Provincial Office, DDPM (= DPM-PO)
	DPMPB	Disaster Prevention and Mitigation Policy Bureau, DDPM
	DPMRC	Disaster Prevention and Mitigation Regional Centre, DDPM (= DPM-RC)
	DTRAC	Disaster Tracking Recovery Assistance Center
	DWR	Department of Water Resources
E	EOC	Emergency Operation Center
	ESAO	Educational Service Area Office, MOE
F	FGD	Focus Group Discussion
G	GIS	Geographic Information System
	GISTDA	Geo-Informatics and Space Technology Development Agency
H	HFA	Hyogo Framework for Action 2005 - 2015
I	Inter-TF	Inter Task Force
J	JAXA	Japan Aerospace Exploration Agency
	JCC	Joint Coordination Committee
	JICA	Japan International Cooperation Agency
L	LAO	Local Administrative Organization of specified locality, Local Authority (= Tedsabaan/Oobortor)
	LDPM	Local Disaster Prevention and Mitigation (action plan)
M	M/M	Minutes of Meeting
	MOA	Ministry of Agriculture
	MOE	Ministry of Education
	MOI	Ministry of Interior
	MOL	Ministry of Skills and Development in Ministry of Labor
N	NDWC	National Disaster Warning Center
O	OBEC	Office of the Basic Education Commission, MOE
	ODA	Official Development Assistance
	ONIE	Office of Non-formal and Informal Education Commission, MOE
	OPEC	Office of the Private Education Commission, MOE
	OTOS	One Tambon One Search and Rescue Team
	OVEC	Office of the Vocational Education Commission, MOE

P	PCDDM-2	the Project on Capacity Development in Disaster Management (Phase-2)
	PCM	Project Cycle Management
	PDM	Project Design Matrix
	PO	Plan of Operation
R	R/ D	Record of Discussion
	RESTEC	Remote Sensing Technology Center of Japan
	RICB	Research and International Cooperation Bureau, DDPM
	RID	Royal Irrigation Department
S	SAO	Sub-district Administrative Organization (= Oobortor)
	SNAP	Strategic National Action Plan on Disaster Risk Reduction
	SOP	Standard Operating Procedure
T	TF	Task Force
	TF-DMP	Disaster Management Planning Task Force (TF-1)
	TF-CBDRM	Community Based Disaster Risk Management Task Force (TF-2)
	TF-DMT	Disaster Management Training Task Force (TF-3)
	TF-DE	Disaster Education Task Force (TF-4)
	TF-FRM	Flood Risk Management Task Force (TF-5)
	TICA	Thailand International Department Cooperation Agency
	TMD	Thai Meteorological Department
	TTX	Table-top exercise
V	VDPM	Village Disaster Prevention Management Committee
W	WS, W/S	Workshop

1. Introduction

1.1 Background of the Project

The Government of the Kingdom of Thailand has contended with enhancement of disaster prevention and mitigation by having established such organizations as the Department of Disaster Prevention and Mitigation (DDPM), Ministry of Interior, responsible for general disaster management including disaster prevention and emergency response in 2002 and the Disaster Prevention and Mitigation Academy (DPMA) responsible for human resources development of DDPM staff in 2004. Moreover, the National Disaster Warning Center (NDWC) has been established to strengthen organizational setup for disaster management taking the Asian Tsunami in December 2004 as a turning point.

DDPM still is a relatively new organization and its capacity and experience are developing to cope with natural disasters in Thailand by collaborating with concerned various organizations. It is a pressing challenge to develop the capacity of DDPM.

The Project on Capacity Development in Disaster Management in Thailand (Phase-1) was carried out from August 2006 to August 2008 in response to the request of the Government of Thailand. The following outputs have been achieved by the Phase-1 Project:

- The system which collects, accumulates and utilizes information on disaster and disaster risk management is established in DDPM.
- Relationship and communication between DDPM and other related organizations are strengthened through publishing a White Paper and formulating a National Disaster Prevention and Mitigation Plan.
- A training system for enhancing the capacity of DDPM staff on natural disaster management is strengthened including e-Learning system.
- Capacities of DDPM staff and village people are enhanced to promote disaster management activities at community level.
- Capacities of MOE staff and teachers at model schools are enhanced to promote education for disaster preparedness at schools.

Since the activities of the Phase-1 Project focused on national and community levels, involvement of provincial and local authority levels was insufficient. In order to improve and scale up disaster prevention and mitigation capacity in Thailand, it is indispensable to involve provincial and local authority levels in disaster management activities.

In 2008, the Government of Thailand requested the Government of Japan to carry out the Project on Capacity Development in Disaster Management (Phase-2) aiming at improving and up-scaling the outputs of the Phase-1 Project in Thailand. In response to the request, JICA and the authorities concerned of the Government of Thailand agreed upon the basic framework and scope of the

cooperation, and both the parties concluded M/M in October 2009 and R/D in March 2010 on the Project.

1.2 Objective of the Project

(1) Project Purpose

Objective of the Project is summarized below:

Super Goal: Implementation of disaster risk management activities is improved and scaled up throughout Thailand and damages caused by natural disasters are mitigated.

Overall Goal: Implementation of disaster risk management activities is improved and scaled up.

Project Purpose: Capacity of DDPM is enhanced to scale up Disaster Prevention and Mitigation Action Plans, Community Based Disaster Risk Management (CBDRM) and disaster education, collaborating with concerned agencies at provincial and local levels.

(2) Outputs of the Project

The following five outputs are expected as a result of activities of the relevant Task Forces (TF(s)) for the Project:

Outputs 1: Disaster Prevention and Mitigation Action Plans with considerations for vulnerable people are formulated for national, provincial and local authorities in the target provinces <Task Force for Disaster Management Planning (TF-DMP)>.

Outputs 2: Capacity of DDPM staff and facilitators on implementation of CBDRM is enhanced <Task Force for CBDRM (TF-CBDRM) >.

Outputs 3: Training curriculum at DPMA is improved < Force for Disaster Management Training (TF-DMT) >.

Outputs 4: Based on the natural disaster preparedness educational curriculum, schools have improved preparedness for disaster < Task Force for Disaster Education (TF-DE) >.

Outputs 5: Knowledge and technical capacity of DDPM on hazard mapping, early warning system and design of structural measures are enhanced <Task Force for Flood Risk Management (TF-FRM)>.

The outputs of the Phase 1 and the Phase 2 of the Project are visually presented in Figures 1.2.1 and 1.2.2 respectively.

	Building cooperative system among relevant agencies	**Human Resources (HR) and Contents Development for DDPM**			**HR and Contents Development for MOE**
Main C/P	Disaster Prevention and Mitigation Policy Bureau, DDPM	Disaster Mitigation Directing Center, DDPM	Disaster Prevention and Promotion Bureau, DDPM	Disaster Prevention Criteria Bureau, DDPM	Office of Basic Education Commission (OBEC)
State	Development of White Paper Preparation for National Disaster Management Plan	Development of CBDRM facilitator guide Development of CBDRM manual	Development of E-learning material	Development of manual for Hazard map by GIS analysis Development of provincial hazard map Development of community hazard map	Disaster education side reader on flood, tsunami and landslide Disaster education teacher's guide on flood, tsunami and landslide
Province					
Local Authority					
Commu-nity/ School		Demonstration of CBDRM at pilot community Evacuation drill of community and school			Model class of disaster education at pilot school Distribution of DE side reader and teacher's guide to 32,000 schools nation-wide Evacuation drill of community and school

Figure 1.2.1 Outputs of the Phase 1 of the Project

Figure 1.2.2 Outputs of the Phase 2 of the Project

The activities and outputs of the Phase 1 Project were effectively utilized for implementation of the Phase 2 Project as described below:

- The CBDRM facilitators guide developed in the Phase 1 was utilized for the training of CBDRM facilitators in the Phase 2.
- The E-learning system has been utilized for Volunteer Youth Camp training conducted by DDPM.
- Manual for hazard mapping by GIS analysis has translated into Thai and the hazard maps on provincial level have already been developed nation-wide.
- Disaster education side reader and teacher's guide have been distributed to all 32,000 public primary and secondary schools.
- Cooperative system or networks among the relevant agencies cultivated through development of Disaster White Paper have facilitated the Project activities easy and effective during the Phase 2 of the Project.

1.3 Final Report

This Final Report has been prepared to report all the results of the project activities from May 2010 to February 2014.

2. The Project

2.1 List of the Project Outputs

The following major outputs are created as a result of activities of the relevant Task Forces (TF(s)) for the Project:

Table 2.1.1 List of Project Outputs

PDM Output	Major Outputs
<Task force – Disaster Management Planning> 1. Disaster Prevention and Mitigation Action Plans with considerations for vulnerable people are formulated for national, provincial and local authorities (in the model provinces).	• Development of template of Disaster Prevention and Mitigation Action Plan (DPM-AP) and flood disaster response manual for local authority level • Preparation of guidelines for dissemination of DPM-AP across country • Execution of workshops on formulation of DPM-AP for local authority level • Execution of table-top exercises (TTX) to verify disaster management plans • Establishment of monitoring procedures for formulation of LAO DPM-AP throughout the country • Preparation of GIS data-base to monitor progress in formulation of DPM-AP for local authority level
<Task force - CBDRM> 2. Capacity of DDPM staff as facilitators on implementation of Community Based Disaster Risk Management (CBDRM) is enhanced.	• Cultivation of 228CBDRM facilitators consist of DDPM staff, retired DPM officials and teachers, and village leaders • CBDRM trainings for 324 local authority staff in the model provinces • Preparation of CBDRM promotion action plan by the trained DPM provincial staff • Implementation of five CBDRM demonstration workshops in the model and semi-model villages • Implementation of CBDRM facilitators' workshop to exchange experience among practitioners of Thai, Vietnam and Japan, to discuss improvement of CBDRM facilitator's guide. • Modification of the existing CBDRM Facilitator Guide to practical one based on discussion among facilitators • Introduction of "BOKOMI" and "Iza! Kaeru Caravan! (IKC)" for awareness raising for children and parents • Preparation of GIS data-base to monitor progress in implementation of CBDRM
<Task force – Disaster Management Training > 3. Training curriculum at DPMA is improved.	• Development of questionnaire for post-evaluation of DPMA's trainings to figure out how trainings are effective for participants duty • Improvement of standard curriculum for training of master trainers and DDPM staff on management of natural disasters (flood, flash flood and sediment disasters) • Implementation of training of master trainers on management of natural disasters (flood, flash flood and sediment disasters): 45 staff • Implementation of trainings for DDPM staff on management of natural disasters (flood, flash flood and sediment disasters): 278 staff
<Task force – Disaster Education> 4. Based on the Natural disaster preparedness educational curriculum, schools have improved preparedness for disaster.	• Establishment of the guideline of disaster management and education of OBEC • Development of new materials for disaster education consists of a reference book and a DVD • Human resources development in disaster education through disaster education workshops with various bureaus of MOE • Two of the selected three model schools were recognized as best practice school with good example of curriculum integration of disaster education. • Preparation of GIS data-base to monitor progress in dissemination of disaster education

<Task force – Flash Flood Risk Management> 5. Knowledge and technical capacity of DDPM on hazard mapping, early warning system and design of structural measures are enhanced.	• Implementation of training on basic hydrology, hydraulics, flood analysis and hazard mapping • Preparation of manuals on rainfall/ flood analysis and hazard mapping • Preparation of manuals on improvement of early warning system and evaluation of structural measures • Establishment of tentative criteria for early warning based on recorded accumulated rainfall at the model site and transfer of knowledge. • Implementation of training by TF-FRM for staff of DPM regional centers on flood risk management

2.2 Plan and Actual Operation

The plan and actual operation of the Project activities are presented in Figure 2.2.1.

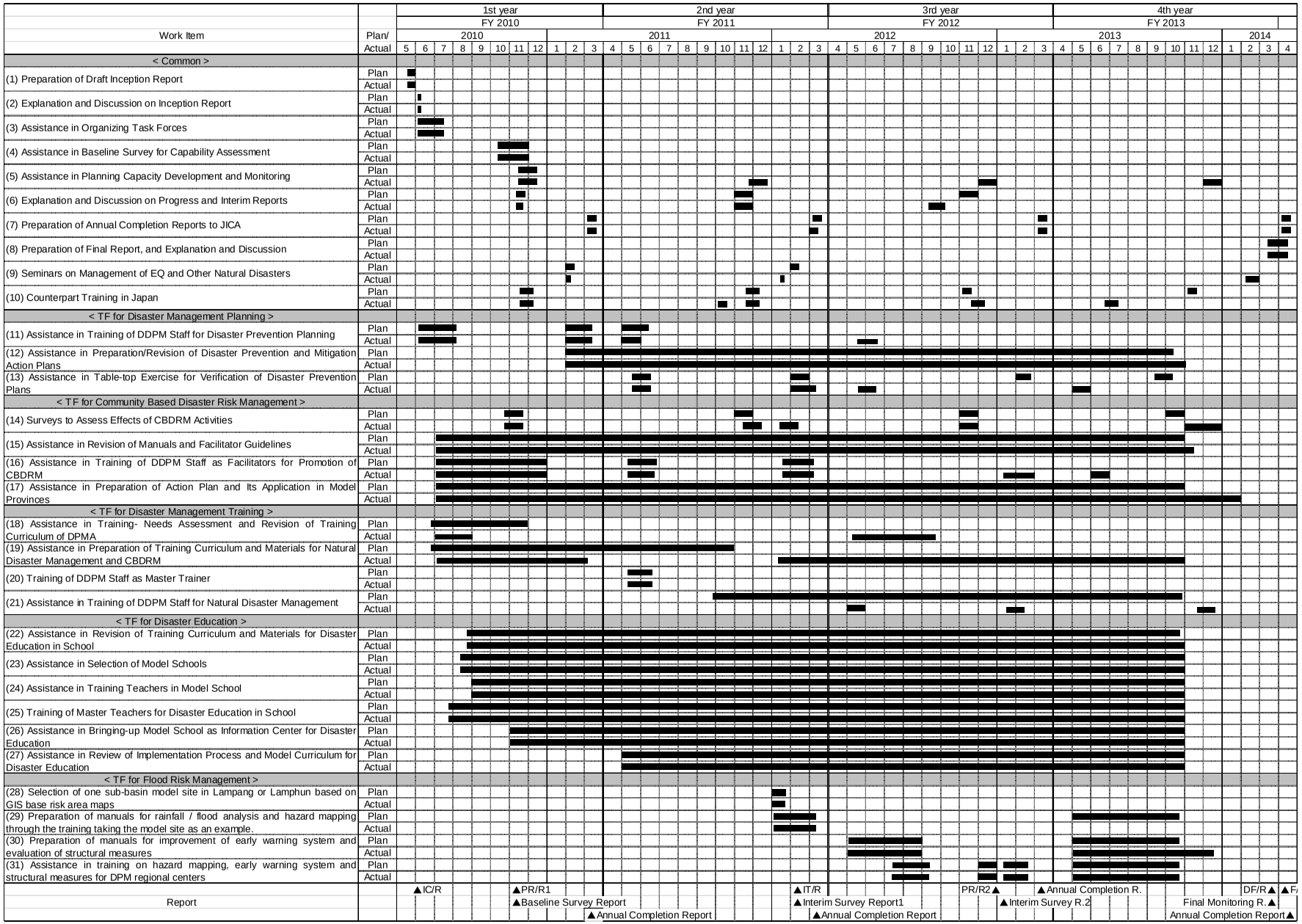


Figure 2.2.1 Planned and Actual Operation of the Project Activities

2.3 Actual Input

2.3.1 Japanese side

The experts were dispatched to the Project as shown Tables 2.3.1 and 2.3.2. After the project commenced, needs to add experts whose specialties are disaster management table-top exercise and GIS data base were identified by both Thai and Japanese sides. Hence, Disaster management table-top exercise and GIS data base experts were dispatched to the Project.

(1) Inputs from Japanese side - in Thailand

Table 2.3.1 Inputs from Japanese Side in Thailand

Expert	Name	Plan (P/M)	Actual* (P/M)
Team leader / Disaster management institution	Mr. Noritoshi Maehara	16.50	20.80
Sub-tem leader / Disaster management plan	Mr. Noboru Jitsuhiro	12.50	14.00
Sediment disaster management	Mr. Toru Koike	5.00	9.63
Flood management	Mr. Makoto Kodama	5.00	14.63
Community based disaster risk management 1	Mr. Arata Sasaki	12.00	15.73
Community based disaster risk management 2	Ms. Lolita C. Garcia	11.50	14.17
Disaster education	Mr. Jun Onodera	13.00	14.97
Disaster management table-top exercise	Mr. Tsuyoshi Koyabu	0.00	3.33
GIS data base	Mr. Tomoyuki Wada	0.00	3.33
TOTAL		64.00	110.59

*Actual shows the total person/month (P/M) spent during Year 1 to Year 3 and contract of Year 4.

(2) Inputs from Japanese side - in Japan

Table 2.3.2 Inputs from Japanese Side in Japan

Expert	Name	Plan (m/m)	Actual* (m/m)
Team leader / Disaster management institution	Mr. Noritoshi Maehara	0.83	1.67
Sub-tem leader / Disaster management plan	Mr. Noboru Jitsuhiro	0.17	0.17
TOTAL		1.00	1.84

*Actual shows the total person/month (P/M) spent during Year 1 to Year 3 and contract of Year 4.

(3) Special Lecturers

Ten special lecturers were dispatched from Japanese sides to introduce disaster risk management promotion in Thailand as shown in Table 2.3.3.

Table 2.3.3 List of Special Lecturers

Special lecturer	Position, Organization	Period of dispatch
Ms. Hiroko Kondo	Disaster education supervisor, Disaster Mitigation Research Center, Nagoya University	Aug. 29 - Sep. 11, 2011 Sep. 7 - Sep. 15, 2013 Feb. 25 - Feb. 27, 2014
Mr. Sumio Hayakawa	Chairman, Aichi Disaster Preparedness Leaders Association (APLA)	Feb. 13 - 18, 2012
Mr. Katsuhisa Fujii	Member, Aichi Disaster Preparedness Leaders	Feb. 13 - 18, 2012

	Association (APLA)	
Mr. Hirokazu Nagata	Representative of "Plus Arts (a non-profit organization (NPO) in Japan)"	Feb. 27, 2012 Feb. 25 - Feb. 27, 2014
Ms. Fumi Hamabe	Member, Aichi Disaster Preparedness Leaders Association (APLA)	Feb. 13 - 18, 2012
Mr. Toshiyuki Akita	Section Head of CBDRM Supporting Section, Kobe City Fire Bureau, Japan	Dec. 11 - 14, 2012
Mr. Nguyen Huynh Quang	Head of CBDRM Division of Disaster Management Center (DMC), Ministry of Agriculture and Rural Development (MARD), Vietnam	Dec. 11 - 14, 2012
Mr. Bui Duc Thai	Center for Management and Mitigation of Natural Disaster in Quang Ngai (CMMND) of Quang Ngai Province	Dec. 11 - 14, 2012
Dr. Hirotada MATSUKI	JICA Expert for Disaster Risk Reduction	Feb. 25 - Feb. 27, 2014
Dr. Barames Vardhanabhuti	Associate professor, Kasetsart University	Feb. 25 - Feb. 27, 2014

2.3.2 Thai side

Thai side allocated project director, project manager and members of each task force as shown in Table 2.3.4.

Table 2.3.4 List of key project members from Thai side

Counterpart	Name	Post, Organization
Project Director	Mr. Chatchai Promlert	Director General, DDPM
Project Manager	Mr. Pornpoth Penpas	Deputy Director General, DDPM
Secretary	Mr. Chainarong Vasanasomsithi	Director, Research and International Cooperation Bureau, DDPM
Leader of TF-DMP (TF1)	Mr. Supakit Phoprapapan	Director, Disaster Prevention and Mitigation Bureau, DDPM
Leader of TF-CBDRM (TF2)	Mr. Pallop Singhaseni	Director, Disaster Prevention Promotion Bureau, DDPM
Leader of TF-DMP (TF3)	Ms. Luckana Manimmanakorn	Director, DPMA, DDPM
Leader of TF-DE (TF4)	Ms. Churairat Sangboonnum	Deputy Permanent Secretary, Office of the Permanent Secretary, MOE
Leader of TF-FRM (TF5)	Mr. Suraphol Lekkao	Director, Disaster Prevention Criteria Bureau, DDPM

Project office was also allocated in DDPM building. A photocopy machine, which was procured under Phase 1 was provided to the Project. Similarly, utilities such as electricity and water are provided by DDPM.

Other than inputs of Thai side discussed above, the following expedience has been extended by Thai side:

- Issuance of identification cards for the experts,
- Traveling expenses of DDPM staff to participate the project activities,
- Printing cost of training, workshop and seminar materials,

- Room renting and meal expenses for trainings, workshops and seminars,
- Services to install or set up the small-scale measures in the model communities,
- Transportation service for activities at the model sites, and
- Monitoring survey of effectiveness of CBDRM at two model villages.

2.4 Actual Assignment of the Experts

Actual assignment of the JICA Experts is presented in Figure 2.4.1.

Figure 2.4.1 Actual Assignment of JICA Experts

2.5 Training in Japan

Training in Japan was conducted five times in the Project and 93 Thai counterparts participated in the trainings. Outline of the training in Japan is shown in Table 2.5.1. Lists of participants are presented in Appendix 3.

Table 2.5.1 Outline of Training in Japan

Year	Participants	Period	Main visiting places/ organizations
1st Year	20	Nov. 28 to Dec. 11, 2010	<Comprehensive Disaster Management Course> - Cabinet Office (Tokyo) - Sabo Frontier Foundation (Tokyo) - Nerima City Office (Tokyo) - Aichi Preparedness Leaders Association (Aichi) - Ms. Hiroko KONDO (Aichi) - Nagoya Municipal Minato Disaster Prevention Center (Aichi) - Obu City Kyowa-Nishi Elementary School (Aichi) - Hyogo Institute for Traumatic Stress (Hyogo) - Hyogo Prefecture Maiko High School (Hyogo) - Asian Disaster Reduction Center (ADRC) (Hyogo) - Hyogo Prefectural Office (Hyogo) - Disaster Reduction and Human Renovation Institution (Hyogo) - IDEA Consultants, Inc. (Tokyo)
2nd Year	15	Oct. 10 to Oct. 24, 2011	<Comprehensive Disaster Management Course> - Stricken area by Great East Japan Earthquake (Iwate) - Nagoya Municipal Minato Disaster Prevention Center (Aichi) - Aichi Preparedness Leaders Association (Aichi) - Ms. Hiroko KONDO (Aichi) - Kobe Municipal Government (Hyogo) - Hyogo Prefectural Government (Hyogo) - Disaster Reduction and Human Renovation Institution (Hyogo) - "Iza! Kaeru Caravan!" by Plus Arts (JICA Kansai) - Asian Disaster Reduction Center (ADRC) (Hyogo)
	18	Nov. 28 to Dec. 7, 2011	<Disaster Education Course> - Hyogo Prefecture Maiko High School - "Iza! Kaeru Caravan!" by Plus Arts (JICA Kansai) - Aichi Preparedness Leaders Association (Aichi) - Ms. Hiroko KONDO, Nagoya University (Aichi) - Obu City Kyowa-Nishi Elementary School (Aichi) - Nagoya Municipal Minato Disaster Prevention Center (Aichi) - Dr. Prof. Nobuo Fukuwa, Dr. Eng., Nagoya University (Aichi) - Higashiura disaster management network (Aichi)
3rd Year	20	Nov. 26 to Dec. 7, 2012	<Comprehensive Disaster Management Course> - Ministry of Land, Infrastructure, Transport and Tourism (Tokyo) - Ministry of Education, Culture, Sports, Science and Technology (Tokyo) - Sabo Frontier Foundation (Tokyo) - Aichi Prefectural Government (Aichi)

			- Aichi Preparedness Leaders Association (Aichi) - Ms. Hiroko KONDO, Nagoya University (Aichi) - Nagoya Municipal Minato Disaster Prevention Center (Aichi) - Higashiura Town Kataha Elementary School (Aichi) - Higashiura disaster management network (Aichi) - Kota Town (Aichi) - Hyogo Prefectural Government (Hyogo) - Asian Disaster Reduction Center (ADRC) (Hyogo)
4th Year	20	Jul. 7 to Jul. 20, 2013	<Comprehensive Disaster Management Course> - Cabinet Office (Tokyo) - Sabo Frontier Foundation (Tokyo) - Life Safety Learning Center, Tokyo Fire Department (Tokyo) - Ministry of Land, Infrastructure, Transport and Tourism (MLIT) (Tokyo) - Tsurumi River Multipurpose Flood Retarding Basin, MLIT (Kanagawa) - Niigata Prefectural Government (Niigata) - Shinano River Ohkouzu Museum, MLIT (Niigata) - Mitsuke Municipal Government (Niigata) - Nagoya Municipal Minato Disaster Prevention Center (Aichi) - Ms. Hiroko KONDO, Nagoya University (Aichi) - Aichi Preparedness Leaders Association (Aichi) - Higashiura Town Kataha Elementary School (Aichi) - Higashiura Disaster Management Network (Aichi) - Aichi Prefectural Government - Hyogo Prefectural Government - Asian Disaster Reduction Center (ADRC) (Hyogo)

2.6 Seminars

The following seminars were held by the Project in 2011, 2012 and 2014. Outline of the seminars were presented in Table 2.6.1.

Table 2.6.1 Outline of Seminar on Earthquake and Other Natural Disasters

Year	Participants	Date/Location	Main speakers and subjects
1st Year	183	Feb. 4, 2011 Amari Atrium Hotel Bangkok	**<u>Seminar on Earthquake and Other Natural Disasters (1st)</u>** 1. Dr. Satoshi NAKAMURA, Ph.D. in Science Professional Engineer (Geotechnical), Japan Subject: "NATURAL DISASTER, Essentials" 2. Dr. Pennung Warnitchai Associate Professor, Asian Institute of Technology Subject: "An Overview of Seismic Risk and Earthquake Engineering Activities in Thailand" 3. Prof. Kimiro MEGURO, Dr. Eng. Urban Disaster Mitigation Engineering, Director/Professor, International Center for Urban Safety Engineering (ICUS), Institute of Industrial Science (IIS), The University of Tokyo Subject: "Towards Implementation of Disaster Safer Built Environment"

2nd Year	200	Jan. 20, 2012 Century Park Hotel Bangkok	**Seminar on Earthquake and Other Natural Disasters (2nd)** 1. Prof. Kunihiro KUMAMOTO College of Media and Communication, Edogawa University Subject: " Learning the Lessons from Past Disasters is the Way to Survive" 2. Assoc. Prof. Dr. Seree Supratid Rangsit University The Sirindhorn International Environmental Park Subject: "The Massive Flood 2011 and Lessons Learnt" 3. Mr. Sumio HAYAKAWA Chairman of Aichi Disaster Preparedness Leaders Association Subject: " Activities of Community Disaster Preparedness Leaders and Their Role" 4. Mr. Noritoshi MAEHARA Leader of JICA Experts Team for PCDDM2 Subject: "The Great East Japan Earthquake on March 11, 2011 and Lessons Learnt"
4th Year	213	Feb. 26, 2014 Royal River Hotel Bangkok	**Project Outputs Sustainability Seminar (Final Seminar)** 1. Panel Discussion (Part 1) on Theme: Outline of the Project and Good practices achieved through the Project Panel: Project task force members 2. Panel Discussion (Part 2) Theme: Sustainable efforts to upscale the Project outputs Project task force members 3. Mr. Hirokazu NAGATA Planner, Producer, and Director of NPO Plus Arts Vice Director of Design and Creative Center Kobe: KIITO Lecture: "Awareness-raising on disaster preparedness supported by various actors" 4. Dr. Hirotada MATSUKI JICA Expert for Disaster Risk Reduction Lecture: "TRIPOD SCHEME" in Flood Risk Management in Japan" 5. Ms. Hiroko KONDO Disaster Education Supervisor in Disaster Mitigation Research Center, Nagoya University Lecture: "Disaster Education as "Education for Preserving Lives and Smile of Children"" 6. Dr. Barames Vardhanabhuti Assistant professor in the Department of Civil Engineering, Kasetsart University, Bangkok Lecture: "A Participatory Approach to Construct a Community Information System for Flood Management"

2.7 Provision of Equipment and Materials

Equipment and materials were provided from JICA to Thai side to support disaster risk management in the course of the Project. List of the equipment and materials is presented in Table 2.7.1.

Table 2.7.1 List of Equipment and Materials Provided

No.	Date	Name of equipment	type	Q'ty	Remarks
1	2011.7.30	Message board for Community	steel with glass	1	
2	2011.7.30	Rain gauge	Oregon RGR126	1	
3	2011.7.30	Rain gauge	Oregon RGR126	1	
4	2011.7.30	Siren	Whener WA-251	1	
5	2011.8.13	Message board for Community	steel with glass	1	
6	2011.8.13	Message board for Community	steel with glass	1	
7	2011.8.13	Rain gauge	Oregon RGR126	1	
8	2011.8.13	Siren	Whener WA-251	1	
9	2011.10.29	Sandbag	LTP PP bag	20,000	Urgent support for the
10	2011.11.1	Sandbag	LTP PP bag	230,000	massive flood 2011
11	2012.1.11	Rain gauge	ONSET RG3-M	2	
12	2012.1.11	Rain gauge	ONSET KIT-D-U20-01	4	
13	2012.1.23	Flood Analysis Software	FLO-2D 2009	2	
14	2012.2.16	Rain gauge	Oregon THN122N	1	
15	2012.3.2	Radio communication system	Icom F5023, other	1	with antenna tower
16	2012.3.9	Message board for Community	steel with glass	1	
17	2012.3.9	Message board for Community	wood	2	
18	2012.6.19	Target of the fire extinguisher exercise (Board)	Iza! Kaeru Caravan!	1	
19	2012.6.19	Kaeru doll	Iza! Kaeru Caravan!	4	
20	2012.6.19	Target of the fire extinguisher exercise (Doll) (6 Pieces)	Iza! Kaeru Caravan!	4	
21	2012.6.19	Disaster Management Card game (School of Catfish)	Iza! Kaeru Caravan!	2	
22	2012.6.19	Disaster Management Card game (SHUFFLE)	Iza! Kaeru Caravan!	2	
23	2012.6.19	Disaster Management Parcheesi (GURA GURA TOWN)	Iza! Kaeru Caravan!	2	
24	2012.6.19	Hand Puppet (3 Pieces)	Iza! Kaeru Caravan!	2	
25	2012.6.19	Disaster Management Guidebook (ver. Iza! Kaeru Caravan)	Iza! Kaeru Caravan!	2	
26	2012.6.19	Water Fire Extinguisher (for practice)	Hatsuta	4	
26	2012.6.19	CPR Training Mannequin	Little Anne	1	
27	2012.6.19	CPR Training Kit	Alexon	40	
28	2013.5.30	Loudspeaker system	MKC Technic	2	2 unit x 2 sets
29	2013.5.30	Radio communication system	Spender	1	
30	2013.5.30	Walkie-talkie	Spender	8	
31	2013.5.30	Life jacket	No brand	15	Adult 8, Children 7

2.8 Actual Local Expenditure

Local expenditure spent for implementation of the Project is summarized in Table 2.8.1.

Table 2.8.1 Actual Local Expenditure

Year	Cost Item	Amount * (1,000 JPY)
1st Year	Employment of local staff and interpreters	635
	Repair and maintenance of equipment	55
	Consumables, procurement of equipment, depreciation	159
	Transport and travelling expenses	2,504
	Preparation of report and material (printing, interpretation, etc.)	72
	Rent, organization of seminar, workshop, etc.	575
2nd Year	Employment of local staff and interpreters	1,793
	Repair and maintenance of equipment	47
	Consumables, procurement of equipment, depreciation	144
	Transport and travelling expenses	2,442
	Preparation of report and material (printing, interpretation, etc.)	1,493
	Rent, organization of seminar, workshop, etc.	741
3rd Year	Employment of local staff and interpreters	1,614
	Repair and maintenance of equipment	164
	Consumables, procurement of equipment, depreciation	113
	Transport and travelling expenses	2,071
	Preparation of report and material (printing, interpretation, etc.)	1,122
	Rent, organization of seminar, workshop, etc.	124
4th Year	Employment of local staff and interpreters	1,468
	Repair and maintenance of equipment	201
	Consumables, procurement of equipment, depreciation	103
	Transport and travelling expenses	1,923
	Preparation of report and material (printing, interpretation, etc.)	1,250
	Rent, organization of seminar, workshop, etc.	2,549

*Amount shows the total local expenditure during Year 1 to Year 3 and budget of Year 4.

2.9 Lessons and Ingenuities in Implementation of the Project

Lessons and ingenuities in implementation of the Project in each activities and outputs are presented in Chapter 3.

2.10 Project Design Matrix

Project Design Matrix (PDM) of the Project has been revised three times as summarized in Table 2.10.1. PDMs of version 1 to 4 are attached in Appendix 1.

Table 2.10.1 Revision of Project Design Matrix (PDM)

PDM	Objective of Revision	Authorization
Version 1	Original	Record of Discussions between JICA and the Authorities Concerned of the Government of Thailand for PCDDM2 in March 2010
Version 2	To clarify the objectively verifiable indicators which had been undecided in the Original PDM	2nd JCC meeting for the Project on September 5, 2011

Version 3	To add Output 5 "knowledge and technical capacity of DDPM on hazard mapping, early warning system and design of structural measures are enhanced"	3th JCC meeting for the Project on October 4, 2011
Version 4	To reflect the actual project activities as well as expected outputs based on the results of mid-term review of the Project	4th JCC meeting for the Project on February 23, 2012

2.11 Record of Joint Coordination Committee (JCC)

Joint Coordination Committee (JCC) of the Project has been organized six times as listed below:

JCC	Date	Major Subject
1st JCC	June 18, 2010	• Basic condition of the Project implementation • Acceptance of the Inception Report
2nd JCC	September 5, 2011	• Indicators in the PDM were discussed and agreed upon as PDM ver.2 • Necessity of TF-flood risk management was discussed
3rd JCC	October 4, 2011	• Establishment of TF-flood risk management was agreed upon as PDM ver.3
4th JCC	February 23, 2012	• Results of the Intermediate Review of the Project were agreed upon as PDM ver.4
5th JCC	February 15, 2013	• Report on progress of the Project activities of each task force • Explanation of Progress Report 2
6th JCC	January 30, 2014	• Report on progress of the Project activities of each task force • Results of the Terminal Evaluation of the Project were agreed upon.

Minutes of meeting of the JCC are presented in Appendix 2.

2.12 Collected Data

List of collected data in the course of the Project is presented in Appendix 4.

2.13 Publicity Activities

The Project has put emphasis on publicity activities. Five newsletters have been published to introduce the project activities for officials who have not been directly involved in the Project. The newsletters were distributed for the participants of trainings, seminars and workshops organized in the course of the Project. The newsletters are presented in Appendix 5.

2.14 The Project Outputs Sustainability Plan

This Project Outputs Sustainability Plan has been prepared based on the Task Force Workshop on Project Outputs Sustainability on October 25, 2013 at DPMA Pathum Thani and subsequent series of discussions with the task force members. The Plan represents concrete efforts of each task force to sustain and up-scale the Project outputs nation-wide after the JICA Project. The Project Outputs Sustainability Plan is presented in Appendix 6.

3. Activity and Achievement

3.1 Disaster Management Planning

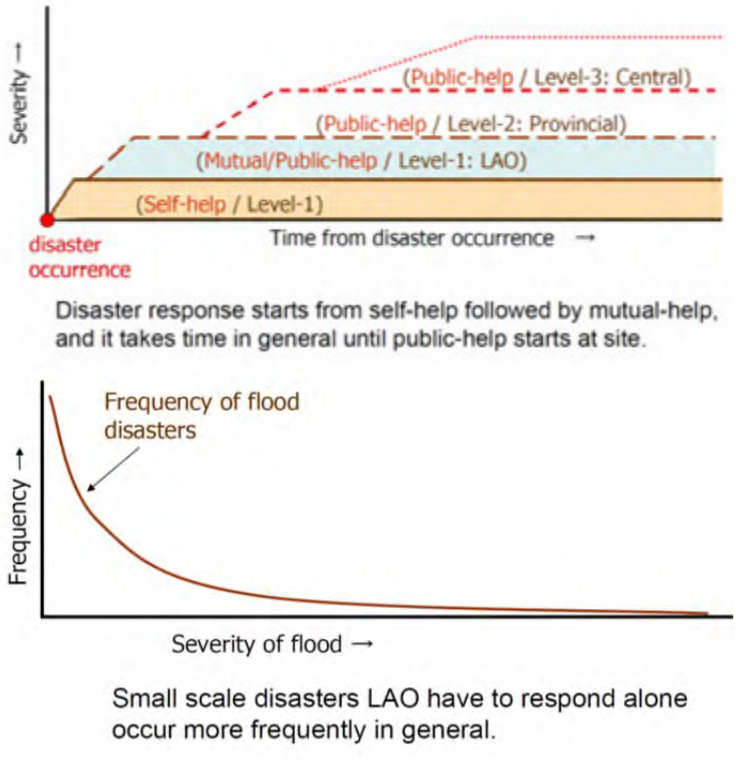
3.1.1 Understanding of the current situation in Thailand

DPM-Act and Plans: Disaster Prevention and Mitigation Act (DPM-Act) was enacted in 2007, and National Disaster Prevention and Mitigation Plan / 2010-2014 (National DPM Plan) was approved in the cabinet meeting in 2009. Complying with the DPM-Act and National DPM Plan, Provincial Disaster Prevention and Mitigation Plan (Provincial DPM Plan) was also formulated by the end of 2010.

On the other hand, plan formulation at local administration organization of specified locality (LAO: Municipality/SAO or Tedsabaan/Oobortor) level was delayed, though it is also obliged by the DPM-Act. This may be partly due to the reason that the concept of DPM plan in LAO is not consolidated yet under new National and Provincial DPM plans, and partly that the LAO is not institutionally under the control of DDPM.

Importance of DPM Operations at LAO Level: Disaster responses in LAO are crucial factors in the DPM operations of the country by the following reasons:

1) Local organizations are the fundamental bodies for disaster response, for they are coping with disaster as victims.
2) Disaster responses of local organizations start from very beginning of the disaster, and the operations are required most frequently though most of them are not big in scale.
3) Emergency responses of local organizations may have chance to save human lives and casualties.
4) Initial actions of local organizations may prevent further expansion of the disaster.

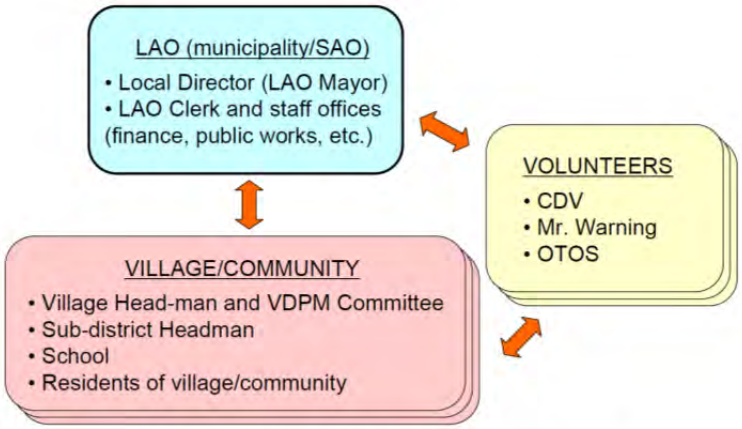


Assistance of LAO by DDPM: Taking count of the importance of DPM operations at LAO level, DDPM have conducted assistances to the communities since its establishment as follows:

1) Development of human resources such as development of civil defense volunteer (CVD) network, Mr. Warning trainings, One Tambon One Search and Rescue Team (OTOS) program, etc.;
2) Dissemination of exercises such as community based disaster risk management (CBDRM), table-top exercises (TTX), etc.; and
3) Supply of disaster-related tools.

DPM Operations by Local Director: According to the DPM-Act, Mayor/Chief Executive of LAO (Tedsabaan/Oobortor) shall be named as Local Director. The Local Director is responsible for DPM operations in the area of jurisdiction and empowered to direct disaster response operation as follows:

1) **Local Director:** LAO shall perform the duties on disaster prevention and mitigation (DPM) operation within the areas under the responsibility of the Local Director. In performing the duties, the Local Director shall be empowered to command, control, and oversee the performance of the duties of the official and the volunteer (Section 20, DPM-Act).
2) **Power and Duties of Local Director:** When disaster occurs or be imminent to occur in any LAO, the Local Director of respective LAO shall be obliged to activate the DPM operation instantly, and shall inform the District Director and Provincial Director forthwith. In performance of the duties, the Local Director shall have following power and duties (Section 21, DPM-Act):
   (1) To order civil servant, local official, official of state agency, volunteer and any person within the jurisdiction of affected LAO to perform tasks as necessity or DPM operation;
   (2) To make use of building, place, materials, device, appliance, and vehicle of state agency and private sector existing within the jurisdiction as necessity for DPM operation;
   (3) To make use of telecommunication appliance and every communication system of state or private sector existing within the jurisdiction or existing within other local area affiliated;
   (4) To request assistance from other LAO for DPM operation;
   (5) To issue an order to prohibit the entry into or leave the designated area, building or place; and
   (6) To provide the relief to the disaster affected persons thoroughly and rapidly.



Local Director shall take leading roles in DPM in the area of responsibility.

DPM-AP at LAO Level: Considering the crucial roles of LAO as mentioned above, DPM Policy Bureau determined to assist LAO in formulating Disaster Prevention and Mitigation Action Plan (DPM-AP), so that disasters in the local area (Level-1) could be managed effectively with the leading role of Local Director (Mayor/Chief Executive of LAO) in collaboration with other agencies and community

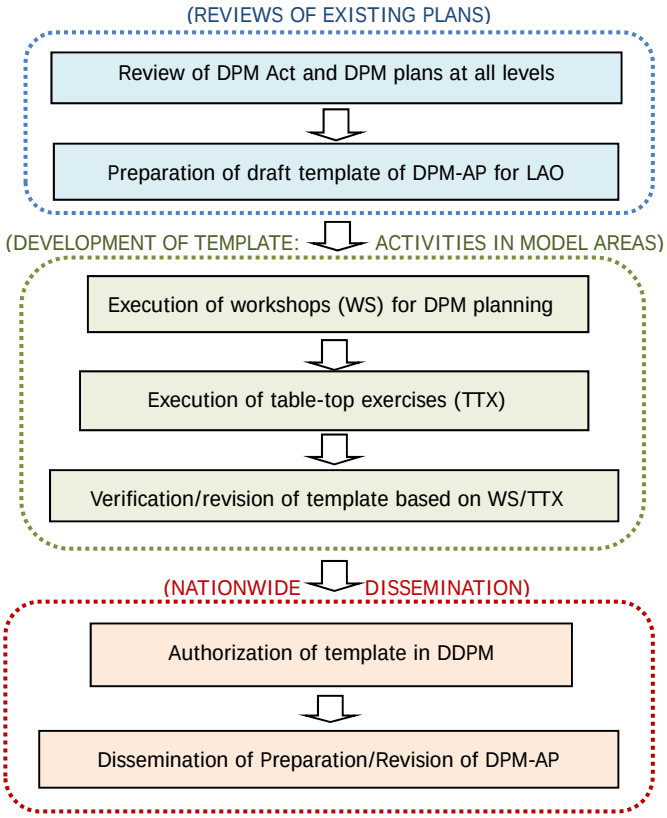
organizations; preventing and mitigating the damages properly and promptly; making use of human resources, equipment and facilities available in the area; in accordance with the DPM-AP comply with National and Provincial DPM Plans.

3.1.2 Activity

(1) Method of Approach

Formulation of PDM plan for LAO is promoted in the following process:

1) To review existing plans to clarify function to be provided with the LAO DPM-AP in the context of relevant plans;
2) Then, to develop template of the DPM Action Plan for LAO through workshops/exercises in model areas (Lampang and Lamphun provinces);
3) Finally, the Plan is disseminated by DPM-PO across the country using the template authorized in DDPM.
4) In the process of dissemination of plan formulation, workshops and table-top exercises contribute as important measures to bring-up capacities of LAO staff who prepare the Plan and officials of DPM-PO, DPM-RC and DDPM who assist LAO staff in Plan formulations.



(2) Review of Existing Disaster Management Plans

Progress of Plan Formulation: By the time the project commenced in May, 2010, National Disaster Prevention and Mitigation Plan (National DPM Plan) has been formulated and Provincial DPM plans are being prepared under new Disaster Prevention and Mitigation Act (DPM Act). Considering these situations, it was recognized that main tasks for the disaster management planning were (1) to monitor the progress of formulation of Provincial DPM plans across the country, and (2) to promote formulation of DPM Action Plans at LAO (Tedsabaan/Oobortor) level. In order to cope with these tasks, it is immediate importance to review the existing national and provincial plans and to prepare a template for the formulation of action plans of local authorities. Based on the result of review, National DPM Act and its relevant plans are briefed below. National DPM Plan and provincial plans were then available only in Thai language. DPM-Act and National DPM Plan are now available in English as well.

National DPM Act : As basic law of the disaster prevention and mitigation in Thailand, National DPM Act was enacted in October, 2007, and National DPM Committee was organized so as to centralize the disaster issues in the Committee having its secretariat at DDPM. The Act stipulates that National DPM Plan shall be formulated by DDPM and provincial DPM plans by provincial governors within two years after enactment of the Act. The National DPM Plan was approved by cabinet meeting in November 2009, and provincial DPM plans are under preparation coordinated by DDPM with scheduled completion date at the end of September, 2010. The Act and the Plans deals with all kinds of disasters such as natural disasters including floods, artificial disasters, epidemic diseases, accidents and incidents, etc.

Preparation of Provincial DPM Plan: Provincial DPM plans were formulated in all provinces (76 provinces) in comply with DPM Act. They were subjected to checking of DPM Policy Bureau mainly from the viewpoints of conformity with new National DPM Plan.

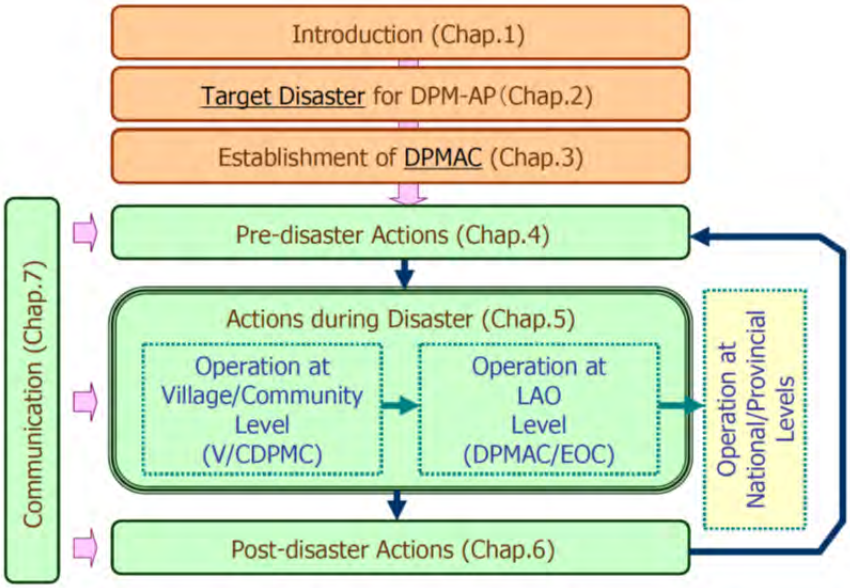
Other Disaster Management Plans: Besides the above, "The 5-Year Master Plan for Disasters Caused by Floods, Storms and Mud-slides (October, 2007)" is in effect together with its sub-ordinate plan, "The 3-Year Operation Plan and Budget: 2010–2012 (August, 2009)". These plans rule the issues of floods, storms and mudslides until relevant plans under new Act will be provided. "Strategic National Action Plan (SNAP) on Disaster Risk Reduction : 2010－2019" was formulated in 2009 in conformity with the international agreement by Hyogo Framework for Action: 2005–2015 (HFA). The SNAP consists of two components, i.e., "Normal Action Plan" of which activities are endorsed by the current laws and regulations of respective countries and "Compulsory Action Plan" responding to the requirements of HFA.

(3) Development of Template of DPM-AP at LAO Level

Development of Template: Draft Template of the DPM Action Plan (DPM-AP) at LAO level was prepared in collaboration with DDPM, DPM Regional Center-10, DPM Provincial Office and JICA Expert. The Plan initially prepared was composed of nine chapters with appendices. Most of the activities were tabulated together with their responsible persons/organization. The Plan should be simple in composition and easy to understand, so that the local officer and community people could refer freely. The initial format is therefore taken over in principle to the final one. The contents of the plan were revised taking into account the results of workshops and TTX held in northern areas in Lampang and Lamphun provinces and those held in southern areas in Nakhon Si Thammarat Province. The draft template was discussed in the Task Force of DDPM and authorized after some revisions for dissemination across the country. The Task Force is organized for discussion of LAO DPM-AP by the members of internal and external officials and experts and chaired by Deputy Director General of DDPM. [Refer to ANNEX 1: Template of Disaster Prevention and Mitigation Action Plan of Local Authority Level]

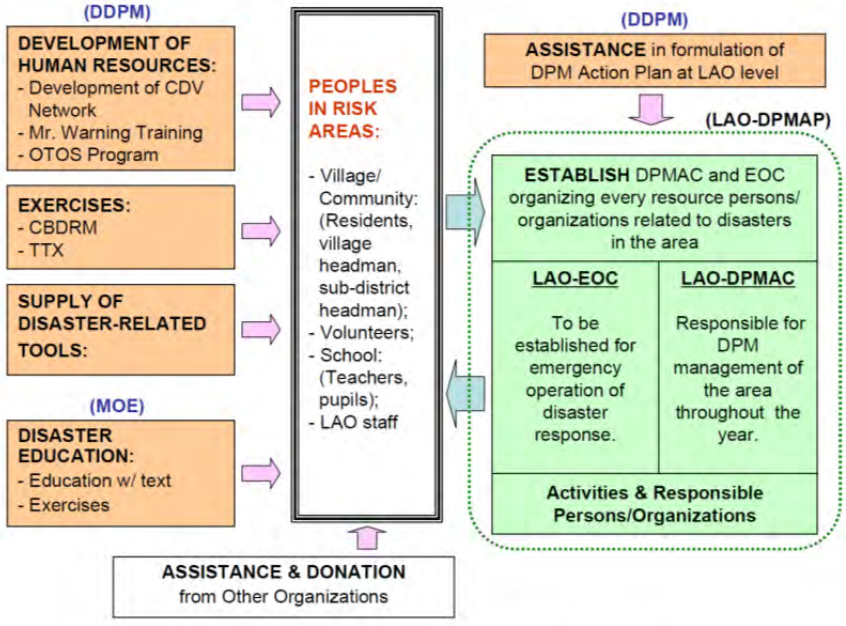
Highlights of LAO DPM-AP: Highlights of the template of LAO DPM-AP are as follows:

1) The Plan simply consists of seven chapters, and most DPM activities are tabulated coupled with their breakdown work items and responsible persons/organizations to them.
2) Past major disasters in the area are introduced and target disaster with which the plan cope is specified in Chap. 2.
3) The Plan intends to secure disaster prevention and mitigation of the area throughout the disaster cycle, i.e., pre-disaster actions (Chap. 4), actions during disaster (Chap. 5), post-disaster actions (Chap.6), in comply with National and Provincial DPM plans.



LAO-DPM ACTION PLAN

4) Establishments of DPM Administration Center (DPMAC) stipulated in Chap. 3 and Emergency Operation Center (EOC) in Chap. 5 are the keys for successful DPM-AP, since DPMAC functions as focal center of DPM activities in the area throughout the year and EOC for emergency response operations during disaster. Both the DPMAC and the EOC shall consist of internal and external key persons concerned of disasters in the area, chaired by Local Director (Mayor of Tedsabaan or Chief Executive of Oobortor), assisting his/her decision-making and operations.



DPM OPERATIONS BY LAO-DPM ACTION PLAN

5) It is therefore expected the LAO DPM-AP will enable that the assistance to LAO from DDPM, MOE, and other government/private organizations would be used effectively under the leading role of the Local Director to secure human lives and properties in the area of jurisdiction.

Matters to be Considered in Formulating Plan: In preparing the DPM-AP using the Template, it is advised to give particular considerations on the following matters:

1) **Seven Chapters:** To keep seven chapters with chapter titles specified in the Template to maintain basic format throughout the country for checking and referring.
2) **Target Disaster:** To specify disaster to be targeted by the DPM-AP in Chapter 2 as clearly and concretely as possible describing (1) types of disasters, (2) locations of affected area, (3) severities of hazards, after reviewing geographic and socio-economical features, past major disasters occurred, and studies of potential disasters of the area of jurisdiction.
3) **DPMAC and EOC:** DPMAC is a focal point of the DPM operation in LAO (Chapter 3). When a disaster occurs in the area of jurisdiction, the DPMAC will be adjusted and transformed into EOC for emergency response (Chapter 5). The DPMAC/EOC may consist of several sections including representatives of village/community, volunteers, etc. Under the section working teams necessary for the operations are organized. The number and names of sections constituting the DPMAC/EOC may differ depending on the existing organizational setup and staffing of the LAO. Whatever sections may be organized, the DPMAC/EOC should cover all functions necessary for DPM operations.
4) **Work Items:** Work items described in the Template in Chapters 4 through 6 are samples of activities, and should be determine the activities only necessary ones for the own area.
5) **Responsible Parties:** Responsible parties which implement respective activities should be specified clearly referring to working teams of the DPMAC/EOC and others known clearly.

(4) Disaster Response Manuals

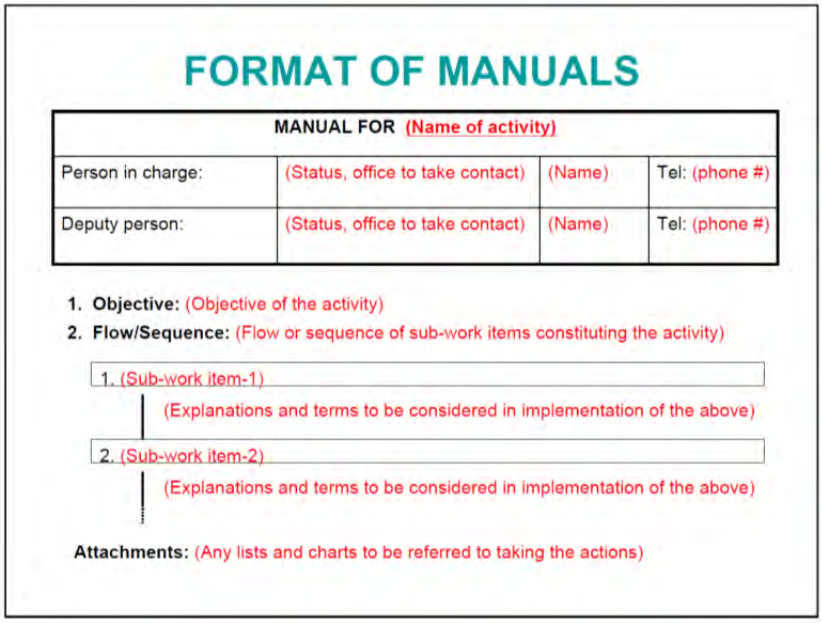
Preparation of Manuals: It is proposed to prepare disaster response manuals beforehand and to be ready for use in the LAO. Provided with the manuals, any staff of responsible organization could take prompt and proper actions at the occurrence of disaster by one's own judgment. The Manual should be prepared separately from the DPM-AP as a document to ensure the implementation of the DPM-AP, so that the manual could be adjusted to the actual situations whenever necessary.

The Manual should be prepared by the staff of responsible organization. Through the preparation works, the staff will have thorough understanding of activities prescribed in the Manuals and DPM-AP as well. In addition the collaborative works would bring up good communications among the staff and make the Manuals more effective and practical.

Contents of Manual: The Manual should provide brief and specific actions, since the Manual should visualize the response actions for all persons concerned and make sure the actions to be taken. A standard format of the Manual was proposed, which simply consists of (1) objectives of response activity and (2) flow/sequence of sub-work items with brief explanations, followed by the title block and names of contact personas. Considering the use of manuals during the emergency response, the Manual should be precise and understandable at a glance. One manual is preferable to consist of a few pages. If the Manuals exceed four or more pages, it is better to consider to divide activities into two or

more reforming as separate manuals.

Priority Activities for Preparation of Manual: It is suggested that the current practices and experience owned by the individual staff concerned should be opened to all staff and shared commonly, integrating them in the form of manuals. Once the manual is made out, it could be improved easily in the course of use.



FORMAT OF MANUALS

MANUAL FOR (Name of activity)			
Person in charge:	(Status, office to take contact)	(Name)	Tel: (phone #)
Deputy person:	(Status, office to take contact)	(Name)	Tel: (phone #)

1. **Objective:** (Objective of the activity)
2. **Flow/Sequence:** (Flow or sequence of sub-work items constituting the activity)

1. (Sub-work item-1)
(Explanations and terms to be considered in implementation of the above)
2. (Sub-work item-2)
(Explanations and terms to be considered in implementation of the above)

Attachments: (Any lists and charts to be referred to taking the actions)

It is also advised to prepare manuals starting from the priority actions and provide for use when it is ready, so that effects of the Manuals could be realized as early as possible.

According to the information from model LAO, major problems during past flood disasters are commonly (1) establishment of LAO-EOC when disaster occurs, (2) operation of communication system, (3) procurement and supply of relief goods, and (4) evacuation. It is recommended to prepare response manuals for these priority activities first of all. [Refer to ANNEX 3: Sample Manuals for Flood Response]

(5) Workshops and Table-top Exercises (TTX)

In the process of dissemination of plan formulation, workshops and table-top exercises (TTX) were executed mainly for improving template of LAO DPM-AP and bringing up capacities of LAO staff and officials of DPM-PO, DPM-RC and DDPM as follows:

1) Workshops:
   - To explain contents of draft template plan and collect comments from the attendants in order to make the template (1) fit well with the actual situation and disasters of the localities, and (2) easy to understand for local people.
   - To bring up capacity of LAO staff for preparation of their own DPM-AP, and at the same time, to provide officials of DPM-PO, DPM-RC and DDPM with knowledge on LAO DPM-AP and its formulation procedures necessary for their assistance of LAO in the areas of responsibility.
2) TTX:
   - To verify and improve the template of DPM-AP and disaster response manuals by role-playing TTX.
   - To bring up capacity of officials of DPM-PO, DPM-RC and DDPM, introducing the procedures of TTX. Two types of TTX were exercised, i.e., role-playing TTX which would be applicable

for the operation training in Emergency Operation Center (EOC) and scenario-driven TTX which would be applicable for disaster management planning in DPM Administration Center (DPMAC) reviewing the past disasters.

- Since many attendants have interest in TTX and wanted to participate the exercises. The TTX were held inviting various groups of attendants in a limited place. With these arrangements, many attendants could have chance to know what is TTX and how to do it together with experience of the exercises. Under the normal situations, however, the TTX should be implemented for a group of EOC or DPMAC, mobilizing actual staff, using their own office space and facilities, in order to examine their operational conditions.

During the period of the Project, five batches of workshops were implemented with attendants of 540 persons in total, and 4 batches of TTX with attendants of 680 persons in total under the assistance of JICA Experts. Respective workshops and TTX were outlined below.

[WS-1, 2 & 3] <u>Workshop for Preparation of DPM-AP at Tedsabaan and Oobortor</u>

1) **Date of Exercise:** From 24 to 26 May, 2011
2) **Venue:** Gassan Khuntan Hotel in Lamphun Province
3) **Objectives of Workshops**:
   - To explain draft template of DPM-AP and examine its applicability to Tedsabaan and Oobortor,
   - To explain functions and preparation method of disaster response manuals, and to collect basic information of Tedsabaan and Oobortor to prepare simple guidelines to prepare the manuals, and
   - To promote understanding of the national and provincial DPM Plans in relation with the DPM-AP.
4) **Attendants and Workshop Staff:** Workshops were opened with attendance of Mr. Srisombat Pornprasidhi, Deputy D.G. of DDPM. One-day workshops were held continuously for three days. Representatives from Tedsabaan and Oobortor in the model provinces were invited divided into three days, i.e., Day-1 and Day-2 for representatives from Lampang Province, and Day-3 for those from Lamphun Province. Officials from DPM Provincial Offices, DPM Regional Center-10 (Lampang), and DDPM/Bangkok were also participated to support the workshops.

Offices	WS-1 May 24,2011	WS-2 May 25,2011	WS-3 May 26,2011	Total
Tedsabaan/Oobortor	57	55	58	170
DPM-PO	4	3	4	11
DPM-RC	5	2	4	11
DPMA	2	1	1	4
DDPM/Bangkok	4	5	4	13
MOE	2	2	1	5

Others	6	2	9	17
Total	80	70	81	231

[TTX-1] <u>Workshop for Design of Table-top Exercises in DPM</u>

1) **Date of Exercise:** From 8 to 10 June, 2011
2) **Venue:** Royal River Hotel in Bang Plat District, Bangkok
3) **Objectives of Table-top Exercise**:
   - To introduce various types of table-top exercises (TTX) and their implementation procedures in general,
   - To explain procedures of image-training TTX and to demonstrate it by groups,
   - To explain how to prepare scenario for role-playing TTX and to experience by groups, and
   - To explain procedures of role-playing TTX and to demonstrate by groups.
4) **Attendants:** The TTX was opened with attendance of Mr. Srisombat Pornprasidhi, Deputy D.G. of DDPM and Mr. Montree Chanachaiviboonwat, Director of DPM Policy Bureau. Officials of the DDPM, DPMA, DPM Provincial Offices and DPM Regional Centers were invited throughout the country.

Offices	Day-1	Day-2	Day-3
DPM Provincial Office	145	141	142
DPM Regional Center	29	30	29
DPMA	6	6	6
DDPM/Bangkok	58	57	24
Total	238	234	201

Officials of DPM Policy Bureau and others who facilitated the TTX: 10 June, 2011

[TTX-2] <u>Table-top Exercise for Flood Disaster Response in Model LAO</u>

1) **Date of Exercise:** From 28 February (Tue.) to 01 March, 2012 (Thu.)
2) **Venue:** Disaster Prevention and Mitigation Regional Center – 10 (Lampang)
3) **Objectives of Table-top Exercise**:
   - To examine DPM-AP and flood disaster response manuals prepared by model LAO for their practicability by putting them into practice;
   - To exercise staff of model LAO (Wianmok, Thung Phueng, Kor and Li) for their prompt and proper actions to response flood disasters; and
   - To enhance skills of officials of model DPM Provincial Office (Lampang and Lamphun) in programming and implementing the TTX.

   Role-playing TTX was executed according to the practical scenario prepared assuming flood disaster occurred in the area of jurisdiction. The role-playing exercise is one of the competent exercises to enhance operation skills of the Emergency Operation Center (EOC).
4) **Attendants and Staffing**: The TTX was opened with attendance of Mr. Anusorn Kaewkangwan, Deputy D.G. of DDPM.
   - Staff of model LAO, i.e., Tedsabaan Tambon (T.T.) Wianmok and T.T. Thung Phueng in Lamphun Province and Oobortor Kor and T.T. Li in Lampang Province, attended the TTX, and take the exercises for their own locality.
   - Officials of DPM Provincial Office of Lamphun and Lampang implemented the TTX, playing as controller, facilitator and secretariat, assisted by officials of DPM Regional Center-10, and DDPM/Bangkok.

TTX on 1 March, 2012: Player Groups (left) and controller groups (right)

No.	Organization	Day-1	Day-2	Day-3
1	T.T. Wiangmok	11	10	10
2	T.T. Thung Phueng	11	10	10
3	Orbortor. Kor	10	10	10

4	T.T. Li	10	10	10
5	DPM Lamphun Prov.	9	9	9
6	DPM Lampang Prov.	10	5	4
7	DPMRC-10 Lampang	17	8	8
8	DDPM/Expert	9	9	9
9	Others	1	1	1
Total		**88**	**72**	**71**

For the TTX, officials from DPM Provincial Office, DPM Regional Center-10, DPM Academy and DDPM/Bangkok had preparatory meeting one day before on 27 February, and wrap-up meeting in the evening on 01 March after the exercise.

[WS-4 & TTX-3] <u>Workshop for Promotion of Formulation of DPM Action Plan at LAO Level and Table-top Exercises at Provincial Level</u>

1) **Date of Workshop:** From 13 (Wed.) to 15 (Fri.) June, 2012
2) **Venue:** Miracle Grand Convention Hotel, Bangkok
3) **Objectives of Workshop:**
   - Workshop to Promote Formulation of LAO DPM-AP: To comprehend the contents of LAO DPM-AP, and discuss how to assist LAO for their plan formulation. The formulation of the DPM-AP should be promoted throughout the country assisted by DPM Provincial Offices and other relevant agencies of DDPM.
   - Execution of TTX at Provincial Level: To review disaster managements during 2011-flood, and execute table-top exercise (TTX) to seek for better response in provincial EOC, according to the scenario prepared based on the 2011-flood. Lesson learnt from experience of the 2011-flood should be reflected to the flood responses in future.
4) **Attendants and Workshop Staff**: The Workshop/TTX was opened with attendance of Mr. Wiboon Sanguanpong, D.G.of DDPM and Mr. Montree Chanachaiviboonwat, Director of DPM Policy Bureau. Officials of DDPM throughout the country are the main object persons of the workshop.

Plenary session on 13 June, 2012

No.	Organization	Day-1	Day-2	Day-3
1	DPM Provincial Office	137	137	137
2	DPM Regional Center	39	39	39
3	DPM Academy	10	10	10
4	DDPM/BKK (incl. JICA Exp.)	54	54	54
5	Other Agencies	27	27	27
Total		**267**	**267**	**267**

[WS-5] <u>Workshop for Preparation of DPM Action Plan of LAO</u>

1) **Date of Workshop:** 2 days from 23 (Thu.) to 24 (Fri.) August, 2012
2) **Venue:** The Ligor City Hotel, Nakhon Si Thammarat
3) **Objectives of Workshop:**
   - To explain outlines of DPM Act and provincial DPM plan in relation with LAO DPM-AP;
   - To explain template of LAO DPM-AP developed based on discussions in model areas in North Region, and to examine its applicability to South Region;
   - To explain functions of flood response manuals and how to prepare them in LAO; and
   - To discuss on the dissemination of LAO DPM-AP over the country (procedures and time schedule, difficulties in execution, etc.).
4) **Attendants and Workshop Staff :** The Workshop was opened with attendance of Mr. Montree Chanacaiviboonwat, Director of DPM Policy Bureau, Mr. Surapol Leckaow, Director of Disaster Prevention Criteria Bureau and Parinya Jatisathien, Director of DPM Regional Center. (Zone-11 Surat Thani). Main object persons were staff of LAO (Tedsabaan/Oobortor) in Nakhon Si Thammarat. Officials of DPM Provincial Office of Nakhon Si Thammarat, DPM Regional Center 11 (Nakhon Si Thammarat), and DDPM/Bangkok were also attended to support the workshop.

Attendants	Day-1 (23 Aug.)	Day-2 (24 Aug.)
LAO (9 Tedsabaan/Oobortor)	28	32
DPM Provincial Office	4	5
DPM Regional Center-11	4	4
DDPM/BKK	14	12
Others	-	2
(Total)	**50**	**55**

[TTX-4] <u>Table-top Exercise for Flood Disaster Response at LAO Level in Nakhon Si Thammarat Province</u>

1) **Date of Exercise:** 20 (Thu.) and 21 (Fri.) June, 2013
2) **Venue:** Ligor City Hotel, Nakhon Si Thammarat
3) **Objectives of TTX**:

- To exercise staff of Tedsabaan/Oobortor for their prompt and proper actions to response flood disasters; and
- To enhance skills of attendants in programming and implementing the TTX.

4) **Attendants and Exercise Staffing**: The TTX was opened with attendance of Mr. Songpon Sawadtham, Vice-Governor of Nakhon Si Thammarat Province. Role-playing exercise was executed according to the practical scenario prepared assuming flood disaster occurred in the area of jurisdiction.
   - Staff of 10 LAO (Tedsabaan/Oobortor) selected in Nakhon Si Thammarat Province attended the TTX, and took exercises for their own locality. Staff of LAO played roles of Player and Controller Groups altering their roles, so that they can experience both roles of the exercise.
   - Officials of DPM Provincial Office (Nakhon Si Thammarat), Regional Center (11), and DDPM/Bangkok had roles of Facilitators and TTX-secretariat.
   - Attendants from related organizations such as TMD, army, and media participated in the exercises taking contact and/or inputting information to Player Groups under the control of Controller Group.

Offices	Day-1	Day-2
LAO (10 Tedsabaan/Oobortor)	84	84-
Related organizations (TMD, army, media)	6	6
DPM-PO Nakhon Si Thammarat	8	8
DPM Regional Center-11	3	3
DDPM/Bangkok	12	12
Total	**113**	**113**

The TTX was held for two (2) days. Prior to the TTX, Organizer Group (officials and facilitators concerned) had preparatory meeting on 19 June, 2013.

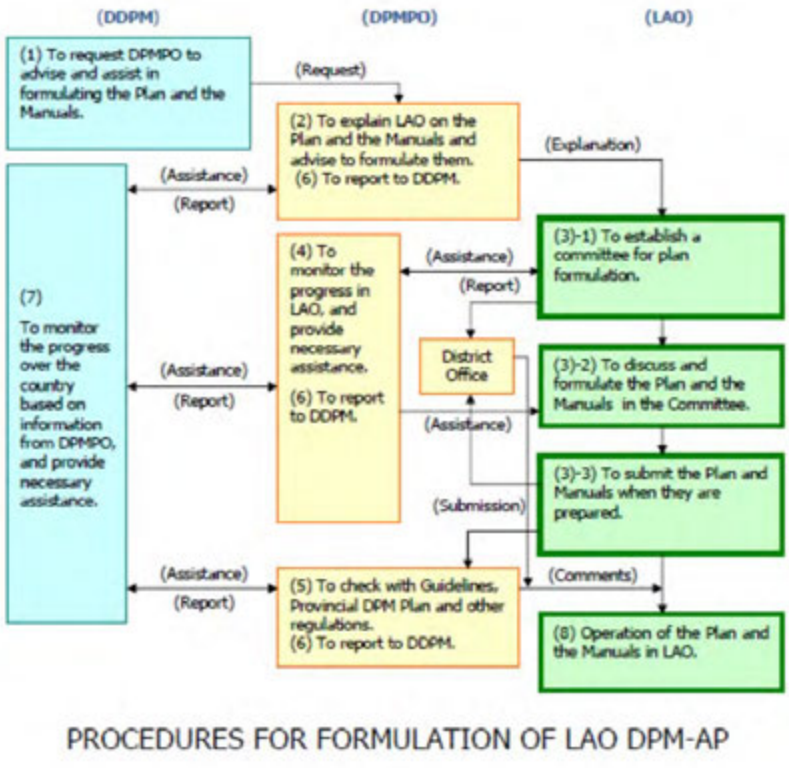
(6) Nationwide Dissemination of LAO DPM-AP

Task Force for LAO DPM-AP: A task force for promotion of DPM-AP for LAO was organized in DDPM and chaired by Deputy Director General of DDPM, consisting of internal and external officers and experts of DDPM to promote LAO DPM-AP across the country. The template of DPM-AP was reviewed in the Task Force and authorized for nationwide dissemination.

Dissemination Procedures: Procedures for nationwide dissemination were discussed among the officers in charge of DPM Policy Bureau and JICA Expert. The procedures for formulation of LAO DPM-AP are described below together with duties of DDPM, DPM Provincial Office and relevant LAO. Numbers in circle in the descriptions indicate general sequence of activities.

① **DDPM/Bangkok** requests DPM Provincial Offices, sending following documents, to advise and assist LAO in their jurisdiction in formulation of DPM-AP/Manuals;

1) Guidelines for formulation of DPM-AP and Response Manuals
2) Template of DPM-AP
3) Conceptual Sample of Flood Response Manuals of LAO-EOC



PROCEDURES FOR FORMULATION OF LAO DPM-AP

② **DPM Provincial Office** invites LAO representatives of its jurisdiction to explain DPM-AP and Response Manuals and advise to formulate them.

③ **LAO** executes the following:

1) **LAO Mayor** (Mayor of municipality or Chief Executive of SAO) establishes a committee to formulate DPM-AP (LAO Committee).
   - LAO Committee consists of LAO Mayor (chairman) and other key persons from LAO and other organizations relevant to the disaster management in the area of jurisdiction.
   - LAO Committee would be a main body of LAO Command Center (LAO-CC) and LAO Emergency Operation Center (LAO-EOC) when the LAO DPM-AP is formulated.
2) **LAO Committee** discusses and formulate DPM-AP referring to the template and guidelines.
   - DPM-AP is formulated in the LAO Committee. DPM-AP should be discussed well in the committee meetings to make the plan effective and practical fitting with the actual situations of the area.
   - Existing emergency operation plans, manuals and regulations should be incorporated in the DPM-AP and Flood Response Manual to make good use of past experience to the maximum extent possible.
   - Response manuals prepared by the responsible parties in charge are also discussed in the LAO Committee to coordinate with other relevant manuals, plans and regulations.
3) **LAO Mayor** submits DPM-AP to District Office and DPM Provincial Office, when it is formulated, for their checking with Guidelines, Provincial DPM Plan and other relevant regulations.

④ **DPM Provincial Office** should monitor the progress of plan-formulations in LAO, and provide necessary assistance.

⑤ **DPM Provincial Office and District Office** should check the DPM-AP submitted from LAO with Guidelines, DPM Provincial Plan and other regulations, and comment on them.

⑥ **DPM Provincial Office** should report to DDPM/Bangkok regarding the progress of following major events in a specified format;

- Event-1: Execution of explanation to LAO by DPM Provincial Office
- Event-2: Establishment of LAO Committee by LAO,
- Event-3: Formulation of DPM-AP by LAO,
- Event-4: Execution of checking of DPM-AP by DPM Provincial Office, and
- Event-5: Preparation of Flood Response Manuals by LAO.

⑦ **DDPM/Bangkok** monitors the progress of the plan-formulation of LAO across the country based on the reports from DPM Provincial Offices, and provides necessary assistance. Progress across the country will be summarized in table and maps at the three-month intervals in principle by DDPM/Bangkok. Based on the result of monitoring, campaign program to promote preparation of DPM-AP and response manuals in LAO will be reviewed.

⑧ **LAO Major** starts operation of DPM-AP.

Guideline for Dissemination: A guideline for dissemination was prepared for officials of DPM-PO, DPM-RC, and DDPM who assist LAO in preparation of DPM-AP. [Refer to ANNEX 2: Guideline for Preparation of LAO DPM Action Plan]

3.1.3 Outputs

Project Outputs: In order to promote dissemination of LAO DPM-AP across the country, following activities were made during the project period. These activities are duly necessary for formulation of the Plan by LAO with guidance and assistance of officials DPM-PO, DPM-RC, DPMA and DDPM.

1) Development of template of DPM-AP and flood disaster response manuals.
2) Preparation of guidelines for dissemination of DPM-AP across country.
3) Execution of workshops on formulation of LAO DPM-AP:
   - Two officials each from all DPM-PO, DPM-RC and DPMA across the country participated the workshops and discussed on LAO DPM-AP.
   - One staff each from all of LAO in model provinces (Lampang and Lamphun) participated the workshops and discussed on LAO DPM-AP.
   - Two staff each from 9 LAO (about 5% of all LAO) in Nakhon Si Thammarat Province participated the workshops and discussed on LAO DPM-AP.
   - In addition, some other persons who have concern to the DPM-AP participated the workshops.
4) Execution of table-top exercises (TTX):

- Two officials each from all DPM-PO, DPM-RC and DPMA across the country participated the role-playing and scenario-driven TTX respectively.
- Ten staff from four model LAO in Lampang and Lamphun provinces participated role-playing TTX.
- Eight staff each from 10 LAO in Nakhon Si Thammarat Province participated role-playing TTX.
- In addition, some other persons who have concern to the exercise participated the TTX.

5) Establishment of monitoring procedures for formulation of LAO DPM-AP throughout the country. Five checking points were set in the monitoring process to confirm practical plan formulation.
6) Preparation of GIS data-base to monitor the progress in formulation of DPM-AP for LAO. Status of progress could be seen visually on the computer display.

Progress of Plan Formulation: As of end of November, 2013, LAO DPM-AP wear formulated in all LAO in Lampang Province, and 97% in Lamphun Province. In all RAO across the country, 30 out of 77 provinces reported the progress. A total of 2,186 LAO (28% of all LAO, or 79% of LAO in 30 provinces) prepared draft DPM-AP.

Proposed Activities for Sustainability: The DPM-AP formulated should be set in respective LAO as governing rule of DPM operations, and upgraded as needed. Activities and procedures to be implemented after the Project were discussed in the Task-Force Workshop for Project Output Sustainability held on 25 October 2013 and meetings with DPM Policy Bureau. Finally following activities were proposed for sustainability of project. Among these, (1-1) through (1-4) are the activities to set the Plan in LAO, and (1-5) through (1-7) are those to upgrade the Plan.

(1-1) Execution of TTX at least one batch every year: TTX is a competitive tool to verify DPM-AP and keep DPMAC and EOC operational. In order to promote the execution of TTX in LAO, DDPM assists in implementation of TTX at least one batch every year in collaboration with DPM-PO/RC.

(1-2) Promoting award for outstanding performance of DPM-AP: In order to promote proper operation of DPM-AP, incentive-award is given to the LAO who performed outstanding DPM operation.

(1-3) Training course for DDPM officials on LAO DPM-AP: In order to promote dissemination of DPM-AP for LAO properly, DDPM officials (including DPM-RC/PO) who assist LAO in plan formulation and monitoring are trained in the course of DPMA. The course is opened regularly every year, covering the lectures on effective operations of DPM-AP and exercises of role-playing and scenario-driven TTX.

(1-4) Bringing up dissemination of LAO DPM-AP to MOI policy: Dissemination of LAO

DPM-AP is a crucial issue to attain DPM of the country, and its execution needs cooperation of various agencies of MOI. It is therefore requested that the dissemination of LAO DPM-AP is brought-up as one of the main policies of the ministry and executed intensively in collaboration with agencies concerned.

(1-5) Preparation of Standard Operation Procedures (SOP) for EOC: In order to support DPM activities in LAO, DDPM offices (including DPM-RC and DPM-PO) assist LAO to prepare SOP for Emergency Operation Center (EOC).

(1-6) Formulation of DPM-AP for various disasters to meet with respective localities: The target disaster for the DPM-AP should be set appropriately and concretely considering disaster hazard and vulnerability of the area based on the past disaster/damage records. For the time being, template developed so far will be used for nation-wide dissemination continuously. Considering the disaster operations in site and requests from the site, template for specific type of disaster should be discussed, if it is required.

(1-7) Revision of DPM-AP in comply with National DPM Plan to be revised: National DPM Plan will be revised in the year 2015. In comply with the revision, provincial DPM Plan and LAO DPM-AP should also be revised immediately.

3.1.4 Recommendations

(1) To enforce operation by Local Director: DPM operations by Local Director should be enforced, since the Local Director is responsible for DPM operations in the area of LAO and empowered to use every resources available in the area according to the DPM-Act. The DPM operations at LAO level play vital roles of DPM of the country because of following reasons:

1) LAO are the fundamental bodies of disaster response and at the same time affected groups of the disaster;
2) Every disaster responses start from the operations of LAO, and their operations are required most frequently even though they are not always big in scale;
3) Emergency responses of LAO have higher opportunity to save human lives and casualties; and
4) Initial actions of LAO may prevent further expansion of the disaster.

(2) To assist in formulation of LAO DPM-AP by whole MOI: Considering the important role of Local Director in DPM Act, DPM-AP should be formulated by LAO as early as possible and root them in the areas of jurisdiction, so that the Local Director could effectively mobilize the resources in his area such as personnel, facilities, equipment and materials for the DPM operations. The consolidation of new system in an area would require much time and continuous efforts from various aspects. It is recommended that the dissemination should be executed with corporations from various parts of MOI under a policy of the ministry, since dissemination of LAO DPM-AP is a big challenge requiring measures from various aspects.

(3) To arrange budget for steady assistance: Thorough discussion should be made to formulate the Plan in LAO committees consisting of key disaster-related persons and organizations of the area. In addition, there exist LAO as many as 7,700 across the country. Therefore, the plan formulation would need time to accomplish. In order to support the steady activities, particular consideration should be given on budget arrangements for assisting LAO.

3.2 Community Based Disaster Risk Management (CBDRM)

3.2.1 Understanding of the current situation in Thailand

In the project Phase-1, the methodology of CBDRM was build. In the Phase-2, it is required to improve and expand CBDRM activities with the results of the Phase-1. The Promotion Bureau of DDPM was in charge of promotion of CBDRM activities in Thailand and keeps their responsibility. For that purpose, the promotion bureau and the Phase-2 set up TF-2 (TF-CBDRM). When the Phase-2 started, DDPM did not have enough CBDRM facilitators to promote CBDRM activities nationwide. Thus, the Phase-2 prepared a strategy to train sufficient number of CBDRM facilitators. Before the Phase-2 started, other donors trained provincial level stuff. However, since most of the trained staffs are not DDPM staff and not in charge of disaster management only, most of them had moved to other positions. Thus, the Phase-2 planned to train mainly DDPM provincial and regional staff in terms of sustainability of CBDRM promotion. For the OJT of the trainees and trial of the standardization of CBDRM activities, the Phase-2 selected 4 pilot villages in 2 pilot provinces (Lampang province and Lamphun province) and 1 semi-pilot village in semi-pilot province (Nakhon Sri Thammarat province) to conduct CBDRM demonstration activities with trained CBDRM facilitators. In the demonstration activities, TF-2 planned to use CBDRM materials prepared in Phase-1 and to modify it for actual necessity of CBDRM activities conducted by DDPM. The CBDRM guide prepared in the Phase-1 suggested conducting 4 days workshop to prepare village level DPM plans. However, actual condition of DDPM and local do not allow such long workshop due to the lack of resources. So, the Phase-2 had to shorten the duration of CBDRM workshop remaining sufficient effectiveness of the activities. Anyway, during the CBDRM workshop, villagers prepare DPM plan to manage CBDRM activities in their village.
For the effective CBDRM activities, the Phase-2 suggested a basic concept. The concept is collaboration with the school disaster education conducted by TF-4. To keep sustainability of the disaster management activities in village level, the roles of schools are important. School teachers are respected by village people and school students will inform their family what they learned in disaster education in schools. Moreover, the school students will be responsible on the disaster management in their village in future.

3.2.2 Activity and Output

The activities of TF-CBDRM in this project can be divided into 3 phases: Preparation Phase, Implementation Phase and Monitoring and Expanding Phase. The activities in each phases are shown on the figure in the next page.

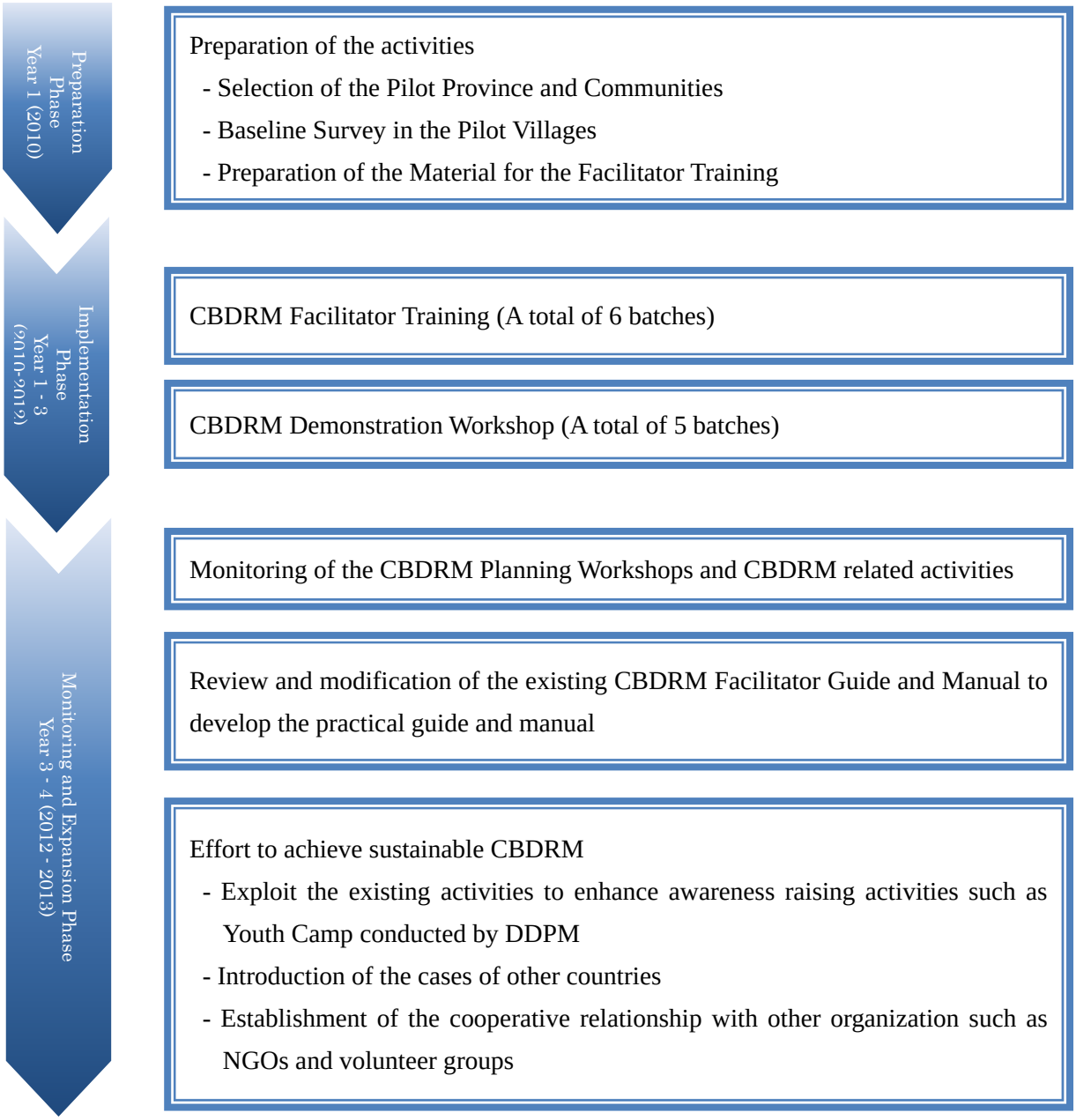


Figure 3.2.1 The Scheme of TF-CBDRM Activities

(1) Selection of the pilot villages

The project selected 4 pilot villages and 1 semi-pilot village.

The following are the major requirement for models of disaster prevention and mitigation activities:

1) The sites should cover variety of flood disasters as much as possible so as to cope with variety of disasters.
2) The sites should be those suffering from frequent and severe flood disasters, vulnerable to disasters, etc., so that the effects of the model activities could be recognized more definitely.

3) The sites should be vulnerable from natural, personal and organizational aspects requiring CBDRM.
4) The sites should be located at more convenient places for the model works implementation.

The project conducted site survey and selected the pilot villages as follows.

Table 3.2.1 Selected Model Provinces and Villages

Province	Site	Flood type assumed from topography
Lampang	Ban Chawfa	Flash flood
Lampang	Ban Chai Chom Phu/Ban Mae Salaem	Debris flow
Lamphun	Ban Koornong	River flood
Lamphun	Ban Muong Sam Pee	River flood
(Nakhon Si Thammarat)	(Ban Tham Talod) (Semi-pilot village)	(River flood)

Basically, the pilot sites are 4 villages in 2 provinces. The fifth village, Ban Tham Talod in Nakhon Si Thammarat was selected to conduct CBDRM workshop only in accordance with the request from TF-2 and TF-4 (TF-Disaster Education).

(2) Baseline survey

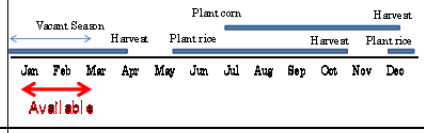
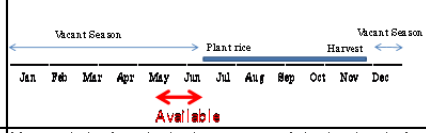
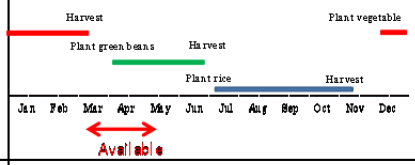
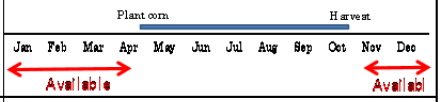
A time-based surveys were conducted by the selected firm for a period of 4 years starting with the baseline survey on year one to establish the current disaster management situation in selected pilot villages. From Yr 2 to Yr 4, the surveys were focused on tracking changes brought on by implementing the Project. Selected firm conducted surveys at Ban Chai Chom Phu/Ban Mae Salaem and Ban Muong Sam Pee from Yr 1. Research and Development Sub-bureau of Research and International Cooperation Bureau conducted surveys at Ban Chawfa and Ban Koornong from Yr 2 since CBDRM activities in Ban Chawfa and Ban Koornong were conducted in the end of Yr 2.

The results of the surveys were made up as reports of baseline/monitoring survey. TF-2 also conducted site survey to identify the characteristics of the pilot villages in Lampang province and Lamphun province.

The following table is the description of characteristic of each pilot village.

Table 3.2.2 The CBDRM related information in each pilot site

	Ban Chawfa	Ban Chai chom Phu & Mae salaem	Ban Muan Sam Pee	Ban Konong
Disaster management structure				
The communication channel of warning information	Village leader receives disaster information from Tedsabaan thruough mobile phone. Village leader warns to village people by loud speakers.	Tedsabaan or Amphu→(Mobile phone)→Village leader→(Loud speaker)→Village people People don't rely on the warning from the village leader and they evacuate by their own estimation. In emergency case, some helper come from Tedsabaan with megaphones.	Tedsabaan or Amphu→(Mobile phone or letter by handover)→Village leader→(Loud speaker)→Village people The warning information from Tedsabaan is given at right time, according to the village leader.	Chanwat→ Amphu→ Oboto→ (Mobile phne)→Village leader→(Loud peaker)→Village people Oboto office is located walking distance from village leader's house. The village leader can receive warning from Oboto before the rainfall becomes heavy. After receiving the warning from Oboto, the village leader start using the rain gauge.
The disaster response structure	Mr. Warning consist of the village leader and asistant leader in Chokfa is responsible about monitoring of river water level and rain gauge.	Chai Chom Phu: Mr. Warning (6-7 people) Civil Defense Volunteer Mae salaem: Mr. Warning(6-7 people) Civil Defense Volunteer	There is a responsible section of the disaster and Civil defense volunteers(5people).	Civil Defense Volunteer(12people)
Warning system equipment	There are loud speakers at 2 places but in some places people cannot hear the warning.	Loud speakers are located at beside the children center but in some pieces people cannot hear the warning. There are 3 rain gauges in this village. One is located beside the temple by WRD and Kasetsart univ. It has warning speaker but the sound is not loud enough. The other is located beside the temple but doesn't work. The last one is in Village leader's house which is prepared by DMR.	There are loud speakers at 4 places. Rain gauge is in the school.	Loud speakders are at 1 place. When electricity is down, the village leader can use a manual siren. The village leader can receive warning from Oboto before the rainfall becomes heavy. After receiving the warning from Oboto, the village leader start using the rain gauge.
Political administrative structure	Tedsabaan Thung Phuong was upgreaded from Oboto recently. Therefore, Oboto is not existing in this Tedsabaan. A village leader and two asistant leaders are in this village. One asistant leader is in Chokfa. The Tedsabaan council representative is also here. Those 4 people are public servants. The council representative receives salary from the Tedsabaan, the village leader and asistants receive from the Amphu. There are 8 sections (development, finance, welfare, etc.) in the village structure and each section has 1 person responsible.	Tedsabaan Wingmok was upgreaded from Oboto 6 years ago. Therefore, Oboto is not existing in this Tedsabaan. Chai chom phu: A village leader and two asistant leaders are in the village. The village is devided into 11 zones and each zone has a leader and an asistant. Mae salaem: A village leader and three asistant leaders. The village is devided into 5 zones and each zone has a leader and an asistant.	A village leader and two asistant leaders are in this village. There are 7 sections (desaster management, finance, welfare, security, education, temple, etc.) in the village structure and each section has 1 person responsible.	A village leader and three asistant leaders are in this village. There are 7 sections (security, health, finance, public relations, etc.) in the village structure and each section has 1 person responsible.
Other organizations	House wife association, Welfare association, Village fund, Civil Defense Volunteer, Security association trained by Police	Chai Chom Phu: House wife association, Old people association, Civil Defense Volunteer(4 members), Mr. Warnings(6-7 members) Mae salaem: Security group (Opopo: gun control, theftproof activity), Civil Defense Volunteer(4 members), Mr. Warnings(5-6 members)	Civil Defense Volunteer (5 members, one of them is also a member of OTOS.) House wife association produces drinking water and leather goods.	Civil Defense Volunteer(12 members), Security Volunteer(9 members). According to DMR they haven't trained anybody as Mr. Warning in this village.
Industry	Most of the people are engaged in agriculture. Few people don't have their own farm land.	Though most of the people are engaged in agriculture, because of insufficiency of the irrigation facility, they can raise one crop a year. In dry season the people work outside of the village.	Most of the people are engaged in agriculture. 10% of the people don't have their own farm land and are engaged in construction. In this village, they can raise three crops a year. Three crops are rice, green bean, and vegitable (Cabbage, corn, etc.). There is a branch office of a broker. The people sell the vegitables and fruits through the broker. The house wife association produce drinking water and leather goods.	This village is opened up by the relocated people from Bhumipol dam area. Most of them are engaged in agriculture. There is no rice field in this village. Corn is the main crop here.

	Ban Chawfa	Ban Chai chom Phu & Mae salaem	Ban Muan Sam Pee	Ban Konong
The schedule of the agriculture				
Available time for the WS	Jan–Mar is the best season to have CBDRM WS for the villagers. If the WS is conducted in other season, it should be held in night time after 4 o'clock. But if the WS is held in night time, it is difficult for people from Chokfa to join.	May–early in June is the best season. It is the time before the planting of rice. If rainy season start earlier, they may start planting in June. They don't want to conduct WS in planting time. In dry season the people go to work outside of the village. Therefore it's difficult to conduct the WS in daytime. Some of them work far away and they come back here before planting season. So the best season is May– early in June. Anyway, if it's required that the same participants attend whole WS, it's convinient for the villagers to attend in night time.	In this village, the villagers can raise three crops a year. The busiest time is July–Aug, planting time of rice. Mar and Apr is the vacant season for the villagers. Mar–early in May is acceptable to conduct the WS in daytime. If the WS is conducted in June, it should be held in night time (19 – 22 o'clock). If we start the WS earlier in the evening, it's difficult for villagers to attend every day.	In this village, the villagers can raise only one crop of corn a year. Nov–Apr is vacant season and the villagers can attend any time during the vacant season.
Venue for the WS	There is a venue beside the temple. In the venue, cooking facilities are available. The village hall can be used also.	The temple can be used as a venue.	The temple or the school are available.	The school in Village 4 is a candidate of the venue.
Candidates of participants for the WS	The representatives from the organizations, sections of the village council, and Chokfa.	The representatives from the organizations and the leaders of each zone.	The representatives from the organizations, sections of the village council, and Civil Defense Volunteers.	The representatives from the each section of the village council and Civil Defense Volunteers.
Disaster Situation				
Affected area	19 houses are affected by flood in 3 areas beside the river. But the flood water doesn't reach to the floor level of the houses. The houses flooded above floor level have moved to safe area after Typhoon Ketsana. The rice field is also affected by flood.	The flush flood from the mountain affects the village and continue a few hours. Few houses flooded above floor level, therefore most of people don't evacuate.	Most of the houses in the south part area from the high way are inundated and evacuate. In the north part area from the high way floods 70–80cm from the ground level but basicaly people don't evacuate. The temple used as evacuation house is located in the north area. The temple building itself is not flooded even though surrounded area is inundated.	12 houses are affected by flood but the flood water doesn't reach to the floor level. Old people and childrens evacuate to the relative's houses in the safe area.
Type of the houses	Most of the houses are elevated. Even in no inundation area, the houses are elevated.	Most of the houses are elevated. Some of the houses are one story but the residents don't evacuate because the flush flood continue only few hours, according to interview.	Many houses are elevated. There are many houses having accomodation space at ground floor in the north part area.	Most of the houses in flooded area are elevated.
Road situation	The road is located beside the river and vulnerable. Especially the bridge at the junction to the school is affected by every flood.	The road becomes a waterway.	The high way running east and west is banked and block the water flow. The flood situation at north area and south area are different. The road running north and south is inundated in south area.	No serious damage.
Evacuation place	There are 3 safe area for evacuation. One of them is the houses behind the school.	The children center and surrounding area in high area is used as evacuation center. Most of livestocks are moved to mountainous area during rainy season.	The mounded highway and the temple are used as evacuation place. 70% of the 200 households evacuate. 80% of them evacuate to the highway and 20% evacuate to the temple 1–3 days. The refugee use tents beside the highway. The village receives the relief from the provincial red cross, provincial DPM, and other private organizations within and without the district.	The relative's house far from the river.
Population				
Others		In this area, there are 3 villages affected by flood. Village No.4 is also flooded. Some of the people misunderstand the project objectives. They worry that JICA relocates houses at flood area. Therefore Expert team should have a large meeting before CBDRM WS at the village to explain the purpose of this project exactly.		Three villages except for the Village No.1 is opened up by the relocated people from Bhumipol dam area. Basically one crop of the corn a year provide enough income for the villagers. They don't need to work so hard, the village leader said. (Approximately, they can earn 100,000 Baht from 17 rai = 2.7 ha of the corn field. The village has 2,000–2,300 rai = 320 ha. The number of the households are 139. It means each household has 14 rai = 2.2 ha of the corn field and can earn 80,000 Baht. They have some livestoks and fruit field also. This story from the village leader makes sense.)

The following are the recommendation from the first baseline survey. The CBDRM activities in all pilot villages were conducted considering these issues.

1) Awareness raising for Evacuation Intention: It was also noted that the community had limited intention to evacuate from their houses because of the low risk perception and awareness. Most of the respondents do not know or believe that flood could harm or kill; even though they were not certain if their houses could withstand the severity of the flood. Thus, it is recommended to focus on awareness rising among the community members.
2) Improvement of Risk Communication: Effectiveness of risk communication contributed to evacuation decision making. It needs accurate, comprehensive, timely and impact information to help people to make decision to evacuate. The communities should learn how to, at least, calculate the severity of the wind, the rain and be able to predict the impact on location which are crucial for calculating lead time to decide when to evacuate the house.
3) Standardized coding system of the Level of Danger: The communities showed their interest in developing effective local warning system. The principle of risk communication should be applied. It is recommended to develop a standardized coding system for the village to establish the level of danger so that people can personalize the risk and be able to make decision for their families.
4) Securement of Shelters: This survey found weakness in warning and evacuation in all communities. The constraints are both hazard related (low risk perception and awareness) and non-hazard related (lack of protective infrastructure, warning system and safe shelter). There is still a long last mile en route between the warning received and the actual evacuation. A simple warning technique and comprehensible message will encourage effective response. The lack of infrastructure in the area could be addressed to concern authority. Safety of existing structure to be converted into shelter must be addressed to gain confidence among community members.
5) Knowledge sharing about Disaster Management: Rural communities must be able to help themselves in a timely and effective manner. It is important in Ban Chaichomphu to bring in all resources available in and around the communities such as the rain gauges, the trained Mr. Warning volunteers, the former Village Head and the DPM of Wiangmok municipality and integrate these resources to develop effective community disaster response plan. In order to prepare for disaster, the community must be knowledgeable about water related hazards and be aware of many possible future scenarios. More importantly, this knowledge must be shared among the community members, not only among response volunteers or the operation team.
6) Utilization of Mr. Warning: This survey found that there is limited use of trained Mr. Warning in community preparedness and response. These volunteers are useful resources. The training should ensure that these personnel have significant roles in the community disaster response plan.
7) Audio-Visual materials: Considering the characteristic of community members, it is needed to have effective audio-visual materials in the training. A video clip about the impact of

climate change, water-related disaster and debris flow will help the communities visualize the possible dangers and relate their community to the risks.

8) Utilization of Social Capital: Rural communities in Thailand are generally rich with social capital when almost everyone knows everyone else, thus adding a high level of trust to preparedness and response activities. Community training should make use of social capital. For example, every zone must at least send one representative to participate in the training. The community planning should be developed through public participation which is the usual practice in rural communities in Thailand.
9) Provision of Clear and Transparent Information: Before conducing training, it is needed for the team to provide necessary, clear and transparent information to gain social endorsement from community members. The rumor about resettlement that occurred before this survey must be addressed and clarified before the training.
10) Training in Agricultural Off-Season: It is recommended that the community training be conducted around March – April because it will be the time when rural people are free from farm work.

(3) CBDRM Facilitator Training

The project design states that 80 DDPM staff and officers will be provided training on how to facilitate CBDRM workshops and 220 local authority staff in model provinces will be trained to enhance the knowledge of CBDRM.

Finally, 228 CBDRM facilitators including not only DDPM staff but also other related organization staff and retired DDPM staff, and retired teachers were cultivated and 324 local authority staffs were trained in the Phase-2.

After the CBDRM facilitators training, the trained DDPM provincial staff prepared CBDRM promotion action plan in each province and submitted it to the DDPM Promotion Bureau.

The list of CBDRM facilitator training conducted under this project is shown in the table 3.2.3. The program of CBDRM facilitator training for DDPM staff is shown in the table 3.2.4 and the program for local authority staff is shown in the table 3.2.5.

Table 3.2.3 List of CBDRM facilitator trainings

Events	Date	Place	Target	Objective / Outcome
CBDRM Facilitator Training Workshop (1st batch)	Dec 2010	DPMA Chiang Mai Campus	1 DPM Official from each province in North and North Eastern Region (Total 52 Officials)	- The objectives are to introduce the CBDRM Facilitator's Guide and to enhance the participants' abilities to use the guide effectively. - CBDRM promotion action plan were submitted to DPM Promotion Bureau from each participated provincial office.
CBDRM Facilitator Training Workshop (2nd batch)	Jun 2011	DPMA Phuket Campus	1 Official from each province in Central and South Region (Total 46 Officials)	- The objectives are to introduce the CBDRM Facilitator's Guide and to enhance the participants' abilities to use the guide effectively. - CBDRM promotion action plan were submitted to DPM Promotion Bureau from each participated provincial office.

CBDRM Facilitator Training Workshop for Local Authority Staff (1st batch)	Feb 2012	Lamphun Will Hotel (Lamphun City)	Officials from each local administration office in Lamphun Province (Total 140 officials)	- The objectives are to cultivate human resources that can facilitate CBDRM as organizers. Since the promotion of CBDRM in Thailand is depending on the budget of local administration office, they should know the roles and responsibility of local administration office in CBDRM activities. - The lecturers from Aichi Preparedness Leaders Association introduced CBDRM activity in Japan
CBDRM Facilitator Training Workshop for Local Authority Staff (2nd batch)	Feb 2012	Wienglakor Hotel (Lampang City)	Officials from each local administration office in Lampang Province (Total 184 officials)	- The objectives are to cultivate human resources that can facilitate CBDRM as organizers. Since the promotion of CBDRM in Thailand is depending on the budget of local administration office, they should know the roles and responsibility of local administration office in CBDRM activities. - The lecturers from Aichi Preparedness Leaders Association introduced CBDRM activity in Japan
CBDRM Facilitator Training Workshop (3rd batch)	Feb 2013	Royal River Hotel (Bangkok)	50 DPM Officials from whole of country (Total 50 Officials)	- This is an additional training for DPM staff. - After the severe flood in 2011, DDPM needed to scale up the CBDRM activities promptly and needed to train DPM staff more.
CBDRM Facilitator Training Workshop (4th batch)	Jul 2013	Chateau de Khao Yai Hotel (Nakhon Ratchasima)	Retired DPM staff, retired teachers, and other related organizations such as NGO, media (Total 80 trainees)	- This is an additional training for non DDPM staff. - To secure the sufficient number of CBDRM facilitators, TF-2 decided to train non DDPM staff.

Table 3.2.4 Program of CBDRM Facilitator Trainings

Day 1

Time	Topics
8:30 - 9:00 a.m.	Opening Remarks by Deputy DG
9:00 - 9:40 a.m.	Introduction of Facilitators & Participants
9:40 - 10:00	Workshop Administration a. Schedule b. Administrative Matters c. Ground Rules
10:00 - 10:30	Leveling of Expectations a. Expectation from Participants b. Workshops Objectives and Expected Outputs
Tea Break	
10:45 - 11:15	Grouping and Assignments
11:15 - 12:00	Introduction of Facilitator's Guide
Lunch Break	
1:00 - 1:45	Session One: Sub-session One: Matching terms with definition
1:45 - 2:30	Session One: Sub-session Two: Disaster Risk Management
2:30 - 3:15	Session Two: The CBDRM Process
Tea Break	

3:30 - 4:00	Session Three: Understanding the Community
4:00 - 4:30	Administration
4:30 - 5:00	Preparatory meeting for the following day

Day 2

Time	Topics
8:30 - 9:10	Session Four: Participatory Disaster Risk Assessment Sub-session 1: Hazard Assessment and Hazard Mapping
9:10 - 9:40	Group work: Hazard Mapping Exercise
9:40 - 10:15	Session Four: Sub-session Two: Vulnerability Analysis and Vulnerability Mapping
Tea Break	
10:30 - 11:15	Continue Vulnerability Mapping
11:15 - 12:00	Session Five: Risk Assessment
Lunch Break	
1:00 - 2:30	Session Six: Managing Risk
2:30 - 3:00	Session Seven: Integrating the Plan
Tea Break	
3:15 - 3:45	Session 8: Action Planning
3:45 - 5:00	Table Top Exercise
5:00 - 5:30	Preparatory meeting for the following day

Day 3

Time	Topics
8:30 - 9:10	Managing Evacuation Drill
9:10 - 10:00	Evacuation Role Play
Tea Break	
10:15 - 12:00	Training on Facilitating (Skills and Techniques)
Lunch Break	
1:00 - 2:00	Demonstration #1: CBDRM Process - Group 1
2:00 - 3:00	Demonstration #2: Hazard Mapping - Group 2
Tea Break	
3:15 - 4:15	Demonstration #3: Vulnerability Mapping - Group 3
4:00 - 5:00	Demonstration #4: Preparing for the Evacuation Drill - Group 4
5:00 - 6:00	Demonstration #5: Managing Risk - Group 5

Day 4

Time	Topics
8:30 - 9:30	Demonstration #6: Table Top Exercise - Group 6
Tea Break	
9:45 - 11:00	Demonstration #7: Evacuation Drill -
11:00 - 12:00	Workshop Evaluation by Participants
Lunch Break	
1:00 - 1:30	Closing Ceremonies and Awarding of Certificates of Completion

Hazard Mapping Exercise in CBDRM Facilitator Training (1st batch)

Demonstration of Evacuation Drill in CBDRM Facilitator Training (2nd batch)

Table 3.2.5 Program of CBDRM Facilitator Training Workshop for Local Authority Staff

1	Disaster Management System in Thailand - Disaster Prevention and Mitigation Act 2007 - Role of Local Administrative Organization in Disaster Management Lecturer: Mr. Anusorn Kaewkangwan, Director of DPMRC 10 (Lampang)
2	CBDRM and Local Administration Lecturer: Ms Lolita C. Garcia, JICA CBDRM Expert
3	Case Study of Roles and Responsibilities of Local Authorities on Disaster Management in Other Countries (1) - Introduction of CBDRM Activities in Aichi Prefecture, Japan Lecturer: Mr. Sumio Hayakawa, Aya Hamabe, Katsuhisa Fujii, from Aichi Preparedness Leaders Association
4	Case Study of Roles and Responsibilities of Local Authorities on Disaster Management in Other Countries (2) - Collaborated Emergency Response among Central Government and Local Authorities for Large-Scale Sediment Disaster in Japan Lecturer: Mr. Arata Sasaki, JICA CBDRM Expert
5	Case Study of Roles and Responsibilities of Local Authorities on Disaster Management in Other Countries (3) - CBDRM Activities in JICA-funded Project in Vietnam, India and Caribbean Lecturer: Ms Lolita C. Garcia, JICA CBDRM Expert

The lecture about Disaster Management System in Thailand by the Director of DPMRC 10

Introduction how to make raincoat with plastic bag by Aichi Preparedness Leaders Association

(4) CBDRM demonstration workshop

The project design states that the trained DDPM provincial staff in Lampang and Lamphun provinces facilitates CBDRM activities, including Disaster Prevention and Mitigation Action Planning for communities at two model communities each in Lampang and Lamphun provinces in collaboration with the local model schools. In 2011 and 2012, the project supported to conduct 4 batches of CBDRM activities in Lampang and Lamphun provinces complying with the project design. The project organized a facilitator team consists of staff from DDPM Lampang regional center, Lampang provincial office, and Lamphun provincial office. CBDRM activities were facilitated by these DDPM provincial and regional staff and JICA experts. Most of CBDRM activities were conducted in collaboration with schools in the villages and school teachers and school students attended the evacuation drills organized at the last of CBDRM workshops. As the result of these activities, early warning and evacuation plan were prepared in four villages and facilitators of DDPM provincial and regional offices could have enough experience to be confident to lead CBDRM activities. The last CBDRM workshop at Lamphun province was facilitated almost completely by DDPM staff. In addition, the project supported to conduct one CBDRM activity at Nakhon Si Thammarat province upon request of DDPM.

Table 3.2.6 CBDRM demonstration workshop

Events	Date	Place	Target	Objective / Outcome
CBDRM demonstration workshop in pilot provinces (1)	May 2011	Chaichomphu/ Maesalaem Village in Lampang Province	- 2 Officials each from Lampang DPM Regional Center, Lampang DPM Provincial Office and Lamphun DPM Provincial Office - 40 villagers from both of the villages - School teachers and students of Salam Wittaya Elementary School	- The objectives are to demonstrate how to facilitate a CBDRM workshop and to enhance the local facilitator's ability to conduct CBDRM workshops. - The early warning and evacuation plan of the villages were formulated in the workshop. - The workshop was mainly facilitated by JICA experts with the support of CBDRM Facilitators from DDPM.
CBDRM Demonstration Workshop	May 2011	Muangsampee Village in Lamphun	2 Officials each from Lampang DPM Regional Center,	- The objectives are to demonstrate how to facilitate a CBDRM workshop and to enhance the local facilitator's ability to

in pilot provinces (2)		Province	Lampang DPM Provincial Office and Lamphun DPM Provincial Office - 20 villagers from the village - School teachers and students of Muangsampee Elementary School	conduct CBDRM workshops. - The early warning and evacuation plan of the village was formulated in the workshop. - 50% of the workshop was facilitated by DDPM facilitators.
CBDRM Demonstration Workshop in pilot provinces (3)	Feb 2012	Chawfa Village in Lampang Province	2 Officials each from Lampang DPM Regional Center, Lampang DPM Provincial Office and Lamphun DPM Provincial Office - 20 villagers from the village - School teachers and students of Chawfa Elementary School and Jokfa Elementary School	- The objectives are to demonstrate how to facilitate a CBDRM workshop and to enhance the local facilitator's ability to conduct CBDRM workshops. - The early warning and evacuation plan of the village was formulated in the workshop. - 75% of the workshop was facilitated by DDPM facilitators.
CBDRM Demonstration Workshop in pilot provinces (4)	Mar 2012	Kor Nong and Ko Thung Village in Lamphun Province	2 Officials each from Lampang DPM Regional Center, Lampang DPM Provincial Office and Lamphun DPM Provincial Office - 40 villagers from both of the villages	- The objectives are to demonstrate how to facilitate a CBDRM workshop and to enhance the local facilitator's ability to conduct CBDRM workshops. - The early warning and evacuation plan of the villages were formulated in the workshop. - Almost 100% of the workshop was facilitated by DDPM facilitators.
CBDRM Demonstration Workshop in Semi-pilot provinces (5)	Feb 2013	Tham Thalod Village in Nakhon Si Thammarat Province	Trained DPM staff from Surat Thani DPM Regional Center, and Nakhon Si Thammarat DPM Provincial Office - 20 villagers from both of the villages	- The objectives are to demonstrate how to facilitate a CBDRM workshop and to enhance the local facilitator's ability to conduct CBDRM workshops. - The early warning and evacuation plan of the villages were formulated in the workshop. - Almost 100% of the workshop was facilitated by DDPM facilitators.

CBDRM Demonstration Workshop in Chawfa Village in Lampang Province

CBDRM Demonstration Workshop in Kor Nong and Ko Thung Village in Lamphun Province

(5) Monitoring of the CBDRM Planning Workshops and CBDRM related activities

Since June 2012, monitoring of CBDRM activities conducted by DDPM without support from this

project as the next step and challenge of keeping sustainability of CBDRM are going on. Basically the CBDRM activities in each province were planned on the action plans which were submitted after the CBDRM Facilitator Training Workshop. DDPM conducted CBDRM Workshops for 360 risk communities by august 2012. However, after the severe flood in autumn of 2011, DDPM was ordered to expand CBDRM activities by the government and added much more batches of CBDRM workshop in 11 provinces along Chao Phraya River. JICA Experts observed five batches of CBDRM planning workshop from June to September to evaluate the effect of CBDRM Facilitator Training and identify the issues to improve the facilitator guide.

Table 3.2.7 TF-CBDRM Monitoring Activities

	Events	Date	Place	Target	Objective / Outcome
i)	CBDRM Planning workshop in Suphan Buri Province	Jun 2012	Nikom Keaiew Sub District, Danchang District, Suphan Buri Province	3 Villages in Nikom Keaiew Sub district	- The early warning and evacuation plan of the 3 villages were formulated in the workshop.
ii)	CBDRM Planning workshop in Chainat Province	Jul 2012	Makham Tao Sub district, Watsing District, Chainat Province	3 Villages in Makham Tao Sub district	- The early warning and evacuation plan of the 3 villages were formulated in the workshop.
iii)	CBDRM Planning workshop in Rayong Province	Jul 2012	Nam Pern Sub District, Khao Chamao District, Rayong Province	7 Villages in Nam Pern Sub district	- The early warning and evacuation plan of the 7 villages were formulated in the workshop and the plan was used in the next item, the collaborated disaster response drill in Aug 2012.
iv)	Collaborated Disaster Response Drill in Rayong Province (organized by Regional Center 17 : Chantha Buri)	Aug 2012	Nam Pern Sub District, Khao Chamao District, Rayong Province	DPMRC 17, Rayong DPM Provincial Office, Khao Chamao District, Nam Pern Sub district, concern organizations such as volunteer groups and residents	- The residents joined the drill and they evacuated in accordance with the plan formulated at the CBDRM planning workshop in Jul 2012.
v)	CBDRM Planning workshop in Nonthaburi Province	Sep 2012	Nong Phrao Ngai Sub District, Sai Noi District, Nonthaburi Province	12 Villages in Nong Phrao Ngai Sub district	- The early warning and evacuation plan of the 12 villages were formulated in the workshop.
vi)	CBDRM Facilitator Workshop at DPMA Pathum Thani Campus	Dec 2012	DPMA Pathum Thani Campus	at least 1 Official from all DPM Provincial Office (Total around 100)	- The objectives of the workshop are as follows: • to share the experience of CBDRM activities in Thailand and overseas. Lecturers from Japan and Vietnam presented the experiences in their countries; • to identify the issues for the revision of CBDRM Facilitator Guide; • to discuss the ways to achieve sustainable CBDRM activities.

JICA Experts attended activities i)-iii) and v) CBDRM Workshops. The objectives of the workshops are formulation of Early Warning and Evacuation Plan of Communities and conducting Demonstration Evacuation Drill. Three to Seven communities participated in each workshop of i)-iii). The CBDRM workshop v) is a part of additional CBDRM workshops for 11 provinces along Chao Phraya River in August and September. In the additional workshops, more communities joined in each workshop. The CBDRM workshop in Nong Phrao Ngai Sub District was conducted for 12 villages. Some retired officials of DPM provincial office were facilitated the workshops since the DPM office did not have sufficient human resources to complete their duty in a short time.

Drawing Community Map (Makham Tao, Chainat): Activity ii)

The presentation about the dangerous place in their villages (Nong Phrao Ngai, Nonthaburi): Activity v)

Activity iv) was a collaborated disaster management exercise organized by DPM Regional Center 17(Rayong). It was conducted at same place as iii). Level 2 disaster (what should be managed by provincial level) was assumed in the exercise. The residents of Nam Pern joined it and the early warning and evacuation plan prepared in CBDRM workshop iii) was used in the exercise. In the exercise, the main activity was rescue work of DPM provincial office under supervision of DPMRC17. The insufficiency of manpower of DPM Provincial office and lack of capacity of disaster management of local authority were clearly shown in the exercise. The capacity development of local authority staff has been an important issue for disaster management in Thailand since increase of number of the staff is not easy. The DPMRC organizes this kind of collaborated disaster management exercise 4 times per year, 1 time per each province in the territory.

The command center of the Disaster Management Exercise (Rayong)

The Participated residents at the Exercise (Rayong)

Activity vi) was held to share the information of challenges to keep sustainability of CBDRM in other countries and to discuss the revision of CBDRM facilitator guide and issues on CBDRM in each province. Three lectures from Japan and Vietnam were invited to the workshop to present their challenges. The description of each lecture is shown in the table 3.2.8. The summarized results of discussions are shown in Table 3.2.9 and Table 3.2.10. These suggestions were utilized in the revision of CBDRM facilitator guide and formulation of sustainability plan in 2013.

The lecture of CBDRM activity in Kobe city, "The introduction of BOKOMI(Disaster-Safe Welfare Communities)"

The Group Discussion on the 2nd day (Group 4: Sustainability of CBDRM in Thailand)

Table 3.2.8 Lectures and Descriptions of Lectures in CBDRM Facilitator Workshop

Lecturer	Theme and description of lecture
Mr. Toshiyuki Akita Section Head of CBDRM Supporting Section, Kobe City Fire Bureau, Japan	Theme: The effort for Promoting and Building Sustainable CBDRM activity in Kobe City Kobe City has organized community-based disaster prevention organization named as "Disaster-Safe Welfare Communities (BOKOMI in Japanese language)". 191 BOKOMIs have been already organized. To promote CBDRM and to secure the sustainability, Kobe City has developed ingenious activities such as collaboration with

	schools and organized "Disaster Management Junior Teams" which consist of primary and junior high school students. The importance of activities to keep sustainability will be understood through the introduction of these efforts of Kobe City.
Mr. Nguyen Huynh Quang Head of CBDRM Division of Disaster Management Center (DMC), Ministry of Agriculture and Rural Development (MARD), Vietnam	Theme: Scheme of Promotion of CBDRM in Vietnam and Roles and Responsibilities of DMC and MARD in CBDRM Promotion Activities In Vietnam, Department of Agriculture and Rural Development (DARD) in each province is working for management of CBDRM promotion in collaboration with NGOs. The lecturer introduces the scheme of promotion of CBDRM and roles and responsibilities of DMC and MARD in CBDRM promotion activities to share the experiences and issues. Staff of DDPM Central and Local may utilize the knowledge from the lecture to prepare the plans of CBDRM promotion.
Mr. Bui Duc Thai Center for Management and Mitigation of Natural Disaster in Quang Ngai (CMMND) of Quang Ngai Province, Vietnam	Theme: Condition of the Progress of CBDRM Promotion in Quang Ngai Province Central Vietnam is flood prone area and the scale and destructive power of the flood are higher than Thailand. The lecturer from Quang Ngai CMMND introduces how CMMND is promoting CBDRM activities in Central Vietnam. To introduce efforts of neighboring countries and to share the knowledge and experience will motivate DDPM staff to proceed with CBDRM activities.

Table 3.2.9 Suggestion for the revision of the CBDRM Facilitator Guide

Target	Suggestions
Section 1	Contents of Processes were appropriate, it is depending on the area (Facilitator can apply but it is important to maintain role and core of CBDRM process due to each risk areas are different. Processes and techniques depend on these factors as well
Section 1	Duration of activity: The duration of activity should be limited to around 2 days. The cores of CBDRM activity are practicing/exercising and evaluation of the improvement of disaster preparedness and prevention in communities/villages. The duration of JICA CBDRM training course of 4 days was too long because community people have to work for their living and family. We have a suggestion that activity should conduct around 2.5 or 3 days will be appropriate for community people. On the first day of activity is to disseminate knowledge to people in prone area to make them understand the process of CBDRM and understand the knowledge on disaster. The activities in the last day will be testing plan and evaluation for the improvement of community disaster preparedness and prevention.
Section 2	Adding contents of Power Point file is useful. Facilitators will be able to use the Power Point file directly in CBDRM workshops.
Section 3	Establishment of Facilitator networking and organization will be useful.
General	Improving instruction material for elderly people and uneducated people by using picture or image as description (such as a picture of warning, evacuation procedure) for easy understanding.

Table 3.2.10 Suggestion for sustainable CBDRM activities

Number	Suggestions
1	Facilitator must have principle and faith of activity procedure that it will be success.
2	Considering culture and way of life of community people.
3	Selecting appropriate disaster type matching with community risk and applying local tools and equipment to make community people related with activity.
4	Emphasize the participant selecting procedure such as selecting respective person in community and religion leader.
5	Knowledge dissemination for not only a group of people but all people.
6	Establishing local/community DPM center for conducting DPM activities

7	Disaster is an opportunity to monitor CBDRM procedure in communities. When disaster occurs, CBDRM procedure should be monitored to find lessons learned. After that, DDPM will be able to modify materials and curriculum with the lessons learned.
8	Selecting volunteer in the community and teach knowledge of disaster management. They can be next generation facilitators. These selecting shouldn't focus just only one group of people.
9	Conducting additional facilitator's training is necessary because many facilitators who already trained were change their position or transfer.
10	Conducting facilitators training for non-DDPM stuff in the province further than CBDRM network such as retired government officer or civil servant who living in the area is helpful to enhance the capacity of CBDRM activities.

(6) Modification of the existing CBDRM Facilitator Guide to develop the practical guide

The project modified the existing CBDRM Facilitator Guide which was prepared in the Phase-1. The CBDRM guide prepared in the Phase-1 suggested conducting 4 days workshop to prepare village level DPM plans. In reality, DDPM and local do not have enough resource to accept such long workshop. So, in the revision of the guide suggests 2 days workshop remaining sufficient effectiveness of the activities. To make the guide more practical, the revised guide is including many slides which can be directly used in CBDRM workshops by facilitators. In addition, the video clip of CBDRM facilitator training workshop is prepared and distributed to each regional and provincial office to learn how to facilitate CBDRM activities for the staffs not trained in the project. [Refer to ANNEX 4: CBDRM facilitators Guide]

(7) Effort to achieve sustainable CBDRM

Each activity in this project was conducted carefully considering sustainability. All activities mentioned above are mainly focused to be done by Thai side. In addition, this project provided some introductions to make CBDRM activities more active. The project introduced some awareness raising activities for children and parents developed by Japanese NPO to DDPM and Ministry of Education. This kind of activity in Japan is utilized to sustain the CBDRM activities and motivate parents to join CBDRM activity with their children. Under this project, the cooperation between DDPM and MOE is strengthened. This approach aims to accelerate collaboration between DPM sector and education sector.

Table 3.2.11 TF-CBDRM Activities to Achieve Sustainable CBDRM

Events	Date	Place	Target	Objective / Outcome
Case Study Tour for "BOKOMI" (Bosai Fukushi Community: Disaster-Safe Welfare Community) and "Iza! Kaeru Caravan (IKC): Awareness raising activity for children and	Dec 2011	Yogyakarta City (Badran Area)	12 officials from DDPM and 8 officials from MOE	- The objectives are to learn how to establish sustainable CBDRM system in Yogyakarta and to learn the way to motivate people to continue CBDRM activities. - BOKOMI and IKC activity in Yogyakarta was introduced and open forum was held. - The director of DPM Promotion Bureau was impressed by the awareness raising activity in Indonesia and decided to adopt the concept for Thailand.

parents" in Yogyakarta, Indonesia				
Study Meeting for IKC	Feb 2012	Bangkok (Meeting Hall at DDPM)	Around 50 officials from DDPM and MOE	- The objectives of the meeting were to share the lessons learnt of study tour in Indonesia from DPM Promotion Bureau to DPM local officers and MOE officers and to introduce the concept of IKC activity by Mr. Hirokazu Nagata, the representative of Japanese NPO, Plus Arts. - Through the meeting, some of the DPM Provincial Offices decided to apply the concept of IKC to Youth Camp.
IKC Youth Camp at Ubon Ratchathani Province (organized by DPM Ubon Ratchathani Provincial Office with the support from DPM Promotion Bureau)	Aug 2012	Ubon Ratchathani	100 Junior High School Students	- The objectives of the camp are to give basic knowledge of disaster management to the junior high school students and give training of disaster response with the concept of IKC. - This Youth Camp is the last of a series of four batches of IKC Youth Camp planned by DPM Promotion Bureau and conducted in July and August 2012.
Youth Camp at Bangkok (organized by DPM Promotion Bureau)	Dec 2012	Bangkok	100 High School Students	- The objectives of the camp are to give basic knowledge of disaster management to the high school students and give training of disaster response.

Case Study Tour for "BOKOMI" (Bosai Fukushi Community: Disaster-Safe Welfare Community) and "Iza! Kaeru Caravan (IKC): Awareness raising activity for children and parents" in Yogyakarta, Indonesia was conducted in December 2011. 20 Officers of DDPM and MOE including the Director of DPM Promotion Bureau and some DPM Regional Center joined the study tour and they had Study Meeting for IKC in February 2012.

The open forum about sustainability of CBDRM activity between Indonesia side and Thai side (Case study tour to Indonesia)

The study meeting for IKC in Bangkok

In the study meeting, the Director of DPM Promotion Bureau decided the method of application of IKC to existing disaster education activity conducted by DDPM for children. DPM Promotion Bureau took initiative for the kick-off of the activities. At last, DPM Promotion Bureau conducted a series of four batches of IKC Youth Camp in July and August 2012 with four DPM Provincial Offices and Regional Centers.

IKC Youth Camp was adopted the concept of IKC. DDPM local offices conducted four Youth Camps in July and August in Khon Kaen、Song Khla、Chiang Rai、Ubon Ratchathani. Promotion Bureau supported them under the initiative of the director, Mr. Songchai. JICA experts observed the Youth Camp in Ubon Ratchathani conducted in August. The participants were 100 junior high school students. The camp is a kind of training of disaster management for students. JICA experts joined it and introduced the concept and contents of CBDRM activity in this JICA project.

Promotion Bureau explained the contents of other three Youth Camps. They tried various devices in each place and improved Youth Camp. Especially in the last youth camp in Ubon Ratchathani, the contents were modified for junior high school students based on their experiences. It seemed the concept of IKC is transferred well.

The lecture how to carry injured people with blanket in IKC Youth Camp at Chieng Rai (July 2012)

The lecture of importance of preparedness in IKC Youth Camp at Ubon Ratchathani (The former director Mr. Songchai had one session of the lecture.)

Youth Camp targets not only junior high school students but also high school students. JICA Expert observed the Youth Camp for high school students in December 2012. DDPM Promotion Bureau had modified activities for elder students there.

The modified rescue training activity for junior high school students (Ubon Ratchathani)

The lecture of CPR in Youth Camp for high school students (Bangkok)

The swimming training for flood disaster “Uite Mate!: Float and Wait!” in Youth Camp for high school students (Bangkok)

The firefighting training in Youth Camp for high school students (Bangkok)

3.2.3 Evaluation of the Achievement

As the result of the inputs from this project and great efforts of DDPM, CBDRM activities in Thailand are conducted nationwide in 2012 and 2013. In year 2012, 525 villages attended CBDRM workshops as regular activities of DDPM provincial office and 550 villages attended the additional 110 CBDRM workshops in 11 provinces along Chao Phraya River. A total of villages which CBDRM workshops were conducted for are 1,385. In year 2013, the progress of CBDRM expansion was almost same as in 2012. The number of CBDRM workshops conducted in 2013 is shown in the table 3.2.12.

Table 3.2.12 Record of CBDRM Workshops in 2013

RC	Province	**Number of WS**	**Total Number of Villages**	Number of Participated Villages (1st)	Number of Participated Villages (2nd)	Number of Participated Villages (3rd)	Number of Participated Villages (4th)	Number of Participated Villages (5th)	Number of Participated Villages (6th)
1	Pathum Thani	**1**	**6**	6					
	Nonthaburi	**5**	**15**	4	5	3	2	1	
	Ayutthaya	**5**	**20**	3	5	4	4	4	
	Saraburi	**5**	**16**	3	4	3	3	3	
2	Suphanburi	**5**	**17**	3	4	4	3	3	
	Kanchanaburi	**1**	**9**	9					
	Nakhon Pathom	**1**	**3**	3					
	Ratchaburi	**4**	**16**	4	4	4	4		
3	Prachinburi	**3**	**10**	3	3	4			
	Chachoengsao	**4**	**12**	3	3	3	3		
	Sa Kaeo	**2**	**6**	3	3				
	Nakhon Nayok	**1**	**3**	3					
	Samut Prakan	**3**	**16**	5	6	5			
4	Prachuap Khiri Khan	**1**	**3**	3					
	Phetchaburi	**4**	**18**	4	6	3	5		
	Samut Sakhon	**4**	**12**	3	3	3	3		
	Samut Songkhram	**1**	**5**	5					
5	Nakhon Ratchasima	**6**	**84**	10	17	20	15	9	13
	Surin	**2**	**14**	10	4				
	Buriram	**4**	**12**	3	3	3	3		
	Chaiyaphum	**6**	**22**	4	4	4	3	3	4
6	Khon Kaen	**5**	**17**	3	3	5	3	3	
	Roi Et	**5**	**26**	3	6	4	6	7	
	Maha Sarakham	**4**	**12**	3	3	3	3		
	Kalasin	**5**	**9**	1	1	2	2	3	
7	Sakon Nakhon	**4**	**30**	8	8	11	3		
	Nakhon Phanom	**6**	**18**	3	3	3	3	3	3
	Mukdahan	**5**	**18**	3	4	3	4	4	
8	Kamphaeng Phet	**1**	**3**	3					
	Phichit	**6**	**18**	3	3	3	3	3	3
	Nakhon Sawan	**6**	**21**	3	3	3	5	4	3
	Uthai Thani	**1**	**5**	5					
9	Phitsanulok	**5**	**24**	10	3	4	4	3	
	Tak	**2**	**6**	3	3				
	Sukhothai	**5**	**15**	3	3	3	3	3	
	Phetchabun	**3**	**34**	14	10	10			
	Uttaradit	**3**	**9**	3	3	3			

RC	Province	**Number of WS**	**Total Number of Villages**	Number of Participated Villages (1st)	Number of Participated Villages (2nd)	Number of Participated Villages (3rd)	Number of Participated Villages (4th)	Number of Participated Villages (5th)	Number of Participated Villages (6th)
10	Lampang	**4**	**12**	3	3	3	3		
	Lamphun	**4**	**12**	3	3	3	3		
	Chiang Mai	**5**	**17**	3	3	5	3	3	
	Mae Hong Son	**2**	**8**	5	3				
11	Surat Thani	**5**	**15**	3	3	3	3	3	
	Chumphon	**2**	**7**	4	3				
	Nakhon Si Thammarat	**5**	**47**	12	9	14	8	4	
	Phatthalung	**3**	**38**	13	11	14			
12	Songkhula	**2**	**8**	3	5				
	Satun	**1**	**5**	5					
	Pattani	**5**	**24**	6	8	4	3	3	
	Yala	**3**	**10**	3	4	3			
	Narathiwat	**5**	**15**	3	3	3	3	3	
13	Ubon Ratchathani	**4**	**12**	3	3	3	3		
	Amnat Charoen	**3**	**9**	3	3	3			
	Sisaket	**6**	**21**	3	3	6	3	3	3
	Yasothon	**5**	**24**	3	5	3	10	3	
14	Udon Thani	**4**	**12**	3	3	3	3		
	Nong Khai	**4**	**13**	3	4	3	3		
	Loei	**4**	**18**	5	2	5	6		
	Bueng Kan	**4**	**12**	3	3	3	3		
	Nong Bua Lam Phu	**1**	**3**	3					
15	Chiang Rai	**6**	**18**	3	3	3	3	3	3
	Nan	**4**	**12**	3	3	3	3		
	Phayao	**5**	**15**	3	3	3	3	3	
	Phrae	**2**	**6**	3	3				
16	Chainat	**4**	**12**	3	3	3	3		
	Lopburi	**3**	**9**	3	3	3			
	Singburi	**4**	**12**	3	3	3	3		
	Ang Thong	**1**	**6**	6					
17	Chanthaburi	**4**	**12**	3	3	3	3		
	Chonburi	**1**	**5**	5					
	Rayong	**1**	**6**	6					
	Trat	**3**	**10**	3	3	4			
18	Phuket	**1**	**3**	3					
	Ranong	**1**	**4**	4					
	Krabi	**2**	**8**	5	3				
	Tran	**1**	**6**	6					
	Phang Nga	**2**	**6**	3	3				
	Total	**260**	**1076**						

3.2.4 Recommendation

To secure the sustainability of CBDRM in Thailand, TF-CBDRM has prepared the sustainability plan in 2013. To formulate the sustainability plan, the Project held sustainability workshop in October 2013. TF-CBDRM and the experts have discussed about the plan responding the result of the workshop. Followings are the recommendation from the experts.

(1) Collaboration with Local Authorities

1) To enhance CBDRM knowledge of Local Administration Offices (LAOs) is necessary to accelerate CBDRM activities and to keep the impact of CBDRM activities funded by DDPM. In this project, the LAOs in Lampang and Lamphun provinces have learned about CBDRM in the trainings conducted in February 2012. The contents of CBDRM should be included in the workshops on disaster prevention and mitigation for LAO executive levels and training courses for disaster prevention and mitigation officers.
2) Cooperation with DLA to expand CBDRM activities should be sought to secure budgets for repetition activity in community level.
3) Collaboration with Policy Bureau to confirm that CBDRM is one of the most important parts of disaster management system in LAO in the next revision of National DPM Plan is necessary so that LAOs make effort to expand CBDRM activities in their jurisdiction.

(2) Continue and expand the activities in this project

1) CBDRM facilitator guide and manual developed in the period of JICA projects should be reviewed and revised regularly.
2) CBDRM facilitator training will be conducted when the pool of facilitators is insufficient to conduct CBDRM activities in each province. When 10 provinces do not have any facilitator, DDPM will provide CBDRM facilitator training with DPMA. The trainers will be sent from DDPM and out sources.
3) To scale up CBDRM activities for all risk area, DDPM has to allocate budget to conduct activity every year continually.
4) DDPM must coordinate with organizations which have DPM activities such as Thai Red Cross, COERR, Raks Thai Foundation and ADPC to conduct CBDRM activities.

(3) Motivating relevant personnel for CBDRM

1) Establishment of disaster prevention center in each village which has already conducted CBDRM workshop will motivate the villagers to keep the activities.
2) Promoting community leaders to be a facilitator for other communities or for relevant knowledge sharing platform will help to activate CBDRM activities.
3) To establish CBDRM Facilitator Certification System such as evaluation of facilitator and grading will motivate CBDRM facilitators to disseminate the knowledge and experience to other DPM officials.

3.3 Disaster Management Training

3.3.1 Understanding of the Current Situation in Thailand

(1) Disaster Prevention and Mitigation Academy (DPMA)

DPMA (Disaster Prevention and Mitigation Academy) was established in October 2004 at Bangpoon, Pathum Thani Province having six campuses in Prachinburi, Songkhla, Chiang Mai, Khon Kaen, Phuket, and Phitsanulok. DPMA takes responsibility of human resources development and knowledge management in DDPM. It also provides training services for officials of local authorities and private sectors in the area of disaster risk management.

DPMA conducts various trainings such as DDPM staff trainings by grade, specialized training for flood management, CBDRM, shelter management, etc., training for provincial officials, training for local authority officials, fire fighters and ERT training, training for civil defense volunteers throughout the year at its campuses. Total number of trainees varies from year to year, but it reaches from 7,000 to 9,000 people. It is evident that DPMA plays important role in human resources development not only for DDPM officials but also for other people in charge of disaster management.

Many of the trainings and seminars are conducted by DPMA but some of them are conducted by other bureaus of DDPM depending on the contents and degree of urgency. For example, the seminars to guide how to prepare a disaster prevention and mitigation plan of provincial level were planned, budgeted, and implemented by Disaster Prevention and Mitigation Policy Bureau. DPMA receives reports of the trainings and seminars conducted by other bureaus for knowledge management role of DPMA.

Under existing conditions, DPMA does not conduct trainings with its own resources only. It conducts trainings in collaboration with other bureaus in DDPM and relevant specialized agencies outside.

Trainings are basically conducted based on annual training schedule of DPMA, but review of the schedule is conducted regularly. A series of process for implementation of the training are already been routine work of DPMA. Draft training curriculum prepared by DPMA is reviewed by the curriculum development committee of DDPM. The training is conducted through the approval procedure of DDPM. DPMA already has applied the following evaluation and monitoring methods for its trainings even before starting of the JICA Project.

1) Pre- and post-training examination to measure the increase in knowledge or intellectual capability from before to after the training
2) Questionnaire after the trainings to collect opinion from the trainees

However, follow up evaluation or monitoring of the training has not been conducted. Therefore, there is no information how the trainings were effective to improve the participants' duty and organizational objectives.

(2) Expectation of DPMA at Starting of the Project

The Project Design Matrix (PDM) states "Training curriculum at DPMA is improved" as an output for TF-DMT and "At least one curriculum on disaster management on natural disaster (flood, flash flood and mud flow) for DDPM staff is improved" as an indicator. In order to achieve the output, TF-DMT requested JICA experts to supply the following information.

1) Advice for formulating guideline for evaluation and monitoring of the trainings conducted by DPMA
2) Example of training curriculum for management of natural disasters (flood, flash flood and sediment disasters) to improve DPMA's curriculum to international level.

DPMA used to conduct training for DDPM staff on management of natural disasters (flood, flash flood and sediment disasters) before starting of the JICA project and it already has standard curriculum on this subject. The curriculum was developed by DPMA but DPMA had intention to improve it referring to example of curricula in Japan.

(3) Training Needs Assessment

DPMA conducted a training needs assessment in December 2009, half a year before the JICA Project started. The training needs assessment was conducted for senior executives, executives and DPM practitioners in DDPM headquarters, 18 DPM Regional Centers, 75 DPM Provincial Offices and 6 DPMA campuses and collected more than 500 responds. The survey consists of closed-ended questions and open-ended questions.

According to the results of closed-ended questions in working levels (executive and practitioners level), needs for development of "leadership and team development" are high at 20% in executives level and 15% in operators level. The needs for "DPM Action Plan Preparation and Practice" are also high at 15% and 8% respectively. The needs for management skills such as budgeting knowledge, strategic management, communication and coordination skill are also high in executives level. Meanwhile, the needs of practical operations such as disaster risk assessment, danger facing and rescue, disaster risk reduction, etc. are high in practitioners level. The results of the survey of the both levels are presented in Table 3.3.1 and Table 3.3.2 respectively.

Table 3.3.1 Results of Training Needs Assessment for Executive Level (Closed-ended)

No.	Needs for development of knowledge, skill and competency for effective operation	%
1	Leadership and team development	20.0
2	DPM action plan preparation and practice	15.0
3	Modern budgeting knowledge	15.0
4	Effective plan/project preparation	10.0
5	Strategic management (strategy map, balance scorecard)	10.0
6	Public sector management quality award: PMQA	10.0
7	Disaster risk assessment management	5.0
8	Effective public reactions, publishing and information	5.0
9	English operation and communication	5.0
10	Communication and coordination technique	5.0

Table 3.3.2 Results of Training Needs Assessment for DPM Practitioners Level (Closed-ended)

No.	Needs for development of knowledge, skill and competency for effective operation	%
1	Leadership and team development	15.1
2	Communication and coordination technique	13.1
3	English operation and communication	12.1
4	Dispatch writing principle?	9.5
5	DPM action plan preparation and practice	8.0
6	Synthesis frequency radio usage	5.5
7	Disaster risk assessment management	5.0
8	Danger facing rescue	5.0
9	Public sector management quality award: PMQA	3.5
10	Communication and coordination technique	3.0
11	Disaster risk reduction	3.0
12	Effective publishing and public relationship technique	3.0
13	Government loan disbursement for emergency disaster victims assistance	2.5
14	Strategic management (strategy map, balance scorecard)	2.5
15	Primary extinguishment	2.5
16	Community empowerment lecturer	2.0
17	Public service strategy and skill	1.5
18	MOF's regulation on Government loan for emergency disaster victims assistance BE2546 and additional	1.0
19	Seminar and minutes preparation technique	1.0
20	Operation under the DPM certified official	1.0
21	CBDRM lecturer	1.0

According to the results of the open-ended questions, there are needs of disaster exercise, communication, workshops along with classroom lectures.

Training needs assessment had been planned to be conducted in this Project. However, since it was conducted just half a year before the Project started, TF-DMT decided to utilized the results for developing training curriculum.

3.3.2 Activity and Output

(1) Post-Evaluation of Training

In order to figure out how the trainings are effective for participants to implement his/her duty and for achieving objective of the organization, DPMA had intention to develop evaluation and monitoring method after half a year or one year.

In this regard, JICA Experts introduced the following two methods, i.e. 1) Follow up training after one year at regional level and 2) Four levels of evaluation model.

1) Follow-Up Training after One Year at Regional Level

Follow-Up training is widely applied in business enterprises to establish knowledge and skill learnt in the training after a certain period of the training (half a year or one year). It is effective to hold a one day small group workshop to exchange information about relevant experiences and practices among participants after one year of the training (collaborative learning). It is also effective to evaluate and improve the training curriculum based on information and suggestions from the participants. It is not necessary to invite all the participants together but it can be organized by region to save the travel time and cost, for example at the DPMA regional campuses.

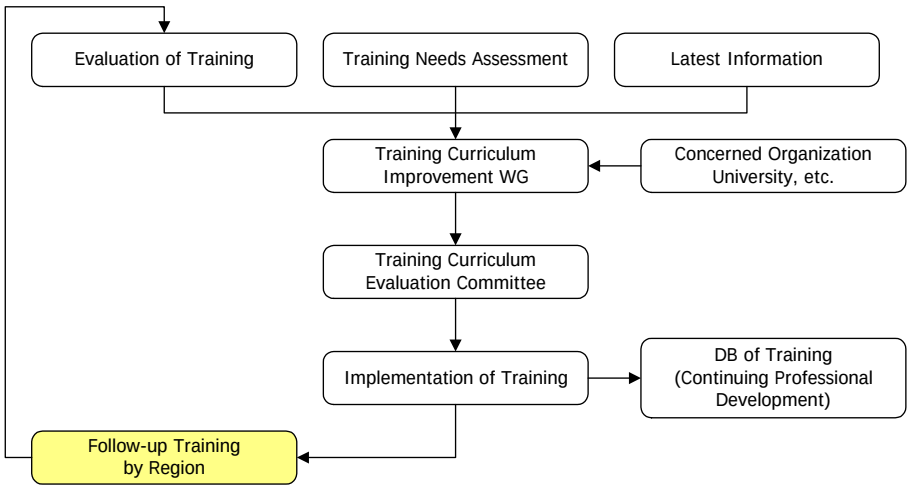


Figure 3.3.1 Recommended Flow of Training with Follow-up Training by Region

2) Four Levels of Training Evaluation Model

JICA Expert introduced Four Levels of Training Evaluation Model in the task force meeting. The model is also widely applied in business enterprises to evaluate trainings. They consist of the following levels of evaluation:

• Level 1: Reaction of trainee - what they thought and felt about the training
• Level 2: Learning - the resulting increase in knowledge or capability

• Level 3: Behavior - extent of behavior and capability improvement and implementation/application
• Level 4: Results - the effects on the business or environment resulting from the trainee's performance

DPMA already conducts level 1 and level 2 evaluations as discussed above. Therefore, JICA Experts recommended to examine the level 3 evaluations following the steps shown in Figure 3.3.2.

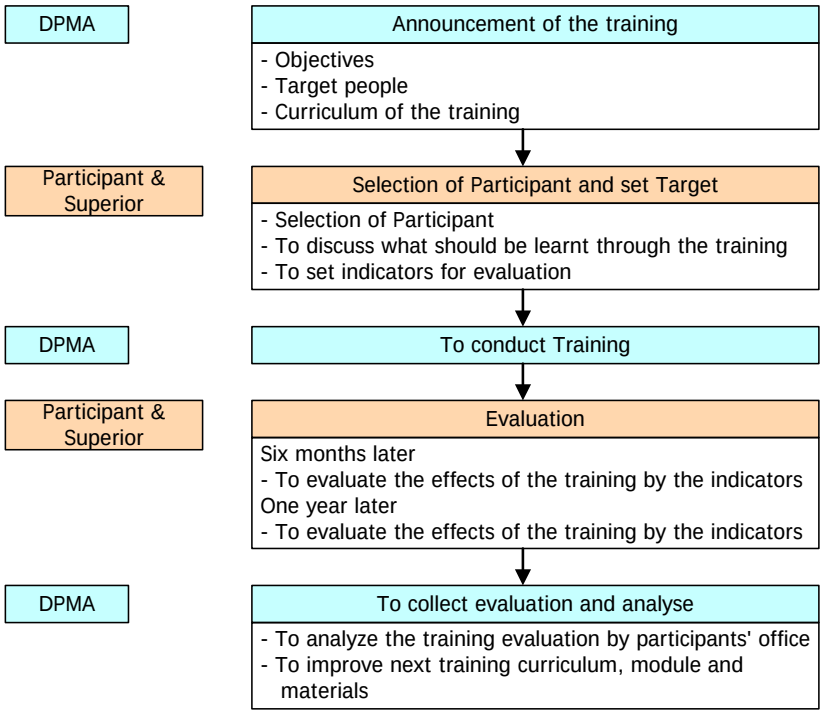


Figure 3.3.2 Procedures for Post-Evaluation of Trainings

In this evaluation model, the participant and his/her superior discuss what the participant should learn through the training and set target indicators before the training. The participant and his/her superior evaluate the achievement using the indicators together after half a year or one year. The evaluation model was introduced to evaluate if the training meets the expectation of the participant and his/her superior.

3) DPMA's Training Evaluation Model

Based on JICA Experts' advice, DPMA developed a questionnaire to investigate the supervisors' satisfaction toward the performance of the officials who completed a training course. Questionnaire consists of five-grade evaluation of the following items and open-ended questions:

1. Virtue and Ethic
   1.1 Honesty
   1.2 Self-discipline
   1.3 Punctual
   1.4 Sacrifice for common interest
2. Knowledge Capabilities

2.1 Capability in knowledge using for work operation and achieve objective efficiency
2.2 Capability in knowledge applying for assignment
2.3 Capability in knowledge analyzing for work operation development
2.4 Capability in knowledge transferring to colleague, subordinate, volunteer and people

3. Management
3.1 Capability in administration and plan management
3.2 Capability in achieve work operation punctually
3.3 Capability in decision making, analyzing and problem solving
3.4 Capability in leadership
3.5 Capability in coordination and set up work operation network
3.6 Capability in communication
3.7 Capability in team building and development
3.8 Open-mindedness to other opinion
3.9 Capability in using information technology

4. Comment and other suggestion (open-ended questions)
4.1 Course/ curriculum suggestion
4.2 Comment and other suggestion

The evaluation was conducted in August 2011 for the training course of Disaster Prevention and Mitigation Administration Officials organized between February 28th - April 1st, 2011 participated by 45 DPM officials. Feedback and participation were well received from every office.

DPMA analyzed the results of the survey and compiled in an evaluation report in December 2011. The results of the evaluation indicated high satisfactions of the supervisors toward the performance of the officials after the training and helped DPMA to recognize the effectiveness of the training.

4) Improvement of DPMA's Post Training Evaluation

TF-DMT conducted 1st and 2nd batches of the trainings for management of natural disasters (flood, flash flood and sediment disasters) during May 14-18 and May 21-25, 2012. TF-DMT implemented post training evaluation for the trainings after approximately one year from the trainings. Objectives of the evaluation are to grasp 1) utilization of knowledge and skills acquired through the training for day to day works and 2) information and opinion to improve the training curriculum. TF-DMT developed a post evaluation method to make questionnaire not only for superiors but also for the participants for the purpose.

Table 3.3.3 shows the results of satisfaction level of superiors of the training participants.

Table 3.3.3 Results of Satisfaction Level of Superiors of Training Participants

Evaluation Item	High←Satisfaction(%)→Low					Ave.	Overall evaluation
	5	4	3	2	1		
1. Ability to apply the knowledge gained to prepare for and prevent floods and landslides	19.1	61.9	19.1	-	-	4.0	4
2. Ability to apply the knowledge gained in work in the event of floods and landslides	14.3	66.7	19.1	-	-	4.0	4
3. Applying the knowledge gained in plan drills of a province / agency	27.0	52.4	17.5	3.2	-	4.0	4

4. Ability to carry out plan and policy	31.8	49.2	19.1	-	-	4.1	4
5. Using the knowledge gained to analyze and solve problems in work	25.4	57.1	17.5	-	-	4.1	4
6. Ability to transfer the knowledge gained to colleagues, volunteers and residents	25.4	52.4	19.1	3.2	-	4.0	4
7. Continued development of academic knowledge and capacity	23.8	57.1	17.5	1.6	-	4.0	4
8. Ability to manage time, accomplishing the work goals and schedule	27.0	52.4	19.1	1.6	-	4.1	4
9. Ability to coordinate and build a working network	36.5	44.4	17.5	1.6	-	4.2	4
10. Applying knowledge on technology in reducing the risk of floods and landslides	14.3	55.6	27.0	3.2	-	3.8	4

The results indicated high satisfaction level for almost all evaluation items. Meanwhile, there are opinions that various area of training should be conducted according to carrier of trainees' level. For example, such trainings as utilization of GIS for disaster risk management, study visit for disaster affected area, and sharing of experience and lessons learned were proposed by superiors. A follow up trainings to share experience among trainees were also proposed. In the TF-DMT meeting, JICA Experts also proposed to conduct a follow up training which is commonly utilized in Japanese enterprise to share experience and lessons learned among trainees and is also useful for evaluation of training but it has not been implemented yet due to limitation of cost.

Table 3.3.4 shows participants satisfaction level of applying the acquired knowledge to daily works.

Table 3.3.4 Satisfaction Level of Applying Acquired Knowledge to Daily Works

Evaluation Item	High←Satisfaction(%)→Low					Ave.	Overall evaluation
	5	4	3	2	1		
1. Implementing the national and provincial disaster prevention and mitigation plans	15.9	54.0	25.4	4.8	-	3.8	4
2. Planning how to use equipment and vehicles to assist victims	19.1	52.4	23.8	3.2	1.6	3.8	4
3. Communication, warning, receiving notification, and coordination among agencies concerned	27.0	55.6	11.1	4.8	1.6	4.0	4
4. Actions in the event of flood and landslide in their responsible area	23.8	57.1	11.1	6.4	1.6	4.0	4
5. Assistance and mitigation for victims suffering from flood and landslide	23.8	52.4	15.9	6.4	4.6	3.9	4
6. Restoration of public goods and mental rehabilitation	11.1	47.6	28.6	9.52	3.2	3.5	4
7. Knowledge of hydrology, rules and laws, and case studies to be used for disaster management	14.3	46.0	34.9	3.2	1.6	3.7	4
8. Knowledge of hydrogeology, space technology, rules and laws	6.4	46.0	33.3	12.7	1.6	3.4	4
9. Knowledge of meteorology, prediction and warning, using information technology and a network of meteorological coordination	19.1	55.6	20.6	3.2	1.6	3.9	4
10. Community-based disaster risk management	23.8	49.2	22.2	3.2	1.6	3.9	4
11. Disaster management in Japan, river engineering, and dealing with a flood and landslide through structural	12.7	42.9	31.8	11.1	1.6	3.5	4

and non-structural measures							
12. Practicing table top exercise using the image training exercise from Japan	22.22	47.6	25.4	3.2	1.6	3.9	4

The results indicated high satisfaction level for almost all evaluation items.

Recommendations on how to improve the training course on management of natural disasters (flood, flash flood, sediment disaster) were stated by training participants as listed below:

- A subject on how to use a geographic information system (GIS) for warning and providing assistance should be included.
- There should be more opportunity for the sharing of experiences. The instructor team could identify a province group with a similar set of disaster circumstances to further develop concepts and skills.
- LAOs, particularly Heads of Prevention Groups, should be trained to apply the knowledge in disaster areas and provide timely assistance to the residents.
- The period allowed for the practical section should be longer, focusing on particular practices that are correspondent with a disaster in particular areas.
- Sometimes the trainees could not understand what the foreign instructors said, probably due to misinterpretation. There should be an approach on how to apply the disaster management in case of an international disaster.
- Trainees should be informed in advance of what they have to prepare for the workshop such as information on a disaster area (evacuation area, evacuation approach, safe place) so that the workshop is closer to reality and more practical.
- The training should continue to be organized, including a study visit to a real disaster-affected community which could show their preliminary recovery through use of the implemented process.
- Operational and mid-level officials can apply the knowledge gained from this course to be most beneficial and achieve the goals. To make it more comprehensive and create synergy, the executives should also be trained in the same practices to ensure the ability to work effectively together under the policies of the department/government.

While many training courses are not subject to post-evaluation in many countries, the post-evaluation of DPMA is a great challenge to improve the training of the officials of DDPM. DPMA is planning to expand the post-evaluations for more training courses.

(2) Improvement of Standard Curriculum for Training of DDPM Staff on Management of Flood, Flash Flood and Sediment Disasters

TF-DMT provided an existing training curriculum for DDPM staff for management of flood, flash flood and sediment disasters to JICA Experts. The training has the following objectives and conducted

for seven days mostly by lectures:

1) To provide knowledge and understanding on basic foundation on flood, flash flood and sediment disasters as well as apply on work effectively,
2) To apply knowledge on writing article or academic report which reference to international standard and acknowledge, and
3) To adapt for working, consulting and being resource person to related organization effectively.

JICA Experts provided four kinds of training curricula for central and local government officers in charge of disaster management in Japan for reference. The training curricula are different from that of DPMA. The training consists of both lectures and exercises and puts great emphasis on experience of simulated disaster situation, enhancement of disaster imagination, handling of information and decision making.

TF-DMT prepared revised training curriculum for management of flood, flash flood and sediment disasters consists of both lecture and workshop of table-top exercise. The draft curriculum was discussed in TF-DMT meeting involving relevant agencies such as Royal Irrigation Department, Department of Mineral Resources, Thai Meteorological Department, Ministry of Education, Office of Woman's affairs and Family Development, etc. and was approved by DDPM. Based on the revised curriculum, the training of master trainer on management of natural disasters (flood, flash flood and sediment disaster) was conducted in June 2011, and the 1st and 2nd batch of trainings for DDPM staff on management of natural disasters (flood, flash flood and sediment disaster) were conducted in May 2012. Through the trainings, standard training curriculum on management of natural disasters (flood, flash flood and sediment

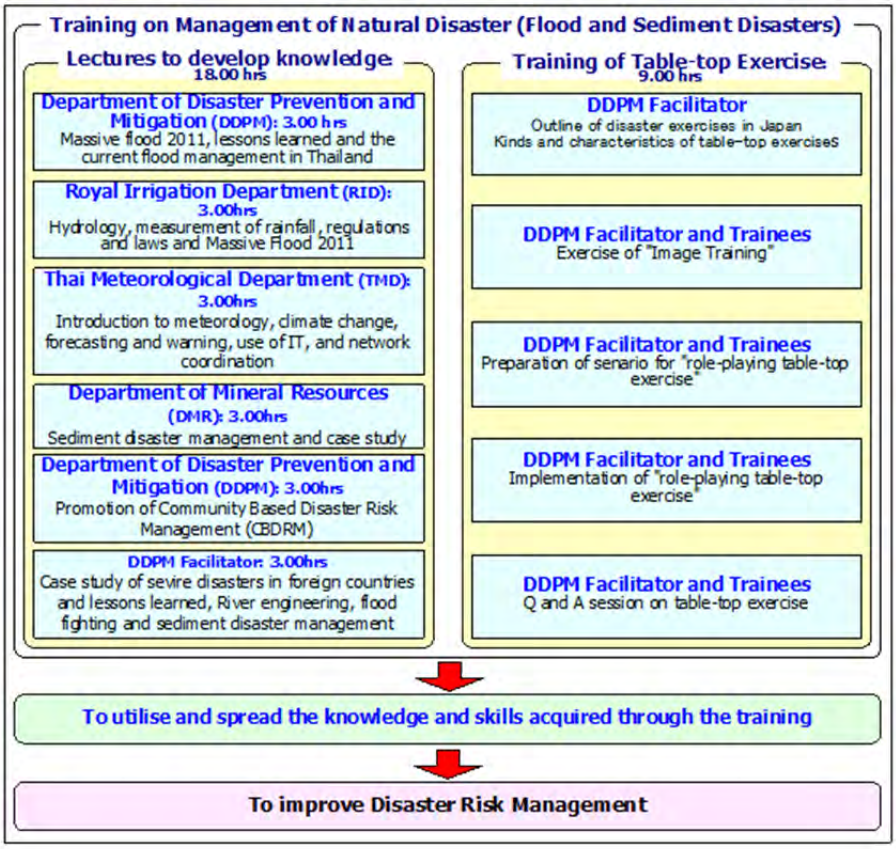


Figure 3.3.3 Standard Curriculum for Training on Management of Natural Disasters

disaster) was formulated. Overall structure of the training curriculum is as shown in Figure 3.3.3. [Refer to ANNEX 6: Standard Training Curriculum on Natural Disasters (Flood, Flash Flood and Sediment Disasters), and Training Materials]

(3) Training of Master Trainer on Management of Natural Disasters (Flood, Flash Flood and Sediment Disasters)

The curriculum of the master trainers training for management of natural disasters such as flood, flash flood and sediment disasters has been developed by TF-DMT and discussed in the TF-DMT meeting on March 2, 2011 inviting the task force members from related agencies.

One of the characteristic of the curriculum is that the course includes a module to train technique to be a trainer/facilitator. Teaching and presentation skill is trained in the module. JICA expert has proposed to include the training of table-top exercise in the master trainers training. The objective of the table-top exercise training is as follows:

a) To enhance imagination ability of disaster situation,
b) To improve ability or skill to handle various information before, during and after disaster,
c) To examine a disaster prevention and mitigation plan, to find out problems and issues, and to discuss concrete improvement measures

In Japan, the trainings for officers in charge of disaster management usually include workshop or table-top exercise in the curriculum. Table-top exercise can be applied at any level of disaster management trainings relatively easily and in cost-effective way.

TF-DMT requested JICA Experts to conduct the following trainings in the Training of Master Trainers for Management of Natural Disasters and JICA Experts accepted to be the trainer of the training.

a) Disaster management in Japan including the Great East Japan Earthquake and lessons learned,
b) Basic river engineering, flood fighting and sediment disaster management in Japan
c) Training of table-top exercise

The program of the Master Trainers Training is as shown in Table 3.3.5.

Table 3.3.5 Program for Training of Master Trainers on Natural Disaster Management

Dates / Times	Subjects/ Facilitators					Subjects/ Facilitators		
	08.00-08.30 am	08.30-09.00 am	09.00-09.30 am	09.30 am-Noon	Noon-13.00 pm Break time for Lunch	13.00-16.00 pm		18.00-19.00 pm Break time for Dinner
1st day	Registration	Opening the training	Orientation/ Project Explanation	Disaster Management in Japan, River Engineering & Flood Fighting		Risk Area Management from Flood Disaster		
		Mr. Prateep	Mr. Chaitawat			Mr.Polchai Klinchajorn		
	Project's officers	Keeratirekha	Siwabowon	Mr. N. Maehara (JICA)		Chief of Information Technology and Water Forecast, Hydrology Section,		
		Deputy DG, DDPM	Deputy Director of DPMA	Mr. M. Kodama (JICA)		Hydrology and Water Management Bureau, Royal Irrigation Department		
2nd day	8.30-9.00 am	9.00 am-Noon				13.00-16.00 pm		
	Main Point Conclusion	Management Principles in Disaster Prevention and Mitigation				Risk Area Management from Mudslide Disaster		
		from Flood and Mudslide Disasters				Mr. Lertsin Raksasakulwong, Director, Environmental Geology & Earthquake Bureau,		
		Mr.Montree Chanachaiviboonwat				Mr.Tinnakorn Thatong, Geologist, Professional Level,		
		Director of Disaster Prevention and Mitigation Policy Bureau, DDPM				Department of Mineral Resources		
3rd day	8.30-9.00 am	9.00 am-Noon				13.00-16.00 pm		
	Main Point Conclusion	Meteorological and Disaster Warning System				Topic "CBDRM"		
		Mr.Charoon Laohalertchai				Mr.Natchanon Sonprasert		
		Director Section of Numerical Weather Forecast,				Director Section of Participation Promotion, Disaster		
		Thai Meteorological Department				Prevention and Promotion Bureau, DDPM		
4th day	8.30-9.00 am	9.00 am-Noon				13.00-17.00 pm		
	Main Point Conclusion	Brainstorming to TTX Practise				Brainstorming to TTX Practise		
		Mr. Anusorn Kaewkangwarn, Director of DPMRC, 10 Lampang Province				Mr. Anusorn Kaewkangwarn, Director of DPMRC, 10 Lampang Province		
		Mr. Tsuyashi KOYABU, JICA Expert				Mr. Tsuyashi KOYABU, JICA Expert		
5th day	8.30-9.00 am	9.00 am-Noon				13.00-15.00 pm	15.30-16.00 pm	
	Main Point Conclusion	Technique to be the Facilitator				Test	Certificate Ceremony	
		Facilitator: Dr. Paiboon Phosuwan				Conclusion and Evaluation the Project	and Closing the training	
		Plan and Policy Analyst Professional Level, Plan and Development						
		Division, Permanent Secretary to Ministry of Interior				Project's officers	by DG of DDPM	

Based on the curriculum, the training was conducted from June 20 to June 24, 2011 at DPMA in Pathum Thani. Outline of the training is as summarized below:

1) Objectives

- To provide participants with knowledge and understand in disaster management from flood, flash flood and sediment disasters,
- To enhance knowledge capacity in being a lecturer on disaster management from flood, flash flood and sediment disasters, and could be a lecturer transferring knowledge to people and networks efficiently, and
- To be a lecturer of DDPM in disseminating knowledge to people and networks, and could support missions in CBDRM training of agency as well

2) Target Group

Target group is the government officials and DDPM staffs, 50 people/ batch. Participants in the training must be qualified in any ways as follows:

- Bachelor's degree or equivalent
- Graduated the CBDRM training or be a lecturer of DDPM
- Be a person whom the Executive considers that he would be lecturer on disaster management on flood, flash flood and sediment disasters after the training.

3) Procedures

- DPMA selects people to participate in the training from provinces which have risk of flood, flash flood and sediment disasters.
- Lecture, demonstration, practice and answer question methods.
- Testing knowledge before and after training.
- Evaluation according to quality assurance principles.
  - Evaluate course, lecturer and the training project.
  - Monitor and evaluate after the training.
- Certification of training by DDPM.

Presentation of the results of image training exercise

4) Topics of the training: 27.5 hours in total consisting of:

Disaster Category: 24.5 hours

a) Topic: Principles of Disaster Management in Disaster Prevention and Mitigation from Flood and Mudslide: 3 hours
b) Topic: Risk Area Management from Flood Disaster: 3 hours
c) Topic: Risk Area Management from Mudslide Disaster: 3 hours
d) Topic: Meteorological and Disaster Warning System: 3 hours
e) Topic: CBDRM: 3 hours
f) Topic: Disaster Management in Japan and River Engineering: 2.5 hours
g) Topic: Outline of TTX and implementation of Image training TTX: 7 hours

Administration and Management Category: 3 hours in total

h) Topic: Technique to be a facilitator/ trainer: 3 hours

5) Lecturers

a)	Mr. Polchai Klinchajorn	Chief of Information Technology and Water Forecast, Hydrology Section, Hydrology and Water Management Bureau, Royal Irrigation Department (RID)
b)	Mr. Lertsin Raksasakulwong	Director of Environmental Geology and Earthquake Bureau, Department of Mineral Resources (DMR)
c)	Mr. Tinnakorn Thatong	Geologist, Professional Level, Department of Mineral Resources (DMR)
d)	Mr. Charoon Laohalertchai	Director Section of Numerical Weather Forecast, Thai Meteorological Department (TMD)

e) Dr. Paiboon Poosuwan	Plan and Policy Analyst Professional Level, Plan and Development Division, Permanent Secretary to Ministry of Interior (MOI)
f) Mr. Montree Chanachaiviboonwat	Director of Disaster Prevention and Mitigation Policy Bureau, DDPM
g) Mr. Natchanon Sonprasert	Director Section of Participation Promotion, Disaster Prevention and Promotion Bureau, DDPM
h) Mr. Anusorn Keawkangwan	Director of Regional Center 10, Lampang Province, DDPM
i) Mr. Noritoshi Maehara	Leader of JICA Experts Team
j) Mr. Makoto Kodama	JICA Expert in charge of flood management
k) Mr. Tsuyoshi Koyabu	JICA Expert in charge of table-top exercise (TTX)

6) Budget

DPMA operating budget

7) Expected Results

Trained participants have knowledge and understand in the principle of disaster management from flood, flash flood and sediment disasters, able to apply knowledge acquired to use in operating including able to be a lecturer to lecture to public and networks efficiently.

8) Project consultants

- Mr. Chatpong Chatphuth Deputy Director-General of DDPM
- Mr. Srisombat Pornprasidhi Deputy Director-General of DDPM
- Mr. Prateep Keeratirekha Deputy Director-General of DDPM

9) Curriculum organizers

- Technical section, DPMA
- JICA Expert Team

10) Responsible agency

DPMA, DDPM

11) Curriculum

A. Disaster Category: 24.5 hours

a) Topic: Principles of Disaster Management in Disaster Prevention and Mitigation from Flood and

Mudslide: 3 hours by DDPM

Scopes:

a1 Disaster Prevention from Flood and Mudslide

a2 Preparation before the disaster

- Meaning and Importance of preparation
- Preparation on Disaster Prevention and Mitigation Plan
- Preparation on personnel
- Preparation on equipment and vehicles
- Preparation on communications
- Preparation for notification when the disaster occurs and coordination with relevant agencies

a3 Operation when flood and mudslide occur

a4 Victim assistance from flood and mudslide

a5 Public utilities and psychological Rehabilitations

Methods: Lecture, case study and answer questions

b) Topic: Risk Area Management from Flood Disaster: 3 hours by RID

Scopes:

b1 Basic knowledge relating to Hydrology

b2 General principles on Hydrology and utilization

b3 Meaning, causes, prevention and mitigation

b4 Intensity and amount of rainfall (Rainfall measuring)

b5 Case study

b6 Relevant regulations and laws.

Methods: Lecture, case study and answer questions

c) Topic: Risk Area Management from Mudslide Disaster: 3 hours by DMR

Scopes:

c1 Basic Knowledge relating to Hydrogeology relating to sediment disaster

- Formation and movement of groundwater

c2 Mineral Resources and Geological Disaster

- Formation and types of important sources of mineral resources

c3 Structural Geology

c4 Prevention and mitigation from mudslide

c5 Utilization from satellite imagery

c6 Case Study

c7 Relevant regulations and laws

Methods Lecture, case study and answer questions

d) Topic: Meteorology and Disaster Warning: 3 hours by TMD

Scopes:

d1 Basic knowledge relating to Meteorology

d2 Variability and climate change

d3 Forecast and disaster warning

d4 Utilization of information technology and coordinating networks on Meteorology

Methods: Lecture, demonstrate and study visit

e) Topic: CBDRM: 3 hours by DDPM

Scopes

e1 Understanding the disasters

e2 Basic concepts in proactive disaster management

e3 CBDRM

e4 Strong community prepared on disaster prevention and mitigation

Methods: Lecture and answer questions

f) Topic: Disaster management in Japan and River Engineering: 2.5 hours by JICA Experts

Scopes:

f1 Disaster Management Plan in Japan

f2 The Great East Japan Earthquake and lessons learned

f3 Basic knowledge on River Engineering

f4 Basic knowledge on Flood Fighting

Methods: Lecture and answer questions

g) Topic: Training of Table Top Exercise (TTX): 6 hours by DDPM and JICA Expert

Scopes:

g1 Basic knowledge on table-top exercise

g2 Demonstration of image training

g3 Presentation

Methods Lecture, exercise and answer questions

B. Administration and Management Category: 3 hours

Subject Group: Personality Building

h) Technique to be facilitator/ trainer: 3 hours by MOI

Scopes:

h1 Technique in being facilitator/ trainer

h2 Practice to be as facilitator/ trainer

Methods Lecture, demonstration and practice

12) Evaluation of the Training

DPMA conducted pre- and post-training examinations to measure the increase in knowledge or intellectual capability from before to after the training. Almost all the participants marked higher score after the training.

Also DPMA conducted questionnaire after the trainings to collect opinion from the trainees. The results of the questionnaire on the training course and lectures are summarized below:

Table 3.3.6 Results of Questionnaire to Participants on Training Course and Lectures

Satisfaction with the academic content							
Evaluation Items	Excellent	Good	Moderate	Fair	Poor	Average	Level
	%	%	%	%	%		
Regarding the training course. 1)The course content corresponds with the requirements.	43.2	47.7	6.3	2.3	0.0	4.3	Excellent
2) Have more knowledge after the training.	34.1	61.4	4.6	0.0	0.0	4.3	Excellent
3) The instructed knowledge can be implemented in operations.	25.0	68.2	4.6	2.3	0.0	4.2	Good
4) Appropriateness of the training documents.	15.9	50.0	31.8	2.3	0.0	3.8	Good
5) Appropriateness of the training duration.	27.3	45.5	22.7	4.6	0.0	4.0	Good
Regarding the lecturers. 1) Proficiency in the subject matter.	34.1	61.4	4.6	0.0	0.0	4.3	Excellent
2) The content provided corresponds with the course subject.	27.3	61.4	9.1	2.3	0.0	4.1	Good
3) Ability to instruct the subject content clearly and understandably.	34.1	59.1	6.8	0.0	0.0	4.3	Excellent
4) Teaching technique is interesting.	34.1	59.1	6.8	0.0	0.0	4.3	Excellent
5) Punctuality.	43.2	52.3	4.6	0.0	0.0	4.4	Excellent

13) Participants

Table 3.3.7 List of Participants of the Training of Master Trainers on Natural Disaster Management

No.	Name	Position	Organization
1	Mrs. Kwanjai Tongkatok	Policy and Plan Analysis, Professional Level	DPMC 1, Pathumtani
2	Mrs. Jaruwan Surbchomphu	Policy and Plan Analysis, Professional Level	DPMC 1, Pathumtani
3	Mr. Phameth Dithawuth	Civil Works Chief Technician, Professional Level	DPMC 2, Supanburi
4	Mr. Boonsong Singthong	Engine Controller, Third Grade	DPMC 2, Supanburi
5	Mr. Panya Rungruang	Mechanical Engineer, Professional Level	DPMC 3, Pracheenburi
6	Mr. Kitthiphum Kaewpradub	Legal Affairs Officer, Practitioner Level	DPMC 3, Pracheenburi
7	Mr. Wiroj Sangwichian	Legal Affairs Officer, Practitioner Level	DPMC 5, Nakhon Ratchasrima
8	Mr. Suwit Thongdonth	Policy and Plan Analysis, Professional Level	DPMC 5, Nakhon Ratchasrima
9	Mr. Bancha Srikong	Policy and Plan Analysis, Professional Level	DPMC 5, Nakhon Ratchasrima
10	Mr. Thanom Deepetch	Policy and Plan Analysis, Professional Level	DPMC 6, Khon Kaen
11	Mr. Wanchai Puabdang	Chief Mechanical, Professional Level	DPMC 6, Khon Kaen
12	Mr. Warapong Triyong	Engine Controller, Third Grade	DPMC 7, Sakonakhon
13	Mr. Akkarawut Chaijit	Handyman	DPMC 7, Sakonakhon
14	Mrs. Juthamart Phanchomphu	Civil Works Chief Technician, Professional Level	DPMC 8, Kampangpetch
15	Mr. Surachai Phugjeen	Chief Mechanical, Professional Level	DPMC 8, Kampangpetch
16	Mr. Navin Phansaard	Engine Controller, Third Grade	DPMC 9, Phitsanulok
17	Mr. Wichat Dokjampa	Engine Controller, Third Grade	DPMC 9, Phitsanulok
18	Mr. Watthana Sakorn	Policy and Plan Analysis, Professional Level	DPMC 10, Lampang
19	Mr. Sanae Paksing	Policy and Plan Analysis, Professional Level	DPMC 10, Lampang
20	Mrs. Nipa Rithphoo	Policy and Plan Analysis, Professional Level	DPMC 11, Suratthani
21	Mr. Samruam Maneerath	Chief Electrician, Professional Level	DPMC 11, Suratthani
22	Mr. Teerasak Thongmart	Civil Works Chief Technician, Professional Level	DPMC 12, Sonkha
23	Mr. Charit Meesab	Typist Level 2	DPMC 12, Sonkha
24	Mr. Nikom Wongkor	Chief Mechanical, Professional Level	DPMC 13, Ubon Ratchathanee
25	Mr. Suwit Sukwatthanathavornchai	Policy and Plan Analysis, Professional Level	DPMC 15, Chiang Rai
26	Mr. Chaiyathon Bonmachaleornvng	Policy and Plan Analysis, Senior Professional	DPMC 16, Chainart
27	Mr. Kowith Chanyim	Disaster Prevention and Relief Officer	DPMC 16, Chainart
28	Mr. Awiruth Worakitpaisarn	Civil Engineer, Senior Professional Level	DPMC 17, Chanthaburi
29	Mrs. Pasinee Suwanchaleorn	Policy and Plan Analysis, Senior Professional	DPMC 17, Chanthaburi
30	Mr. Suriyan Puaneapai	Radio Control Officer	DPMA, Chiang Mai
31	Mr. Chartchai Srisuk	Engine Controller, Third Grade	DPMA, Phitsanulok
32	Mr. Thanadon Kampeepong	Engine Controller, Third Grade	DPMA, Phitsanulok
33	Ms. Choocheap Suktoh	Policy and Plan Analysis, Professional Level	DPMA, Phitsanulok
34	Ms. Darawan Nampai	Policy and Plan Analysis, Practitioner Level	DPMA, Pracheenburi
35	Mr. Prawit Poonsri	Civil Works Chief Technician, Professional Level	DPMA, Khon Kaen
36	Ms. Saowapak Malakarn	Scientist, Professional Level	DPMA, Sonkha
37	Mr. Kethsirin Panithyacheva	Policy and Plan Analysis, Practitioner Level	DPMC, Phuket
38	Ms. Pirom Thaneerom	Policy and Plan Analysis, Practitioner Level	Disaster Prevention and Mitigation Policy
39	Mr. Pairat Kulasri	Communication Officer, Professional Level	Disaster Prevention and Promotion Bureau
40	Mrs. Sumitha Nasawang	Human Resources Officer, Professional Level	Disaster Prevention and Promotion Bureau
41	Ms. Kamonwan Kapsri	Human Resources Officer, Practitioner Level	Disaster Prevention and Promotion Bureau
42	Mr. Prasert Nuaesaen	Mechanical Engineer, Professional Level	Disaster Prevention Criteria Bureau
43	Mr. Kairith Danpitak	Mechanical Engineer, Practitioner Level	Disaster Prevention Criteria Bureau
44	Ms. Duangnapha Utthamakapong	Policy and Plan Analysis, Professional Level	Research and Cooperation Bureau
45	Ms. Narumon Tansuwan	Policy and Plan Analysis, Professional Level	Research and Cooperation Bureau

(4) Training of DDPM Staff on Management of Natural Disasters (Flood, Flash Flood and Sediment Disasters)

The curriculum of the training of DDPM staff on management of flood, flash flood and sediment disasters has been developed by TF-DMT as discussed above. Based on the standard curriculum, six batches of the trainings were conducted as follows:

1st Batch: from May 14 to May 18, 2012 (40 persons)
2nd Batch: from May 21 to May 25, 2012 (53 persons)
3rd Batch: from January 14 to January 18, 2013 (45 persons)
4th Batch: from January 21 to January 25, 2013 (44 persons)
5th Batch: from December 9 to December 13, 2013 (50 persons)
6th Batch: from December 16 to December 20, 2013 (47 persons)

1) Objectives

- To provide participants with knowledge and understand in disaster management from flood, flash flood and sediment disasters,
- To share knowledge, experience and ideas on disaster prevention and mitigation among experts and trainees.

2) Program of the Training

The program of the training is as shown in Table 3.3.8.

Table 3.3.8 Program for Training of DDPM staff on Management of Flood, Flash Flood and Sediment Disaster

Date / Time	Topic /Facilitator					Topic /Facilitator		
	07.30 - 08.00	**08.00 - 08.30**	**08.30 - 09.00**	**09.00 - 12.00**		**13.00 - 16.00**		
Day 1	Registration	Pre-Test	Open Ceremony by Director of DPMA	Disaster Management in Japan, River Engineering, and Sediment Disaster Management in Japan	**12.00 - 13.00 Lunch**	Management Principle for Flood and Landslide Prevention and Mitigation		**18.00 - 19.00 Dinner**
	DDPM Officers			JICA Expert Team		Facilitator from DDPM (Policy Bureau)		
Day 2	**08.00 - 09.00**	**09.00 - 12.00**				**13.00 - 16.00**		
	Exchange experience by participants	Flood Risk Management				Landslide Risk Management		
		Facilitator from RID				Facilitator from DMR		
Day 3	**08.00 - 09.00**	**09.00 - 12.00**				**13.00 - 16.00**		
	Exchange experience by participants	Meteorology and Warning				Community Based Disaster Risk Management (CBDRM)		
		Facilitator from TMD				Facilitator from DDPM (Promotion Bureau)		
Day 4	**08.00 - 09.00**	**09.00 - 12.00**				**13.00 - 16.00**		
	Exchange experience by participants	Table Top Exercise				Table Top Exercise		
		DDPM and JICA Expert				DDPM and JICA Expert		
Day 5	**08.00 - 09.00**	**09.00 - 12.00**				**13.00 - 15.00**	**15.30 - 16.00**	
	Exchange experience by participants	Table Top Exercise				Post-Test	Certificate of Attendance and Closing Ceremony	
						Conclusion and Evaluation		
		DDPM and JICA Expert				DDPM Officers	DDPM Director General	

Group discussion on necessary response for severe flood and sediment disaster (14 May 2012)

Training of role-playing exercise (25 May 2012)

3) Evaluation of the Trainings

TF-DMT conducted pre- and post-training examinations to measure the increase in knowledge or intellectual capability from before to after the training. Almost all the participants marked higher score after the trainings.

Also DPMA conducted questionnaire after the trainings to collect opinion from the trainees. The results of the questionnaire on three batches of the training courses and lecturers are summarized in Table 3.3.9.

Table 3.3.9 Results of Questionnaire to Participants on Training Course and Lectures

1st Batch (May 14 - May 18, 2012)

Topic	Very high %	High %	Moderate %	Low %	Very Low %	Average	Level
About Curriculums/courses							
1) Course contents were concordance with your knowledge needs	33.3	53.9	12.8	0.0	0.0	4.2	High
2) Accruing knowledge after training	30.8	56.4	12.8	0.0	0.0	4.2	High
3) Applying knowledge with your task/duty	23.1	56.4	18.0	2.6	0.0	4.0	High
4) Handout (document)'s content were appropriate for training course	20.5	56.4	20.5	2.6	0.0	4.0	High
5) Duration of each course	20.5	53.9	23.1	2.6	0.0	3.9	High
About Lecturers							
1) Technical skill/knowledge in courses content	41.0	48.7	7.7	2.6	0.0	4.3	Very high
2) Courses content concordance with course title and objective	35.9	53.9	10.3	0.0	0.0	4.3	Very high
3) Capability to disseminate course content understandably and clearly	35.9	46.2	18.0	0.0	0.0	4.2	High
4) Interesting technical skill in teaching	38.5	41.0	18.0	2.6	0.0	4.2	High
5) Punctual teaching time	41.0	43.6	12.8	2.6	0.0	4.2	High

2nd Batch (May 21 - May 25, 2012)

Topic	Very high %	High %	Moderate %	Low %	Very Low %	Average	Level
Curriculums/courses							
1) Course contents were concordance with your knowledge needs	43.1	37.3	17.7	2.0	0.0	4.2	High
2) Accruing knowledge after training	33.3	58.8	3.9	3.9	0.0	4.2	High
3) Applying knowledge with your task/duty	31.4	54.9	11.8	2.0	0.0	4.2	High
4) Handout's content were appropriate for training course	17.7	54.9	21.6	5.9	0.0	3.8	High
5) Duration of each course	23.5	52.9	21.6	2.0	0.0	4.0	High
Lecturer							
1) Technical skill/knowledge in courses content	41.2	45.1	13.7	0.0	0.0	4.3	Very high
2) Courses content concordance with course title and objective	33.3	54.9	7.8	3.9	0.0	4.2	High
3) Capability to disseminate course content understandably and clearly	37.3	49.0	13.7	0.0	0.0	4.2	Very high
4) Interesting technical skill in teaching	21.6	60.8	17.7	0.0	0.0	4.0	High
5) Punctual teaching time	39.2	47.1	13.7	0.0	0.0	4.3	Very high

3rd Batch (January 14 - January 18, 2013)

Topic	Very high %	High %	Moderate %	Low %	Very Low %	Average	Level
Curriculums/courses							
1) Course contents were concordance with your knowledge needs	31.8	61.4	6.8	0.0	0.0	4.3	High
2) Accruing knowledge after training	40.9	50.0	9.1	0.0	0.0	4.3	High
3) Applying knowledge with your task/duty	38.6	52.3	9.1	0.0	0.0	4.3	High
4) Handout's content were appropriate for training course	34.9	32.6	23.3	9.3	0.0	3.9	High
5) Duration of each course	27.3	45.5	22.7	2.3	2.3	3.9	High
Lecturer							
1) Technical skill/knowledge in courses content	50.0	43.2	6.8	0.0	0.0	4.4	Very high
2) Courses content concordance with course title and objective	54.6	31.8	13.6	0.0	0.0	4.4	High
3) Capability to disseminate course content understandably and clearly	43.2	40.9	15.9	0.0	0.0	4.3	Very high
4) Interesting technical skill in teaching	40.9	45.5	13.6	0.0	0.0	4.3	High
5) Punctual teaching time	47.7	43.18	9.09	0.0	0.0	4.4	Very high

4) Participants

The total number of participants of the training course was 279 DPM officials as shown in Table 3.3.10. The number of participants from DPM provincial offices (DPM-PO) was 213, that accounted for 75% of the participants. Meanwhile, the numbers of participants from DPM regional center (DPM-RC) and DDPM headquarters were 47 persons (18%) and 19 persons (7%), respectively.

Table 3.3.10 Number of Participants of the Training Courses of the Project

Batch	Training Period	Participants (person)			
		DDPM HQ	DPM-RC	DPM-PO	Total
1	May 14-18, 2012	3	6	31	40
2	May 21-25, 2012	2	7	44	53

3	Jan. 14-18, 2013	3	7	35	45
4	Jan. 21-25, 2013	5	8	31	44
5	Dec. 9-13, 2013	4	9	37	50
6	Dec. 16-20, 2013	2	10	35	47
	Total	19	47	213	279
	Distribution	7%	18%	75%	100%

3.3.3 Evaluation of the Achievement

(1) Improvement of Standard Curriculum for Training on Management of Natural Disasters (Flood, Flash Flood and Sediment Disasters)

TF-DMT and JICA Experts developed a training curriculum consists of both lectures and workshop of table-top exercise by reference to training curricula for central and local government officers in charge of disaster management in Japan. The draft curriculum was discussed in TF-DMT meeting involving relevant agencies such as RID, DMR, TMD, MOE, OWAFD and other bureaus of DDPM and was approved by DDPM. Even before starting of the JICA Project, DPMA had already established a process to implement a training such process as 1) formulation of annual training plan, 2) preparation of draft curriculum, 3) review by curriculum development committee, 4) approval by DDPM, 5) implementation of training, 6) evaluation of training. The process is a routine operating process of DPMA and all the trainings of the JICA Project, one training of master trainers and six trainings of DDPM staff on management of natural disasters, were also conducted through the same procedures. Training cycle of DPMA and support by the JICA Project are presented in Figure 3.3.4.

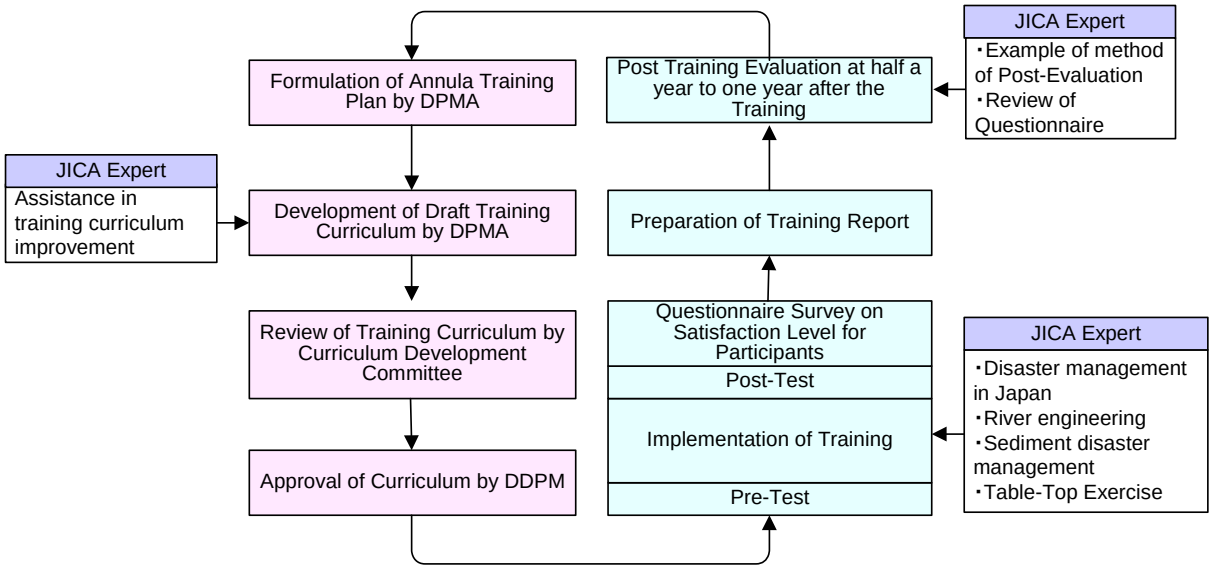


Figure 3.3.4 Training Cycle of DPMA and Support by JICA Project

From the above mentioned circumstances, the objective of improvement of standard curriculum for training on management of natural disasters (flood, flash flood and sediment disasters) has been

considered to be successfully completed.

(2) Implementation of Trainings

TF-DMT and JICA Experts conducted the following trainings by using newly developed training curriculum.

1) Training of Master Trainer on Management of Natural Disasters (flood, flash flood and sediment disasters) (45 participants)
2) Training of DDPM staff on Management of Natural Disasters (flood, flash flood and sediment disasters) (181 participants as of November 2013). Approximately 100 DDPM staff will be trained in the remaining two batches of the training in December 2013.

All the trainings conducted in the Project received relatively high satisfaction level through the questionnaire survey after the training. Furthermore, the results of post-training evaluation for the 1st and 2nd batches of the training for DDPM staff also indicated high satisfaction level by both participants and their superiors. After completion of the 5th and 6th batches of the trainings in December 2013, the total number of DDPM staff who will have completed the training course will be 279 persons (324 persons including the master trainers).

Training of table-top exercise has been conducted four times in TF-DMP and seven times in TF-DMT trainings. As a result, many staff of DDPM have already understand the concept and procedure of table-top exercise, which had not been familiar for DDPM before the Project. The objective of the trainings has been considered to be successfully completed.

(3) Post-Evaluation of Training

While many training courses are not subject to post-evaluation in many countries, the post-evaluation of TF-DMT is a great challenge to improve the training of DPMA. In the first post-evaluation, superiors of the training participants evaluated how the participants had effectively and diligently carried out his/her duties utilizing knowledge acquired through the training. In the second post-evaluation, TF-DMT further improved the evaluation method. Not only superiors but also participants themselves evaluate effectiveness of the training at half a year to one year after the training. The post-evaluation has already applied for several trainings of DPMA including those of the Project. From the above, the objective of post-evaluation of training has been successfully completed.

3.3.4 Recommendation

(1) Continuous Improvement of Training Curriculum

TF-DMT has developed the five days training curriculum on management of natural disasters (flood,

flash flood and sediment disasters). It is recommended that the curriculum will be continuously improved including the latest information in collaboration with academic experts of universities and the curriculum development committee of DDPM.

DPMA is planning to develop intermediate level and advanced level training curriculum based on the current curriculum within three years. Such stated trainings will be effective to enhance capacity of the organization and are considered very good challenge.

(2) Continuous Implementation of Training on Management of Natural Disasters

TF-DMT and JICA Experts has conducted one batch of training of master trainer (45 participants) and training of DDPM staff on management of Natural Disasters (flood, flash flood and sediment disasters) (279 participants in total).

DPMA considers that all DDPM staff who works for management of flood, flash flood and sediment disasters should take the training course. The target is 3,800 staff, approximately 80% of DDPM staff. In order to disseminate the knowledge to all DDPM staff in short time, it is recommended that the master trainers and other training participants should disseminate their knowledge and skills through on-the-job training and table top exercise at their working place.

(3) Standard Training Plan in accordance with Carrier Path

DPMA has been playing very important role to support achievement of DDPM's objective through human resources development by providing trainings for DDPM staff. It is recommended that DPMA shall clarify standard training plan according to typical carrier path of DDPM staff.

It is generally recognized that development of knowledge and skill is obligation of professionals. Data base of training or self-development is effective tools to monitor progress of human resources development of DDPM staff.

3.4 Disaster Education

3.4.1 Understanding of the current situation in Thailand

Situation before 2010

Before moving on to explain the work process of the Task force for Disaster Education (TF-DE) in the Phase-2 Project, this section gives an overview of the background.

In 2008, at the end of the Phase-1 Project, supplementary reading books and teacher's guidebooks on floods, landslides and tsunami were developed and distributed to thirty two thousand governmental schools. Teachers in the three pilot schools in the phase-1 Project had been trained to implement the model lessons as well.

In 2009, one year after termination of the Phase-1 Project, the Office of Basic Education Commission (OBEC), the Ministry of Education (MOE) launched a new training project for teachers. It was a training course for disaster management in cooperation with DDPM. DPMA provided training opportunities for 175 educational officers in the Educational Services Area Office (ESAO) in local provinces through MOU between MOE and DDPM. However, a budget shortage prevented OBEC to continue the second batch of the training.

In August 2010, two months after the Phase-2 Project kick-off, OBEC held a seminar for the Phase-2 kick-off. OBEC introduced the outcome of the Phase-1 Project. There JICA found that there were very few people who knew the educational material OBEC provided nation-wide in 2008, this due to the discontinuation of school staffs responsible for the material and lack of knowledge transfer process. In that matter, OBEC has provided additional materials to schools. A seminar was held to spread the knowledge of Phase-1 outcome to ESAOs and schools.

Another cause of the suspension seemed to be due to the lack of consensus building in MOE. Without a policy declaration by top management, it was difficult for every bureau and division to get the budget for disaster education promotion.

Therefore, the Project started the work from knowledge sharing and policy setting (or strategy making) on how OBEC can expand the disaster education system nationwide. OBEC also began with an utilization of those educational materials in other schools to check whether they are applicable or not since those materials for disaster education had never been tested in other schools or other regions as of 2010

To solve above challenges, the Task Force for Disaster Education (hereinafter TF-DE) has implemented a mission for three areas for disaster education promotion as below.

- ✓ Policy setting
- ✓ Human resources development
- ✓ Educational material development

The procedure of the TF-4 in OBEC is shown below.

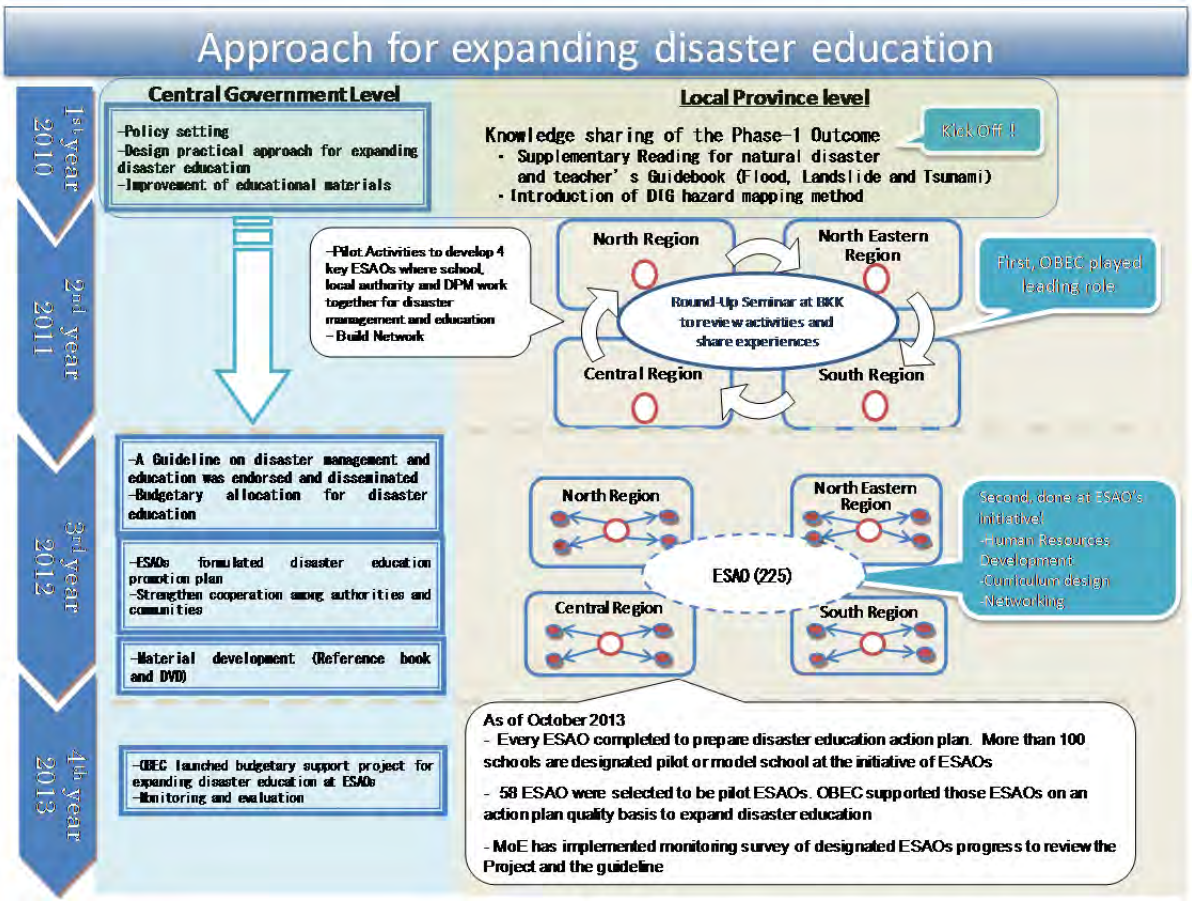


Figure 3.4.1 Approach for Expanding Disaster Education

Policy Setting

The Office of Basic Education Commission (OBEC), Ministry of Education (MOE) in 2011, formulated a Guideline on "แนวทางการจัดการภัยพิบัติในสถานศึกษาและเขตพื้นที่การศึกษา" so as to promote disaster management in school and disaster preparedness education. This guideline clarifies each actor's responsibility of OBEC, Educational Service Area Office (ESAO, สำนักงานเขตพื้นที่การศึกษาประถมศึกษา, สำนักงานเขตพื้นที่การศึกษามัธยมศึกษา) and Schools. The Guideline provides Standards for disaster education promotion at ESAOs and School level. OBEC has encouraged ESAOs to make action plans on disaster management and education. Based on progress of making action plans, OBEC started, in 2013, a project for disaster education promotion to provide the budget for competent ESAOs. The

Cover Page of the Guideline of disaster Management and Education

result was that more than 50 ESAOs launched their own projects for school disaster education in mid-2013. The JICA Expert highly appreciates that the Guideline led the National Plan to be adopted.

The index of this Guideline is detailed below. [Refer to ANNEX 10: Disaster Education Guideline]

1. Preface
2. Purpose and objective
3. Disaster Management
3-1. What OBEC, ESAOs and school must do before disasters
3-2. What OBEC, ESAOs and school must do during disasters
3-3. What OBEC, ESAOs and school must do after disasters
4. Disaster education
4-1. Policy
4-2. Purpose and Objective
4-3. Curriculum design from 1st grade to 9th grade

Educational Material Development

OBEC has developed a set of new materials for disaster education (one is a reference book and the other is a DVD). Those materials have been developed by utilizing the educational materials in the Phase-1 Project. These materials enable teachers and students to learn how they can prepare and respond to flooding, landslides and tsunami, for example, hazard mapping. It also shows natural disasters in the world so that teachers can learn scientific knowledge in detail. For students, it can be good educational material not only to learn scientific knowledge and life skills but also to foster imagination for vulnerable people in the world and it will enhance the spirit of mutual help.

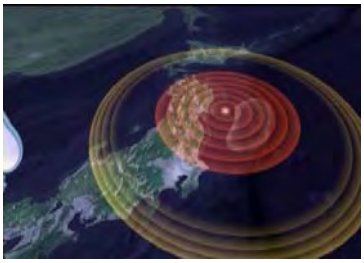
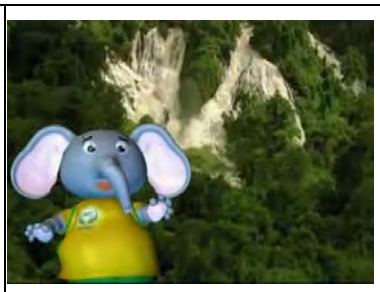
The outline of the educational materials is shown below. [Refer to ANNEX 11: Disaster Education Side Reader]

The new materials consist of the reference book and DVD.

The index of the reference book is as follows;

1) What natural disasters are
2) Mechanism of natural disasters
- Earthquake
- Tsunami
- Landslides
- Floods
- Storms
3) Risk reduction of natural disasters
4) Disaster preparedness – hazard mapping and evacuation drill
5) Narrative history of survivors
6) Case studies in Japan – surviving tsunami

The DVD follows the same index as the reference book. This DVD also shows the mechanism of natural disasters, how people protect themselves, and how people can prepared for disaster. The DVD was added to show DIG method (disaster imagination game) in Mae Hong Sorn Province and Chumporn Province in the phase-1 project.

		
Earthquake and Tsunami in 2011	Mascot character	Interview to victim in 2011 flood
		
A comedian facilitates story with mascot character	DIG in Pilot school	Interview with expert

Human Resource Development

OBEC in cooperation with JICA and DDPM launched the Project for fostering model ESAOs and model schools in 2011. OBEC, first, selected four regional key ESAOs and schools in North, Central, North-Eastern and South part of Thailand (see Figure X). OBEC called them "Model ESAOs-Schools". "Model ESAO-school" means an integrated model. OBEC designated not only the model schools but also designated ones which are combined with educational offices to encourage a comprehensive approach to enhance disaster education. Through a series of workshops in four regions, it was found that OBEC's educational materials in Phase-1 were effectively utilized. Regarding curriculum design, a series of workshops were good opportunities to share ideas for improvement. Also, a learning method such as hazard mapping was introduced, and evacuation drills were implemented. In particular, outcomes at two model schools and ESAOs in the Northern part of Thailand (Baan Pong Sanuk primary school in Lampang Province โรงเรียนบ้านปงสนุก and Baan Muang Sam Pee primary school in Lamphun Province, โรงเรียนบ้านม่วงสามปี) are outstanding. Those two schools are recognized nationwide as best practice schools where they have good examples of curriculum integration into ordinary subjects such as social studies and language studies, disaster management

with community, and a practical learning program. Recently, some ESAOs and pilot schools groups visited those schools to learn good practices. OBEC confirmed that not a few ESAOs and Schools got feedback from best practices in modeled ESAO-Schools through a series of monitoring surveys in September and October 2013. The JICA Expert is assured that technical transfer system using the model school approach is effective.

According to the monitoring survey, as of 2013, it is confirmed that more than 100 schools have been designated pilot schools at the initiative of ESAOs.

3.4.2 Activity and Output

Work Process:

Policy and Strategy setting - In 2010, the TF-DE started to seek a roadmap for achieving goals of the Project. At that time, OBEC recognized that it was a top priority to get top managers or directors to be involved in this Project. Sharing common understanding on the importance of disaster awareness education was the first challenge, before going into human resources development at regional level because it is difficult even for highly-motivated teachers to promote disaster education without his/her superior's vigorous commitment. Therefore, first, OBEC targeted school principals and ESAO Directors to get them motivated for disaster education.

Therefore, the OBEC strategy took two-way-approach. One is the Top-down approach to force educational institutions at all levels such as OBEC, ESAOs and schools to implement disaster education plan based on the National Policy. The other approach is the bottom-up one. It aims at motivation uplifting for all actors, especially teachers on the spot. To let every actor get interested in disaster education, OBEC fostered model schools (as show-cases) in every region.

In the meantime, this work is closely related to the *expected activity 4-1 in PDM version 4*, namely, "*Activity 4-1: DDPM and the MOE discuss and agree on the roles of each agency to implement TF-disaster education activities"* and *"Activity 4-2: TF in collaboration with OBEC develops model curriculum of disaster education in schools on flood, flash flood, mudflow, and Tsunami."* Prior to formulating the guideline for disaster education, MOE held a workshop, in participation with every other task force member to agree on the role of MOE.

Implementation process

The two-way approach is detailed as follows.

A guideline for disaster management and education had been officially announced in 2012 to 225 ESAOs. It declared that MOE had established a policy for disaster education. Based on this, OBEC made disaster education action planning mandatory at ESAO level. Through a series of seminars for the guidance in Bangkok, Lampang Province, Ubon Ratchathani Province, Nakhon Si Thammarat Province and Kanchanaburi Province in 2012-2013, general purpose of this guideline prevailed in all

ESAOs. As of 2013, every ESAO in Thailand has completed the action plan for disaster education.

Table 3.4.1 Typical elements of action plan of ESAO

	Key Elements of Action Plan (Prepared by JICA Expert)
1	Policy setting
2	DPM Plan in ESAO level
3	Responsibility/Role
5	Guidance of DPM Plan in School level
6	Risk Analysis/Assessment/survey/Disaster Type
7	Identified target schools
8	Assigned Model Schools/School Outstanding
9	Human resources development plan for Teachers
10	Plan to hold Workshop
11	Evacuation drill
12	Budget
13	Network/ coordination
14	Curriculum/Learning program

This work process above is relevant to the expected activity in PDM below;
Activity 4-5: TF in collaboration with the MOE trains at least four model schools in collaboration with ESAOs.
Activity 4-6 : ESAOs that supervise model schools prepare a disaster education strategic plan and curriculum design to enhance the outcome to other schools including private schools.

In parallel with this top down approach, in order to foster model schools and make good practices available to concerned people, OBEC established five "Model ESAOs-Schools" in Lampang, Lamphun, Ubon Ratchathani, Kanchanaburi and Nakhon Si Thammarat Provinces. Those Model ESAOs-schools are to be leading players to expand the expected outcome. Those Model ESAOs-Schools also showed how they collaborate with local agencies such as local government, DDPM, hospitals and communities. Through pilot activities in model provinces, those model schools were expected to become regional learning centers so that they can disseminate skills and know-how of disaster education to other areas.
In September, 2011, OBEC held a round-up seminar to review the Model ESAO-School achievement, and exchange experiences in participation with 86 people from the entire country. Experiences in model schools have been introduced and shared through a series of seminars on ESAO action plans in 2012 (shown in Table 3.4.2)
As of 2013, more than 1,000 educational officers and teachers joined a series of workshops in every region since 2010. They have learned know-how of curriculum design and how to utilize disaster education materials as well as hazard mapping and evacuation drill.

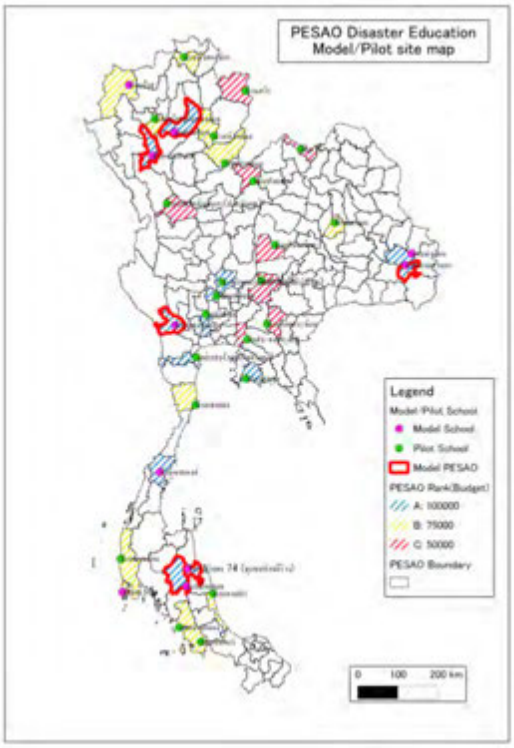
This work process above is based on the expected activity in PDM below;

Activity 4-4: TF selects at least four model schools and ESAOs in northern, north-eastern, central, and southern part of Thailand for disaster education planning and implementation

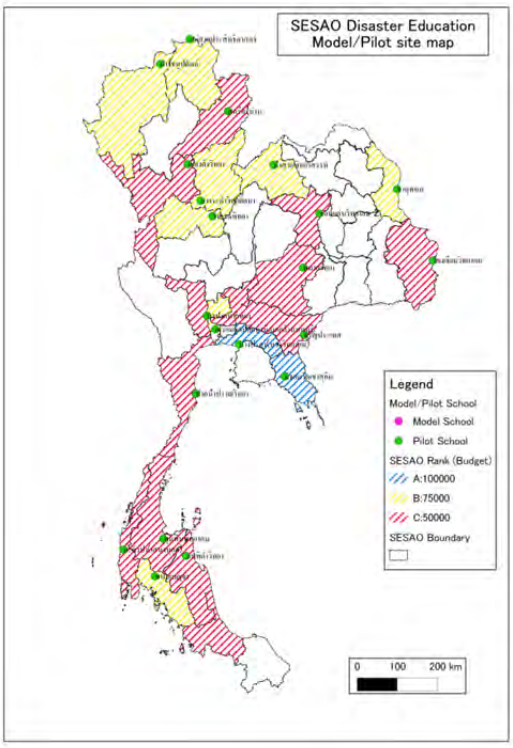
Activity 4-7: Model schools train at least 100 teachers how to teach disaster education at schools in cooperation with local communities, cooperation with local authorities and DPM offices.

Activity 4-10: TF proposes and DDPM institutionalizes in up-scaling mechanism and establishes networks of sharing knowledge for all province staffs such as a study tour, case study forum, seminars, and newsletters.

Monitoring - In June 2013, OBEC launched a project for disaster education for ESAOs to encourage highly motivated ESAOs to accelerate the activities of disaster education expansion in the region. OBEC distributed a budget to 58 ESAOs. The amount of the budget for ESAO was classified according to the feasibility of the action plans which were submitted to OBEC. There are three types (10,000 THB, 75,000 THB, 50,000 THB). The pilot areas are shown in the figure below.



Model ESAO (Primary education)



Model ESAO (Secondary education)

In September 2013, OBEC with the JICA Expert visited to monitor the progress in some ESAOs as shown in Table 3.4.2. It was found that more than 100 schools were designated pilot/model school (*actual name depends on ESAO plan) nationwide. This number is much more than the original plans that ESAOs submitted in advance. Furthermore, it was also found that some ESAOs (such as

Uttaradit, Mae Hong Son, Phrae Provinces) planned training tours to model schools in Lampang and Lamphun Provinces from other Provinces and got feedback. It shows that model school approach is effective.

The work process above is closely related to the expected activity in PDM below;
Activity 4-8: TF in collaboration with the MOE develops at least one master school as information center of disaster education
Activity 4-9: TF in collaboration with OBEC reviews the process and revises curriculum.

Material development - Meanwhile, in January 2012, OBEC undertook original material development for disaster education. Prior to this, OBEC reviewed the supplementary reading books and teachers guidebooks for floods, landslides and tsunami which were made in the Phase-1 Project (2008). OBEC considered that audio-visual material would be better for understanding the natural disaster mechanism. The contents on other natural disasters in the world were to be included in new educational material as well since the educational materials in the Phase-1 did not cover whole natural disasters. Learning other disasters will foster imagination on what happened in other areas or in the world, and it leads students to be aware of how valuable people help each other. Therefore, OBEC determined to develop educational material with an attached DVD which enables teachers and students to learn not only floods and landslides but also other major natural disasters. The DVD was published in 2012 and disseminated throughout ESAOs in Thailand.

This work process above is closely related to the expected activity in PDM below;
4-3 TF in collaboration with OBEC modifies textbooks and teachers' guides.

Private education - Apart from this activity in OBEC, other TF members have also achieved disaster education encouragement to some extent. The Office of Private Education Commission (OPEC) in MOE, one of the members of TF-DE, launched disaster education workshops for private schools. In September 2011, the first workshop in a private school (Kusum Technology College, Pakchong, in Nakhon Ratchasima Province) was held. In 2013, OPEC held workshops twice in Chiang Rai and Krabi Province. More than 150 teachers were trained through those workshops. In Krabi, the JICA Expert got a chance to transfer the wisdom of Tsunami survivors in East Japan Earthquake.

The summary of the activities is shown below.

Table 3.4.2 TF-DE Activity List (As of November 2013)

Events	Date	Organizer	Place	Participants	Outcome / By-product
Disaster Education	Aug 2010	OBEC	Bangkok	100 people (ESAOs, School principals)	Getting Common understanding on phase2 project,

Seminar (1)					Introduction of activities on phase 1
Training course in Japan	Dec 2010	JICA	Tokyo, Nagoya, Hyogo	4, MOE, Non-formal Education, BAAE, Lampang ESAO1	The training encouraged the Director of ESAO Lampang 1 to promote disaster education
Workshop in School (1)	Dec 2010	OBEC	Tam Talod primary school, Nakhon Si Thammarat	40 (ESAO Nakhon Si Thammarat, Teachers nearby)	Principal of Tam Talod School has played a role of facilitator in every subsequent workshop since this workshop
Strategic Planning Meeting in OBEC	Jan 2011	Permanent Secretary Office, OBEC, MOE	Bangkok	25 dozen of ESAOs, Teachers of Model school	Director of ESAO Lampang1 assisted to prepare 5 year strategic plan for disaster education in OBEC and recommended to increase the budget for the activity
Meeting on Disaster Education Guideline	April 2011	OBEC	Pattalung	ESAOs in Six southern provinces	Disaster Education Guideline in MOE got authorized based on this meeting and last strategic planning
Workshop in School (2)	May 2011	OBEC	Muansampee primary school, Lee, Lamphun	50, ESAOs, Teachers in Lampang, Lamphun and others	This workshop encouraged ESAO Lampang 1 to start planning disaster education workshop at ESAO initiatives.
Workshop in School (3)	June 2011	OBEC	Baan kaen Luang school in Kanchanaburi	60, ESAOs and teachers in mid west region	The Model school was recommended by TF meeting, MOE. LAO strong leadership made good cooperation among relevant organizations
Workshop in School (4)	July 2011	OBEC	Baan Kue Due school in Ubon Ratchathani	70, ESAOs in Isaan, Teachers	This workshop encouraged OPEC to organize disaster education workshop at initiative of OPEC.
Workshop in School (5)	July 2011	ESAO Lampang1	Mae Hang Wittaya school in Lampang	50, ESAOs in Lampang, teachers	This is first time for ESAO to organize a workshop on disaster education without OBEC support.
Disaster Education Round up Seminar (2)	Sept 2011	OBEC	Nakorn Nayok	86 people (ESAOs and school principals)	The Seminar provided a good opportunity to communicate and exchange opinions among model schools
Workshop in School (6)	Sept 2011	OPEC	Kusum Technology School, Pakchong, Nakhon Ratchasima	51, private schools from Nakhon Ratchasima, Lopburi, Saraburi	This is first time for OPEC to organize a workshop on disaster education without OBEC support.
Training course in Japan	Dec 2011	JICA	Nagoya, Hyogo	18, Director of BAAE,ESAO and School directors in model province	The training encouraged the BAAE to promote disaster education
Training tour in Indonesia	Dec 2011	JICA	Indonesia	4 from ESAO and OPEC	IKC was introduced
Material development in OBEC	Feb 2012	OBEC	Bangkok	25, OBEC, ESAOs, DMR, TMD, RID	Discussion on Materials for teachers and DVD for students
Seminar for Guideline (1)	June 2012	OBEC	Bangkok	250, OBEC, ESAO Directors	Dissemination of OBEC policy of disaster education
Seminar for Guideline (2)	July 2012	OBEC and Lampang ESAO (1)	Lampang	300, OBEC, School directors and advisors in North region	Action planning and interactive exhibition by model school
Seminar for Guideline (3)	July 2012	OBEC and Nakhon Si Thammarat ESAO (1)	Nakhon Si Thammarat	130, OBEC, School directors and advisors in South region	Action planning and interactive exhibition by model schools
Seminar for Guideline (4)	July 2012	Pranburi ESAO	Prachuap Khiri Khan	70 school teachers	Presentation by JICA, DPM, action planning
Seminar for Guideline (5)	July 2012	OBEC and Ubon Ratchathani ESAO (4)	Ubon Ratchathani	170, OBEC, School directors and advisors in North-East region	Action planning and interactive exhibition by model schools
Seminar for	Aug	OBEC and	Kanchanaburi	90, OBEC, school	Action planning and interactive

Guideline (6)	2012	Kanchanaburi ESAO (1)		directors and advisors in Central region	exhibition by model schools
Seminar for Guideline (8)	Aug 2012	Maha Sarakham, ESAO	Maha Sarakham	25 school teachers	Presentation by JICA, DPM, action planning
Seminar for Guideline (9)	Aug 2012	Petchaburi, ESAO	Petchaburi	70 school teachers	Presentation by JICA, DPM, action planning
Seminar for Disaster Education action plan	Feb. 2013	OBEC	Bangkok	20-50 pilot ESAOs nationwide	Action planning and interactive exhibition by model schools
Training of GIS data base	Jun. 2013	JICA	Bangkok	4 members of TF-DE	To acquire basic technique to establish and maintain GIS data base for monitoring progress of school disaster education
Disaster Education Workshop	Aug. 2013	Phrea ESAO	Phrae Province	30 school Teachers	Dissemination of OBEC policy of disaster education and demonstrate know-how of disaster education
Disaster Education Workshop	Aug. 2013	Pranburi (2) ESAO	Prachaupkirikan Province	50 school teachers	ESAO No.2 Pran Buri has started to address disaster education in the region.
Disaster Education Seminar on Sediment Disaster Management	Aug. 2013	Uttaradit ESAO	Uttaradit Province	100 teachers from surrounding region	Experience, knowledge, measures and learning tools were shared among participants.
Tsunami education seminar	Aug. 2013	OPEC	Krabi Province	◆ 50 teachers of private schools from Krabi, Phang Nga, Phuket and Ranong Provinces	Tsunami education seminar
Disaster Education Seminar on Sediment and EQ Disasters	Aug-Sep. 2013	OPEC	Chiang Rai Province	50 teachers of private schools from Chiang Rai and Phayao Provinces	Sediment disaster knowledge was transferred to personnel of OPEC
Follow-up training of GIS data base	Aug-Sep. 2013	JICA	Bangkok	4 members of TF-DE	To confirm basic technique to develop and maintain GIS data base for monitoring progress of disaster education.
Monitoring of implementation status of disaster education at ESAO and Phase-2 model school	Sep. 2013	OBEC	ESAO, Mounsampee primary school and Gho Primary school, Lee, Lamphun	◆ Officers of MOE, JICA expert and Ms. Hiroko KONDO (Disaster Education Supervisor of Nagoya Univ.	Monitoring survey on ESAOs
Monitoring survey on ESAOs	Sep. 2013	OBEC	ESAO and Baan Nam Hoo school, Mae Hong Son	Officers of MOE, JICA expert and Ms. Hiroko KONDO (Disaster Education Supervisor of Nagoya Univ.	Monitoring of implementation status of disaster education at ESAO and Phase-1 model school
Disaster evacuation drill		Nakhon Si Thammarat ESAO (1)	Thai Rad Wittaya school, Nakhon Si Thammarat	700 people from ESAO Nakhon Si Thammarat No.1, schools teachers, students from neighboring areas, DPM, Health Officer, VDPM	Evacuation drill and Caravan event

In total, there have been 26 workshops and seminars, and 6 training opportunities in Japan and Indonesia. The total numbers of pilot schools in Thailand is so far more than 100. Although the JICA Expert is not sure whether every pilot school is ready to implement disaster education, most of the schools that JICA visited seemed to be fully prepared for curriculum design and evacuation drills according to the survey in September 2013.

3.4.3 Evaluation of the Achievement

The JICA Expert recognizes that the OBEC two-way Approach to spread disaster education as described above proved to be practical as described below.

Endorsement - One of the significant things to establish a clear guideline on how OBEC drives disaster education promotion nationwide is that the National Policy on Disaster Education, namely, "National Disaster Prevention and Mitigation Plan" and "Strategic National Action Plan (SNAP, 2553-2562)" has been put into effect through this Guideline. The Guideline in OBEC plays a role to certify disaster education projects at all levels as authorized activities which the National Government encourages or give an incentive.

Break Down - The second positive impact of this guideline is that it enables a top level policy to be embodied in a practical work structure. In 2012, OBEC sent an order to 225 ESAOs in 76 Provinces to prepare plans for disaster education in local areas. In other words, the Guideline functions as a vertical connector of the three actors among the Central Government, local educational offices and schools.

Meanwhile, OBEC built a horizontal development approach, called "the model school method" to disseminate disaster education.

Comprehensive approach - One of the positive effects of the model school approach is that it provides a total solution for disaster management and education. Unlike the group training program for school teachers at a training facility such as DPMA, which enables each teacher to acquire knowledge of natural disaster, this model school system enables people to learn the best practices of ESAO and schools in a comprehensive manner. Especially, it is efficient to learn the curriculum design in schools, in which the school integrates disaster studies into each general subject. As every school is faced with the challenge of how the school squeezes the time for disaster study program into a limited class hours each year, curriculum design must be tackled by all school members. This task must be done not by each school teacher in a separate manner but by a leader such as a curriculum manager or a school director effectively.

Uplifting Motivation - There is another advantage of the Model School Approach. This method helps to get teachers motivated in a very natural way. Working together for disaster awareness raising will lead each teacher to be willing to seek a better solution for his/her school. Deep understanding by a

school principal and building cooperation among relevant actors such as DDPM and the community will also enhance each teacher's capacity to work for better. On the contrary, no awareness of school principals will lead even a motivated teacher to become disappointed. It may end by disturbing disaster education promotion.

Sustainability - Furthermore, the Guideline emphasizes the importance of building a social network, in which schools can find available local human resources such as DDPM, local authorities, communities to be able to collaborate with when a disaster occurs. The more it is recognized that a school must be a member of the local community, the more the community network is strengthened. When community bonding becomes strong, the disaster education activity will be built into the community-school. Fostering the teacher's mind to contribute to their home town will lead teachers to be proud of their activity in disaster prevention. It will result in preventing the educational movement to fade. This explanation is on an ideal type. However, it was fortunate that the Project team and OBEC discovered a couple of successful cases in Model ESAOs-Schools in Lamphun, Kanchanaburi, Nakhon Si Thammarat and other remote areas.

Feedback - The JICA Expert recognizes that so far modeled schools have given good feedback to other schools. It was found that there are some study tours to model schools in Lampang and Lamphun Province for teacher training.

For instance, the Muang Sam Pee School, in Lamphun Province has a mid-long term plan to disseminate disaster education. According to this school action plan, activity in the third year (2013) focuses on spreading knowledge to other schools as a Learning Center. The School Principal and teachers energetically visited other areas when they received offers to give presentations on disaster education. It is significant that this school is aware of the mission to spread the knowledge and skill for disaster education which was acquired through the JICA Project.

From this view point, the JICA Expert is highly assured that the OBEC approach for model schools has so far been successfully done.

In conclusion, the OBEC guideline (top down approach) and model school method (bottom up approach) has so far provided a synergetic effect to reinforce sustainability of this educational movement.

3.4.4 Recommendation

(1) Suggestions on Disaster Management and Education Guideline

- As Ms. Yauwaluck Tearonabanchong (เยาวลักษณ์ เตียรณบรรจง, BAAEสำนักวิชาการและมาตรฐานการศึกษา) suggested, the JICA Expert agrees that the index of the guideline for natural disaster management and education in schools must be re-organized so as to easily understand each actor's

responsibility for OBEC, ESAO and School. If it is revised, the JICA expert hopes that the guideline will mention the periodical review of the guideline contents, for instance, once every three years.

- The JICA Expert recommends that the management on evacuation shelter or temporary schools during the evacuation is described in the guideline additionally. The monitoring survey in September 2013 reveals that some of ESAOs are faced with the challenge of how people go through a hard time during disasters, where those ESAOs focus on learning support and mental health care during disasters much more than prompt evacuation.

- The JICA Expert recommends that the guideline allow schools to be able to choose an alternative instead of evacuation drill for flooding because some of the north-eastern areas in Thailand are faced with prolonged periods of flooding for one or two months, where they do not always need an early warning system as the flood comes very slowly. In those areas, an evacuation drill with early warning system is not always obligatory, instead, those schools should prefer an evacuation drill for fire to get awareness of an emergency situation and learn how to avoid panic. Evacuation drill for fire can sometimes be applied to other emergency situations. In Thailand, there are some areas where people cannot prevent the flood itself and flee from inundation. In those areas, local wisdom to get through hard time during the disaster, keeping good health and mental health is important. This wisdom may sometimes emerge as implicit. Therefore, people are usually unconscious of what a valuable thing the wisdom is. The JICA Expert hopes that OBEC will consider that these kinds of model schools should be discovered and appointed.

(2) Recommendation on material development

- The JICA Expert hopes that integration of disaster education into the normal curriculum must be feasible, considering available hours in a school year. The supplementary reading and teacher's guides which were made in the JICA Project Phase-1 were designed from this point of view. They were based on the discussion among three ESAOs and model schools in the Phase-1 Project (Maehongsorn, Chumporn and Phuket). At that time, it was reasonable to consider that the school can spare seven hours per a year for disaster education. Recently, the importance of education program for ASEAN Economic Community (AEC) adaptation is being much more focused on. The time allocation for disaster preparedness may decrease.

  With a view to this trend, the JICA Expert recommends that the guideline must mention that a minimum of 7 hours is required for disaster preparedness education. If the school has enough time for disaster education, it is better that OBEC instruct ESAO to include a climate change adaptation program within disaster education as well.

- In Japan, after the great earthquake in 2011, the contents for disaster learning become more fruitful in the field of social studies, science, health, and language. This is an obvious sign that Ministry of Education, Science and Technology (MEXT) put more focus on disaster education. MEXT revised the national core curriculum for primary and secondary school so that students can learn about disasters much more than before 2011. According to this governmental decision, most private publishers of teaching materials in Japan modified the contents of general study subjects (As shown in the actual textbook which the JICA expert provided as a showcase). The JICA Expert hopes that those textbooks in Japan are utilized as a reference if the national textbooks in Thailand are revised.

(3) Recommendation on Human Resources Development

- The JICA Expert hopes that the budgetary allocation project for disaster education must continue every year, which can enable ESAOs to promote disaster education in the area. The monitoring surveys in September and October, 2013 show that model schools in the Phase-1 Project have kept good practice on disaster education even without OBEC support. The phase-1 model school in Mae Hong Sorn Province has not slowed down the activity even without any assistance of OBEC. It is good evidence that motivated school has a high potential to be able to expand disaster education in the entire region. The JICA Expert believes that budget support by OBEC will be a good trigger for disaster education promotion at regional level. The impact of the government push has already been verified in Japan. MEXT in Japan had similar projects to promote school safety and it produced many successful cases. Also, the JICA Expert hopes that wisdom in the phase-1 project is widely utilized in the Phase-2 model schools.

- The JICA Expert recommends that OBEC organizes data information on disaster risk on all the schools in Thailand by 2015. The method to collect this information will be sending questionnaires to schools by ESAOs to ask for past disaster history in the school and community where students live.

- Meanwhile, a training course for teachers at DPMA, which was once organized by the Directing Bureau (General Administration Bureau) in 2009, was a good opportunity for teachers and educational officers to learn about disaster management. The JICA Expert hopes that it will be resumed in the near future.

- A seminar in BKK to share good practice is very effective. OBEC promotes an information sharing system such as seminars and web-site construction (e.g. Facebook).

(4) Recommendation on organizational reinforcement

The JICA Expert suggests that OBEC creates a permanent unit for school safety promotion which includes not only risk management issue but also educational issues. The same as in Japan, school safety includes various challenges such as road safety. Schools in Thailand are faced with serious challenges on HIV, drug abuse and youth pregnant problems. Natural disasters must be one of the major challenges which schools should cope with. JICA hopes that OBEC establishes a standing committee or permanent unit so as to continue disaster education promotion activities which have been organized by the Bureau of Academic Affairs of Educational Standards (BAAE,สำนักวิชาการและมาตรฐานการศึกษา), OBEC. This unit is expected to have a wide ranging function which will cover preparedness, response, recovery and reconstruction for natural disasters. The JICA Expert expects that the General Administration Bureau and BAAE will be the main actors. Also, it is desirable in the future, that the school safety unit will coordinate with a bureau which is responsible for safe school facility to reduce vulnerability to natural disasters such as storms and inundation.

3.5 Flood Risk Management

3.5.1 Understanding of the current situation in Thailand

Task Force for Flood Risk Management (TF-FRM) was launched with approval of Joint Coordination Committee (JCC) meeting held on October 4, 2011 in order to enhance knowledge and technical capacity of DDPM on hazard mapping, early warning system and design of structural measures. The core implementation counterparts are dispatched from Safety Standard Sub-Bureau, Disaster Prevention Criteria Bureau, DDPM, with support of advisory agencies. In this project period, TF-FRM conducted following activities according to Project Design Matrix (PDM).

1) TF designs capacity development plan on its activities and monitoring / evaluation.
2) TF selects one sub-basin model site in Lampang or Lamphun provinces based on GIS base risk area maps which are being prepared by DDPM.
3) TF prepares manuals for rainfall / flood analysis and hazard mapping through the process of the practical training taking the model site as an example.
4) TF prepares manuals for improvement of early warning system and for evaluation of structural measures, in which the result of 3) will be functionally utilized.
5) TF conducts training on hazard mapping, early warning system and structural measures targeting DPM regional centers using the above manuals.

3.5.2 Activity and Output

(1) Preparation of Capacity Development Plan [Activity 5-1]

For effective and practical implementation of capacity development, TF-FRM designed capacity development plan promptly after commencement of its activity in January 2012. TF-FRM planned five approaches in their capacity development plan. Thy are 1) preparation of capacity development plan, 2) selection of model sites, 3) preparation of manuals for rainfall, flood analysis and hazard mapping, 4) preparation of manual for improvement of early warning system and for evaluation of structural measures, and 5) training of DPMRC staffs on hazard mapping, early warning system and evaluation of structural measures. Implementation progress of the plan is monitored once a year and compiled in “Report on Baseline Survey and Monitoring for Capacity Development”.

(2) Model Site Selection [Activity 5-2]

Model site for the TF-FRM activities was prioritized from the project pilot communities in Lampang and Lamphun provinces according to the risk zonation map prepared in Phase-1 project as well as actual flood condition and damages in the past. Further, the existing communication information network with the neighboring villages was also key issue for the model site selection in consideration of community early warning system.

As a result of consultation, Ban Muang Sam Pee (Li district, Lamphun province) was selected as the model site. The outline of Ban Muang Sam Pee is as follows:

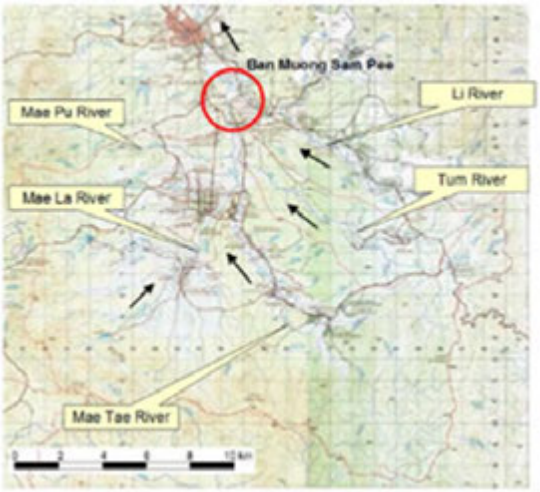


Figure 3.5.1 River basin of Mae Tae River

a) River Basin

Ban Muang Sam Pee is located in Mae Tae River basin that has 239 km^2 watershed area. Mae Tae River has 4 major tributaries, i.e. Mae La River, Mae Pu River on left bank and Li River, Tum River on right bank as shown in Figure 3.5.1. These 4 tributaries join Mae Tae River near Ban Muang Sam Pee. Therefore, if it rains heavily, flood water gathers near the village. After passing Ban Muang Sam Pee, Mae Tae River joins its main stream, Li River. Backwater from the confluence obstructs smooth flow of Mae Tae River.

b) Flood Situation and Damages

During Typhoon Ketsana in October 2009, flood flow of Mae Tae River started to overflow just upstream of Ban Muang Sam Pee. Overflowed flood from the river spread over the whole village. A truck road, Route 106, runs east and west in Ban Muang Sam Pee. The road embankment is 2-3 m in height. Therefore, flooded water in Ban Muang Sam Pee was blocked and stored by the Route 106 road. And inundated depth was 1-2.5 m. Piloti-type house is hardly found in the village, and so almost all the houses in the village

Figure 3.5.2 Destroyed river bank protection work

were inundated.

Responding to the damage of Typhoon Ketsana, river bank protection work of Mae Tae River was conducted by Disaster Rehabilitation Fund (14 million BHT). The right bank of Mae Tae River in the village was protected for 17 km in length with concrete-mixed sand bags. At several sections, however, the protection was immediately destroyed and washed away during the next rainy season (Figure 3.5.2).

c) Community Information Network

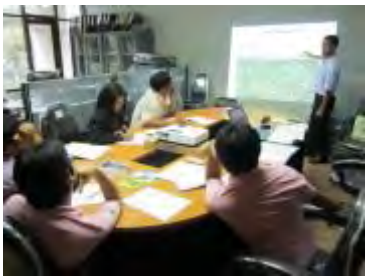
Ban Muang Sam Pee has good relation with the upstream villages, i.e. Ban Na Sai along Mae Tae River and Ban Pha Lad Tai along Mae La River. In case of heavy rainfall or storm, the village headman of Ban Muang Sam Pee calls to the representatives of the both upstream villages in order to get information about rainfall and river water conditions, so that he can judge to announce warning to villagers if they need to prepare or evacuate. According to the village headman, however, there are no concrete criteria for warning and evacuation order to the village people.

(3) Preparation of Manuals for Rainfall/Flood Analysis and Hazard Mapping [Activity 5-3]

a) Regular Training

<u>Hydrology and Hydraulics</u>

The trainings on basic hydrology and hydraulics, which are needed for flood analysis, were conducted for TF-FRM members by JICA experts. The trainings were designed to improve their knowledge regarding hydrology and hydraulics and they basically consist of lecture and exercise. The numbers of trainee were fluctuated depending on training contents or their workload. However, 2 core members always participated. The training contents are shown in Table 3.5.1.



Lecture by JICA expert

Exercise

Presentation by C/P

Table 3.5.1 Training Contents on Hydrology and Hydraulics

Hydrology	・ Hydrological cycle ・ Rainfall process ・ Areal average rainfall ・ Hydrological statistics (Probable rainfall) ・ Runoff analysis (Rational formula) ・ Runoff analysis (Unit hydrograph)
Hydraulics	・ Channel flow (Uniform flow) ・ Channel flow (Non-uniform flow)

Flood analysis and Hazard Mapping

Practical training on runoff analysis and flood simulation was conducted for the purpose of improvement of flood risk zonation map in community-scale. HEC-HMS and FLO-2D models were employed for runoff analysis and flood simulation respectively. High resolution digital elevation data and ortho-rectified aerial image were provided from Land Development Department (LDD) according to MoU between DDPM and LDD.

The training was regularly held once or twice in a week. JICA expert trained core members of TF-FRM, and then they trained the other members in the next. Trainees practically learned utilization of analysis software as well as GIS software to produce flood zonation map at Ban Muang Sam Pee as an example (Figure 3.5.3). All of the process to prepare flood risk zonation map was combined together and prepared as a tutorial manuals. The training contents are as Table 3.5.2.

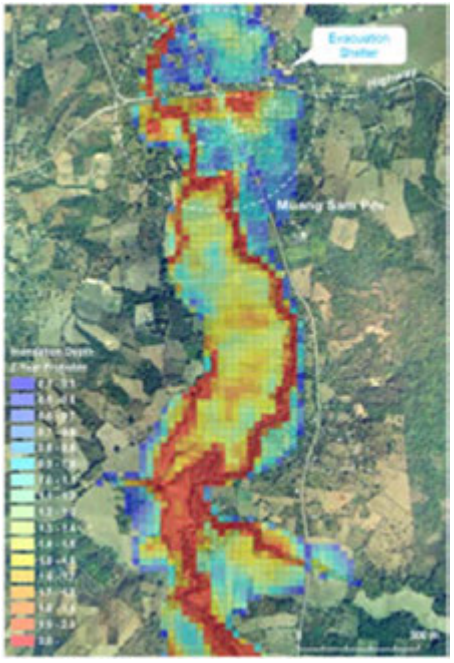


Figure 3.5.3 Prepared flood zonation map at Ban Muang Sam Pee

Table 3.5.2 Training Contents on Flood Analysis and Hazard Mapping

Runoff Analysis 1 :	Basic procedure of HEC-HMS
Runoff Analysis 2 :	Geometry data extraction from digital elevation model
Runoff Analysis 3 :	Runoff modeling, producing design hydrograph from observed rainfall data
Flood Analysis 1 :	Basic Procedure of FLO-2D model for Ban Muang Sam Pee
Flood Analysis 2 :	Manning's N modification based on land use, input of design hydrograph
Flood Analysis 3 :	Channel element development – 1D unsteady flow model –
Flood Analysis 4 :	Channel profile modification, levee element development
Flood Analysis 5 :	Multi-hydrograph input to several tributaries
Flood Analysis 6 :	Importing channel cross-sections from survey data

b) Manuals for rainfall/flood analysis and hazard mapping

Through above trainings, TF-FRM prepared manuals for rainfall/flood analysis and hazard mapping. The manuals were developed as training text book with necessary training data, so that the manuals will be directly used for dissemination of knowledge and techniques to DPM regional centers and provincial offices by TF-FRM members. [Refer to ANNEX 7: Manuals for Hydrology/Hydraulics, Flood Analysis and Hazard Map]

(4) Preparation of Manuals for Improvement of Early Warning System and for Evaluation of Structural Measures [Activity 5-4]

a) Early Warning system

Manual-type rain gauges distributed by several agencies are practically effective for community people to be aware imminent risk, especially at small river basins. In most case, however, there are no concrete criteria regulated based on the actual phenomena in the basin. If the criteria will be improved by observation, the manual-type rain gauges can be utilized more effectively for preparedness and safe evacuation of the community people, without high-tech system.

Based on the above concept, TF-FRM has installed several auto-recordable rain gauges and water level gauges to the model site of Ban Muang Sam Pee. The costs of equipment are reasonable. As it is easy to install and remove, the equipment can be moved to the other risk community after 1 to 2 years observation.

The location of installed equipment is shown on Figure 3.5.4.


Installing rain gauge


Installing water level gauge


Explanation of equipment at DPM Provincial office

<u>Record on May 2012</u>

Ban Muang Sam Pee was flooded caused by heavy rainfall in the early May 2012, which was about 3 months after installing gauges by TF-FRM. The rainfall amount during May 5 to May 13 (7

days) recorded 250 mm in total. The rainfall on May 6 reached to 140 mm/day, and the maximum rainfall intensity was 43 mm/hour. Such strong and short duration rainfall generated the hydrograph with steep peak. According to the village headman of Ban Muang Sam Pee, the flooded water has mainly come from Mae La sub-basin about 1 hour after the flood at Ban Pha Lad Tai village.

Based on this flood event, tentative rainfall criteria for preparedness and evacuation were examined. The estimated criteria are informed to the village headman of Ban Muang Sam Pee by TF-FRM members and region office to improve the flood early warning of the village.

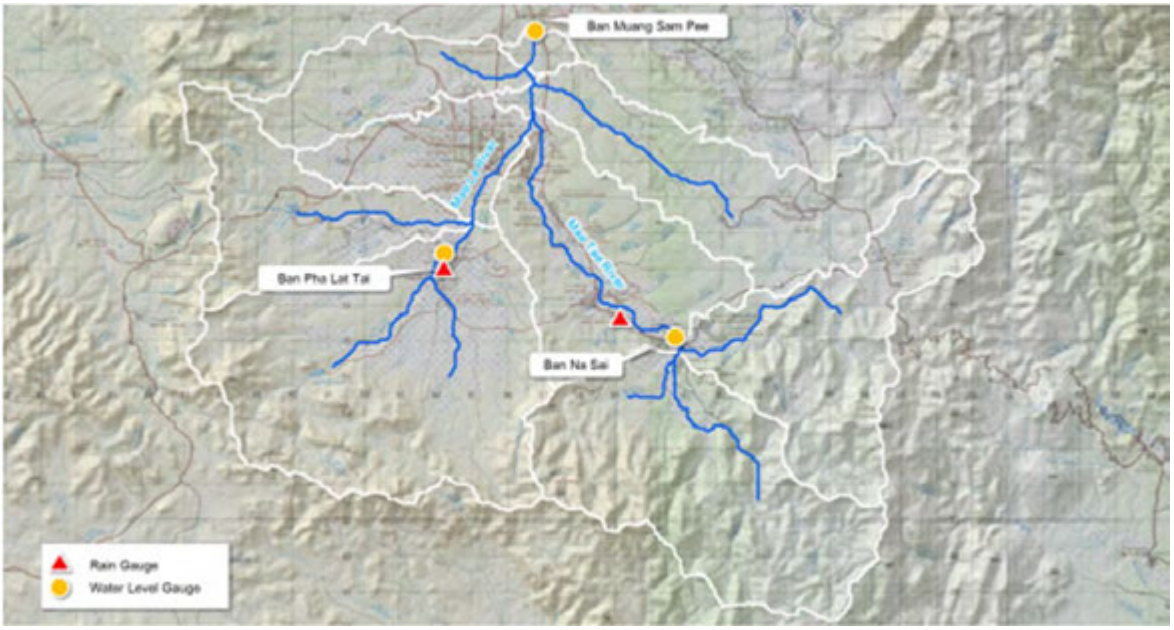


Figure 3.5.4 Location of installed equipment at Mae Tae River basin

Overflowed Mae Tae River water to the paddy field

Before flood (Feb 2012) at Muang Sam Pee bridge

During flood (May 2012) at the same place as the left picture

<u>Tentative Criteria based on Accumulated Rainfall</u>

The following phenomena are figured out in the graph of Figure 3.5.5.

- Accumulated rainfall less than 30mm may not cause any flood at the downstream area (except in case of heavy rainfall at another sub-basin of Ban Na Sai).
- Village headman and Mr. Warning are required to prepare for warning in case the accumulated rainfall reaches to 50mm from rainfall starting. If rainfall still continues after 50mm, the water level at Pha Lad Tai bridge may reach to the critical level.
- Accumulated rainfall over 100mm probably generate overflow at Pha Lad Tai bridge, that leads flood at Ban Muan Sam Pee as well. So the Village headman must warn to residents before 100mm (recommended at accumulated 80mm)
- In case of continuous heavy rainfall after 100mm, the Village headman must to consider evacuation directive to the people.

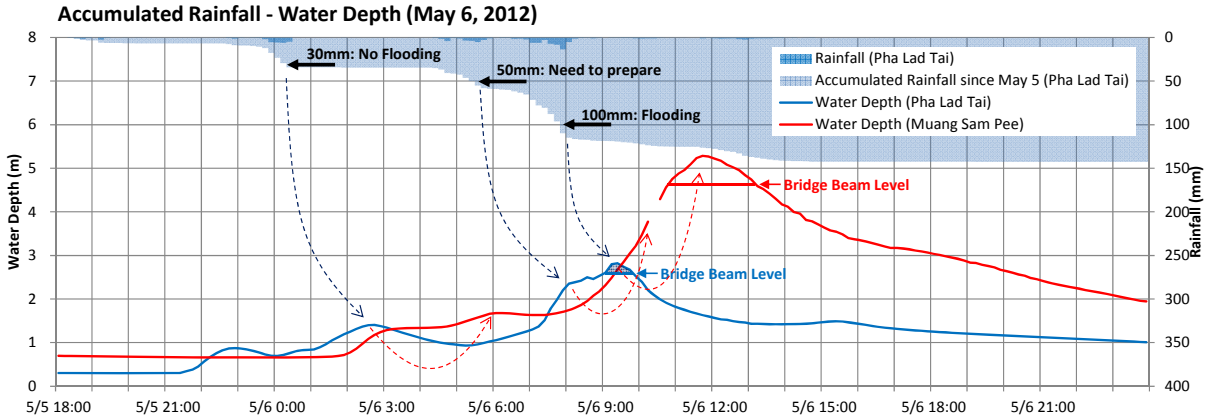


Figure 3.5.5 Observed rainfall (mm/10minutes) and river water level May 5 – May 6, 2012

Training for DPM Region Center 10

All gauges were equipped by DPM Region Center 10 in cooperation with DPM Lamphun provincial office. Training was regularly conducted as OJT at the site as well as in the Region Center. Data collection and maintenance of the gauges have been done by DPM Region Center. Though the water level gauge at the Muang Sam Pee Bridge was broken by the flood on May 2012, it was immediately repaired by the Region Center.

b) Structural Measures

DPM provincial offices are a member of provincial disaster recovery committee, and are responsible for inspecting a proposal on disaster recovery for damaged infrastructures submitted by local authority. These damaged structures are mainly riverbank protection, dike, weir, bridge, etc.

In model communities of the Project, there exist some flood control structures damaged by flood even though they were constructed recently. The causes of damage are side erosion, scouring,

suction, washing out, etc. Adding site survey with C/P and local authority, villagers, the trainings regarding flood control structure, riverbank erosion, riverbank protection works were conducted. Through these activities, TF-FRM prepared the manual on flood control structural measures. The manual consists of river planning and flood control structures. [Refer to ANNEX 8: Manuals for River Structure Plan and Early Warning System]

(bank protection)

(bank protection)

(weir)

Site inspection of damaged structures

(5) Training for DPM Region Center [Activity 5-5]

As an activities of TF-FRM (Activities [5-5] in PDM), training for DPM Region Center on flood risk management was held in the period of Sep 3 to Sep 6, 2012. In this training, TF-FRM members, who were trained by JICA experts, played a role of trainer using developed training materials and manuals. 19 trainees from 18 Region Centers took part in the training. The training period was very limited as only 4 days due to budgeting reason. The training curriculum is as Table 3.5.3.

Table 3.5.3 Training Curriculum for DPM Region Center

Date	Contents
Sep 3, 2012	Basic Hydrology: Rainfall distribution (Thiessen), Statistical analysis, Runoff (Rational Formula, Unit Hydrograph)
Sep 4, 2012	Channel Flow Analysis: Open channel flow (Uniform & Un-uniform), Instruction of hydrological observation
Sep 5, 2012	Geometry Data Processing: Basic of ArcGIS, Data processing, Exercise for model sites for each DPM Region Center
Sep 6, 2012	Basic Flood Analysis: Model preparation, Simulation, Export & import the simulation result, Presentation by participants

In order to review and improve the training, questionnaire was conducted just after the training. The summary of questionnaires corrected from trainees is shown in Table 3.5.4. Most of trainees highly satisfied about the training contents, whereas the training period of 4 days was not appreciated. The qualification of trainers (TF-FRM members) was also fairly good.

Table 3.5.4 Questionnaires for Region Center Training

Basic Hydrology (Sep 3, 2012)

Item	Very Poor	Poor	Moderate	Good	Very Good
Contents of Training	-	-	1	9	7
Period of Training	2	3	6	5	1
Qualification of Trainer	-	--	3	12	2
Benefit to your work	-	1	2	10	4

Channel Flow Analysis (Sep 4, 2012)

Item	Very Poor	Poor	Moderate	Good	Very Good
Contents of Training	-	-	2	8	7
Period of Training	1	5	4	6	1
Qualification of Trainer	-	-	4	10	3
Benefit to your work	-	2	4	6	5

Geometry Data Processing (Sep 5, 2012)

Item	Very Poor	Poor	Moderate	Good	Very Good
Contents of Training	-	-	1	6	10
Period of Training	2	5	6	2	2
Qualification of Trainer	-	1	3	8	5
Benefit to your work	-	-	3	8	6

Basic Flood Analysis (Sep 5, 2012)

Item	Very Poor	Poor	Moderate	Good	Very Good
Contents of Training	-	-	1	8	8
Period of Training	4	5	3	4	1
Qualification of Trainer	-	-	3	9	4
Benefit to your work	-	-	4	9	4


Opening Ceremony


Training initiated by TF-FRM


Closing and certification

The other comments are: 1) more practical work with many examples, 2) involvement of case-studies, 3) more assistants for the training and 4) translation of training materials.

Reflecting the questionnaires and comments, TF-FRM is planning to have next budge training with more practical work and case-studies.

(6) Others

Considering collaboration between each Task Force, TF-FRM joined to the activities of TF-CBDRM at

Ban Kornong (Li district, Lamphun province) on March 6, 2012. TF-FRM provided high resolution areal images of the community that allows people to easily understand the outline of communities and location of community facilities. Besides TF-FRM provided community-scale flood risk zonation map of 2yr, 5yr, 10yr and 20yr probabilities. TF-FRM also presented recommended rainfall criteria for the safe evacuation considering hydrological analysis.

Some participants including district (oboto) officers appreciated the presentation. However it was strongly recommended that the information to the villagers must be much easier so that they could well understand about hazard map and rainfall criteria. .

High resolution areal image

CBDRM workshop

Explanation by TF-FRM

3.5.3 Evaluation of the Achievement

TF-FRM was set up in a year and a half after the project started in response to a request from DDPM intending to prepare flood hazard maps for flood prone areas in whole country.

Transfer technology was conducted through lectures and field exercise that were installation of hydrological observation instruments, observation, data collection/analysis and study on warning criteria. Lectures were held as regular training and intensive course according to C/Ps' daily workload. The manuals for hydrology/hydraulics, flood analysis, hazard mapping, early warning system and structural measures were prepared through these activities. In the result, knowledge and technical capacity of them were enhanced substantially, and understanding of these manuals was also enough.

The hydrological observation equipment of rain gauges and water level gauges procured by the project has been well maintained by TF-FRM. C/P understands the effectiveness of the equipment, which will be relocated to the other risk communities to utilize the project outputs. Moreover, TF-FRM has requested the budget for the additional gauges for the next fiscal year to equip them to all DPM regional centers. It is expected that the project activities will be sustainably implemented by DDPM.

C/Ps eagerly tackled activities mentioned above though there were some difficulties in securing budget. Regarding training for DPM regional center, all 18 regional centers dispatched trainees to the training

held in Bangkok in September 2012. However, due to budget restrictions, 2nd batch of the training has not been conducted in the project period.

3.5.4 Recommendation

Flood hazard map is a one of non-structural measures. But just preparing hazard map cannot reduce flood damage. Hazard map will only work effectively if residents understand risk area, expected inundated depth, etc. at the sight of hazard map, and a community prepare disaster management plan, evacuation plan, flood control plan, etc. using hazard map. In the project, TF-FRM prepared hazard map in selected model site, where CBDRM was conducted by TF-CBDRM. Therefore, prepared hazard map was used effectively and understood well by the community. When DDPM prepares hazard map of other areas after the project, it should cooperate with the agency responsible for CBDRM in consideration of making effective use of hazard map.

Regarding training for DPM regional center, all 18 regional centers dispatched trainees to the training held in Bangkok in September 2012. But number of participants is 19 and it is not enough. DDPM should make effort to conduct the training continuously after the project. When DDPM organizes the training, it will look at a reasonable way, e.g. conducting a training targeting 4~5 neighboring regional centers and dispatching a trainer from DDPM to a representing center.

To endorse the sustainability of the TF-FRM activities, the following action plans were suggested in the discussion between TF-FRM and the expert team;

(1) To set up mapping unit

DDPM will set up a mapping unit in Disaster Prevention Criteria Bureau. The unit will deal with topological map, satellite image and hazard map which are utilized in CBDRM activities. The unit will be officially set up in 2014.

(2) To conduct master trainer training

DDPM will regularly conduct trainings targeting staffs of DPM regional office and provincial office. The training should be programmed in the annual curriculum of DPMA. Disaster Prevention Criteria Bureau will dispatch appropriate master trainer to DPMA.

(3) To utilize hazard map

Disaster Prevention Criteria Bureau will provide hazard maps and the other information obtained in the project to CBDRM and relevant activities to support each bureau in DDPM.

3.6 GIS Data Base to monitor Progress of Activities

3.6.1 Understanding of the current situation in Thailand

TFs conduct disaster risk management (DRM) activities in their own areas. The TFs monitor and collect progress of these activities as their routine work. However, the collected data is not stored as geographical data. Thus, it is hard to make visualized inventory maps of their activities by themselves. The visualized inventory maps are helpful to understand progress of the project activities quantitatively and spatially, and those are useful to make their future plans. Besides, the inventory maps are valuable materials to explain their activities to outsider or DDPM senior level. It was hence recommended that JICA Experts would support to prepare GIS inventory maps of disaster risk management activities comprising DPM-Action Plan, CBDRM and Disaster Education in the 4th JCC meeting held on February 23, 2012.

The other aspect of benefit to make inventory maps on GIS is easy integration of their activity progress information and other geographical data, such as natural disaster hazard information. If they can use natural hazard data as references when TFs make decision about their activities, it is expected to improve quality of their activity.

The inventories are made by using GIS database, however TF members except TF 5 have almost no experience about GIS operations. Therefore, it is necessary for TF members to learn how to operate GIS software. JICA Expert delivered training on GIS for TF-DMP (TF-1), TF-CBDRM (TF-2) and TF-Disaster Education (TF-4).

3.6.2 Activity and Output

The first GIS training was held in September 2012 for TF 1 and TF 2 members. Contents of the training are basic GIS operation and making sample inventory maps. Subsequently, follow-up trainings which aims establishment of GIS operation on their actual work are carried out in June, July and August 2013. Trainings for TF 4 are also held in June and September 2013. Schedule and participants of the trainings are shown in Table 3.6.1. Numbers of the participants are 1 person from TF 1 and 2 persons from TF 2 and TF 4, respectively. In addition, several staff of Promotion Bureau (DDPM) and MoE joined in the training. The time length of the training was ca. two to three hours per a day in consideration of their routine work.

Table 3.6.1 Trainees list and schedule

	Disaster Prevention and Policy Bureau, DDPM	Disaster Prevention and Promotion Bureau, DDPM	Ministry of Education
TF members	Mr. Rattipat Pangwatcharakorn Policy and Plan Analysis, professional level	Ms. Pimnapa Ornsaran Disaster Prevention and Mitigation Officer Mr. Chonlatit Ponsucharit Disaster Prevention and Mitigation Officer	Ms. Vannee Chantarasiri Educational officer, senior professional level, Bureau of Academic Affairs and Educational Standards, OBEC Ms. Sunida Dechsen Human resource officer, senior professional level, Bureau of General Administration , OBEC
Other staffs (joined in only 1st training)		Ms. Sujinporn Panukarn Policy and Plan Analysis, Practitioner level Ms. Kamolwan Klubsri Human Resources Officer, Practitioner level Ms. Monpala Lektor Human Resources Officer, Professional level Ms. Paveena Tanadamrongsith Disaster Prevention and Mitigation Officer Mr. Parinya Ngenmool Disaster Prevention and Mitigation Officer	Ms. Supawee Meyong Policy and Plan Analysis, professional level, Bureau of Policy and Plan, OBEC Ms. Sermsuk Thumakijpiroj Computer Technical Officer, senior professional level, Bureau of Policy and Plan, OBEC Ms. Chitrada Kotrnonlerd Educational officer, Office of the Non-Formal and Informal Education
1st training	9/4-9/7, 9/10,9/11, 9/21 2012 Basic GIS operation and making sample inventory maps	9/4-9/7, 9/10-9/13 2012 Basic GIS operation and making sample inventory maps	6/17, 6/18, 6/26 2013 Basic GIS operation and making Model/Pilot site map
2nd training	7/1, 7/3, 7/5 2013 follow-up training	6/17, 6/19, 6/20 6/21, 6/26, 6/27, 8/22, 8/23, 8/29, 9/11 2013 follow-up training	9/13 2013 follow-up training

The actual DRM activity progress data collected by each TF were utilized to make inventory maps in the training. Other GIS data comprising administrative boundaries, infrastructures and natures are provided from TF 5. In addition, risk community list, flood hazard area and sediment disaster hazard area information are obtained from Research sub-bureau, TF 5 and Department of Water Resources (Ministry of Natural Resources and Environment), respectively. The trainees made inventory maps by operating GIS along JICA Expert's explanation in the training. Handouts (Figure 3.6.1) were prepared to support the training. After the training, the handouts are revised as manual so that they will update the inventories. [Refer to ANNEX 9: Manuals for Development and Operation of GIS Database for Monitoring DPM Action Plan, CBDRM and Disaster Education]

Figure 3.6.2 shows an example of the GIS database created by using Quantum GIS. This window indicated a disaster education model school which came from TF 4 data and flood hazard area information provided by TF 5. On GIS database, it is able to refer to such other format data on the one window. These GIS data are suited to illustrate hazard situation of pilot sites, thus it is believed that GIS inventory maps are valuable to improve their activities.

The inventory maps of each TFs made in the training are followings.

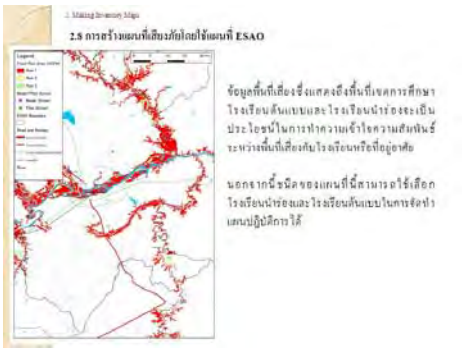


Figure 3.6.1 Example of handout for the training

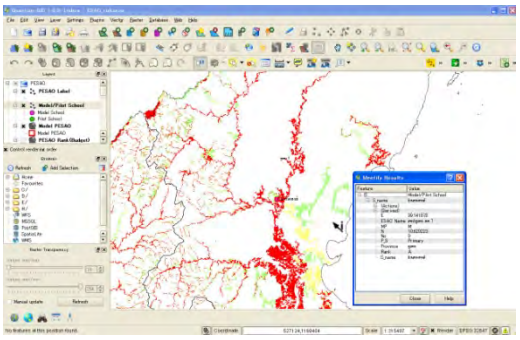


Figure 3.6.2 Example of GIS database

(1) TF1

- Inventory map for DPM-Action Plan

Figure 3.6.3 shows progress of DPM-Action Plan establishment as of 2012. The blank provinces in the map mean data missing due to no data-submitting from provincial officers. According to this data, the progress in each province varies widely. Six provinces have completed to establish DPM-Action Plan. On the other hand, progress rate in the two provinces are less than 10 %.

This inventory map form was made in the first training, and consequently TF 1 member complete the inventory map by himself.

This inventory map as of 2012 has only three status (finished, in progress, not start), but there are actually five event steps (Event1: Explanation, Event2: Establishment of Committee, Event3: Formulation of DPM-AP, Event4: Checking DPM-AP, Event5: Manuals) until completing establishment of DPM-Action Plan. Thus, JICA Expert of DPM-Action Plan gave direction to collect progress data of each event to comprehend detailed DPM-Action Plan progress. As of 2013 September, they had still continued data collection. TF 1 member hence learned how to make inventory map for each event in advance of data collection in the training. The sample inventory map is shown in Figure 3.6.4.

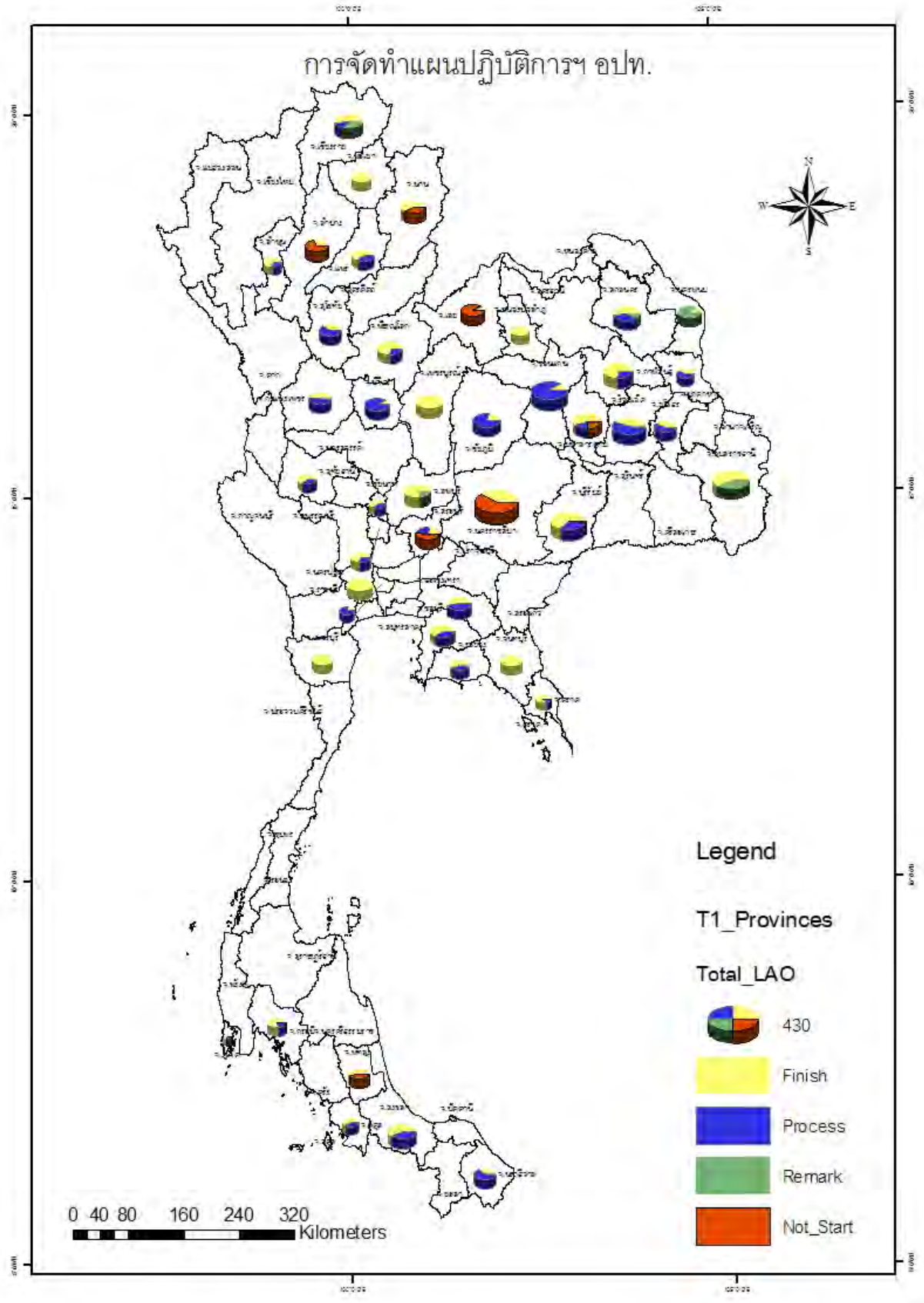


Figure 3.6.3 Progress of DPM-Action Plan establishment

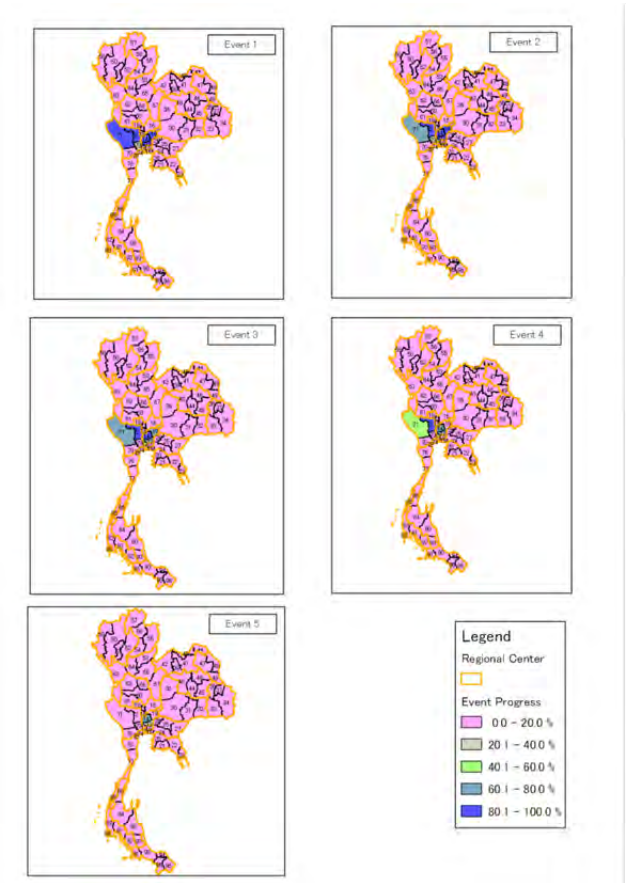


Figure 3.6.4 Sample map of event progress of DPM-Action Plan

(2) TF2

TF 2 members made inventory maps for CBDRM and Mr. Warning in the training. In addition, risk community, flood hazard area and sediment disaster hazard area data are added into GIS database in order to detect priority area to conduct activities by comparing the risk area information with CBDRM activity progress data.

- Inventory Map for CBDRM

Figure 3.6.5 is inventory map about total numbers of communities where CBDRM was conducted. This inventory map was made in the second training and updated by TF 2 members. The map indicates that CBDRM is conducted much in the northern mountainous provinces and southern provinces. These areas match with high flood and/or land slide hazard area according to hazard area map (Figure 3.6.6 and 3.6.7), since TF 2 prioritizes these high risk areas by using risk community list provided by Research sub-bureau (Figure 3.6.8) when they conducts CBDRM. It seems that TF 2 succeed to select high priority area for their activities in northern and southern area. Whereas, in Nakhon Sawan and Pichit provinces, which situate in lower Chao Phraya basin, numbers of communities where CBDRM

was conducted are relatively low compared with high flood risk. It is judged from the inventory maps that it is necessary to improve CBDRM activity in these areas.

Rate of CBDRM conducted community in risk community is shown in Figure 3.6.9. This inventory map was made in the training held in August 2013. Average CBDRM conducted rate in the all provinces is ca. 17%. The conducted rates in the Nakhon Sawan and Pichit provinces situating in high flood hazard area are low. The rates in around half of provinces range from 10% to 20%. The maximum and minimum rates are 77% and 3%, respectively. Difference between maximum and minimum is high, thus it appears that TF 2 needs to review for causes of the difference.

- Inventory Map for Mr. Warning

DDPM conducts Mr. Warning training for land slide. TF 2 member collects the activity progress data, such as total numbers of Mr. Warning and rates of risk community with Mr. Warning, in his routine work. These data were inputted into GIS database by the TF 2 member in the GIS training (Figure 3.6.10 and 3.6.11). The numbers of Mr. Warning includes that trained by DDPM budget as well as other budget. The blank provinces in the maps mean that budget have never been provided for those provinces by DDPM. Therefore, it is necessary to recognize that Mr. Warning trained by the other organizations may exist in the blank provinces.

Distribution trend of conducted Mr. Warning training is similar to that of CBDRM. The Mr. Warning training is actively held in the northern and southern part of the Thailand, while the rates in the central Thailand are relatively low.

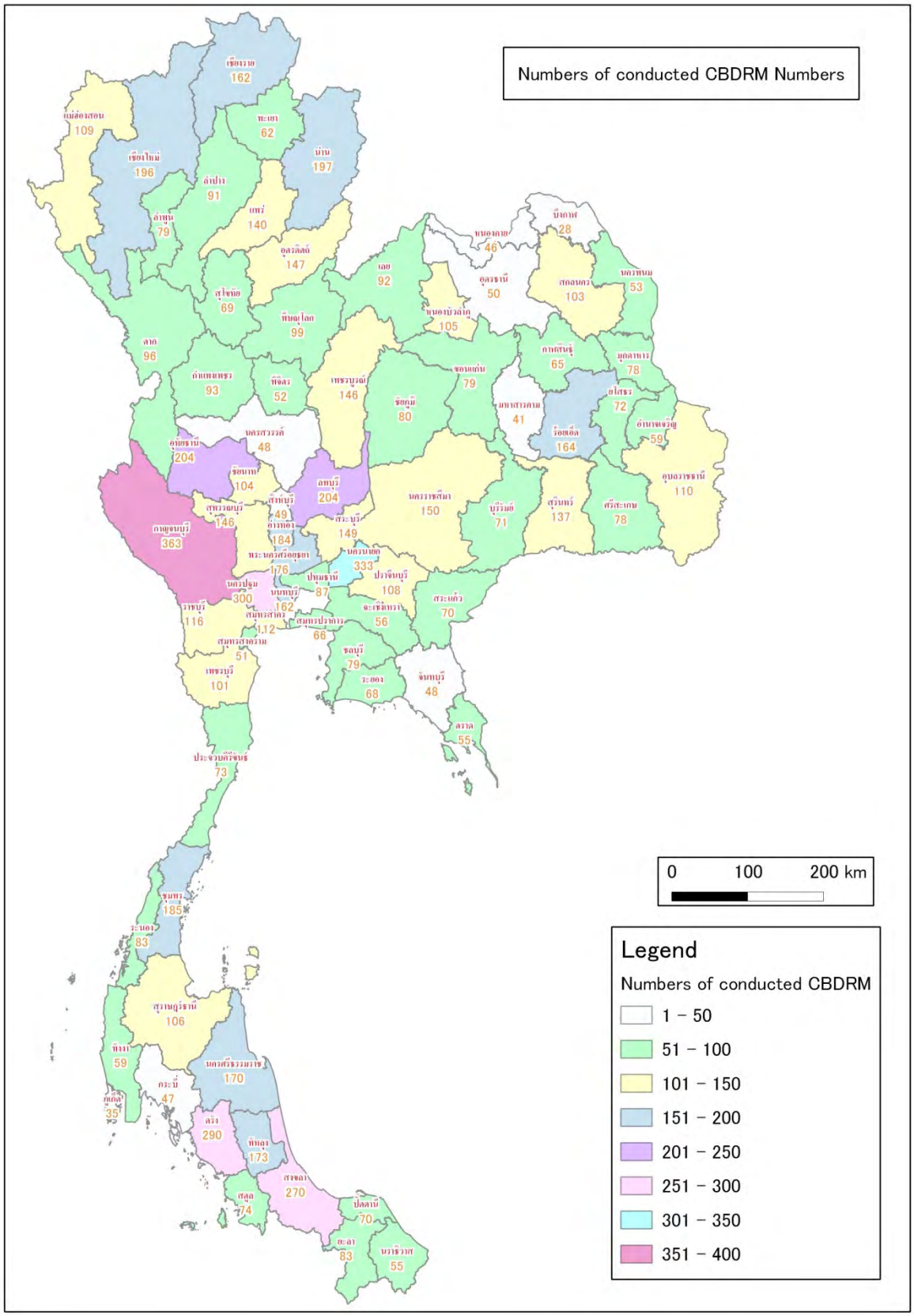


Figure 3.6.5 Numbers of conducted CBDRM

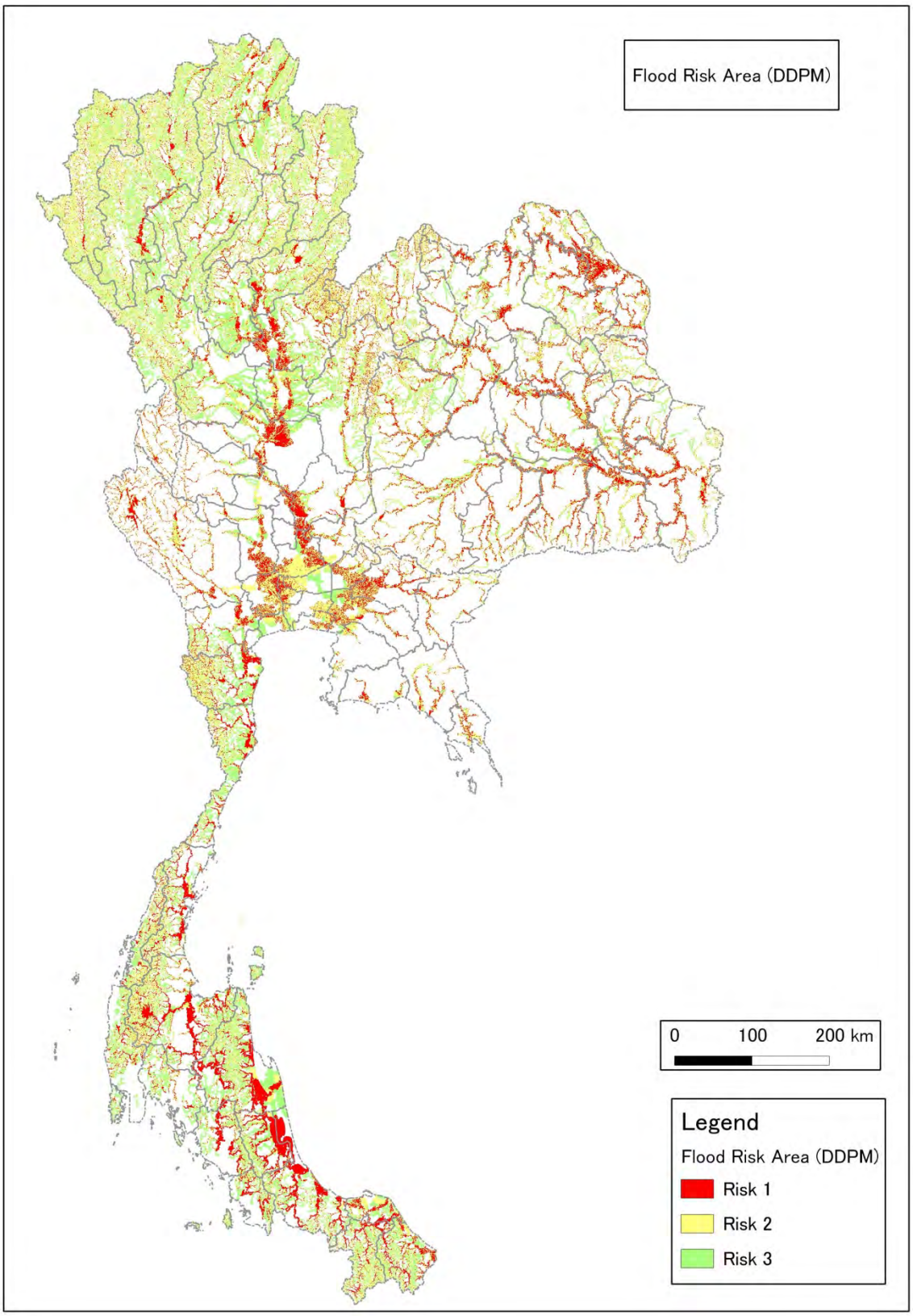


Figure 3.6.6 Flood hazard area (data from TF 5)

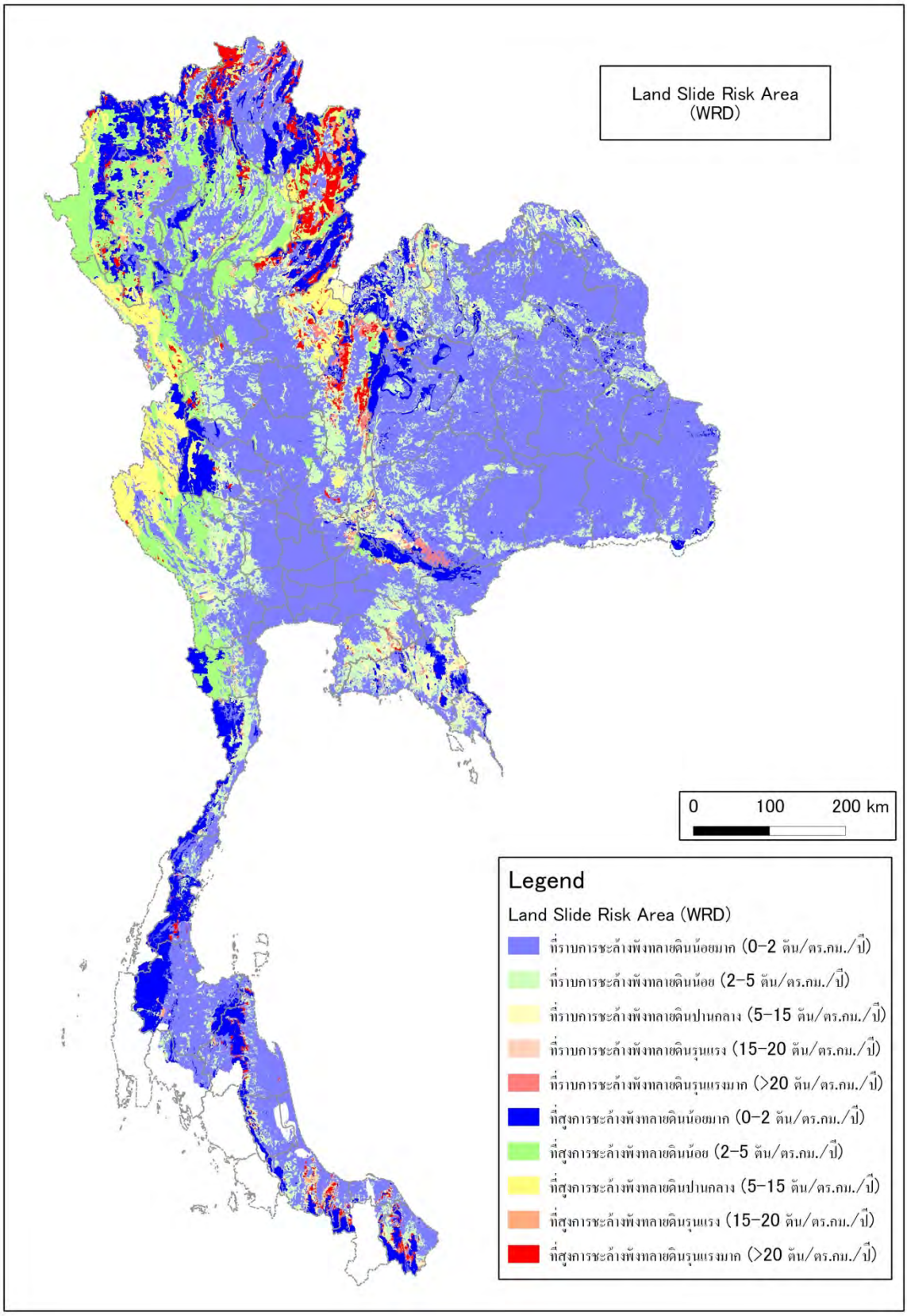


Figure 3.6.7 Sediment disaster hazard area (data from Department of Water Resources)

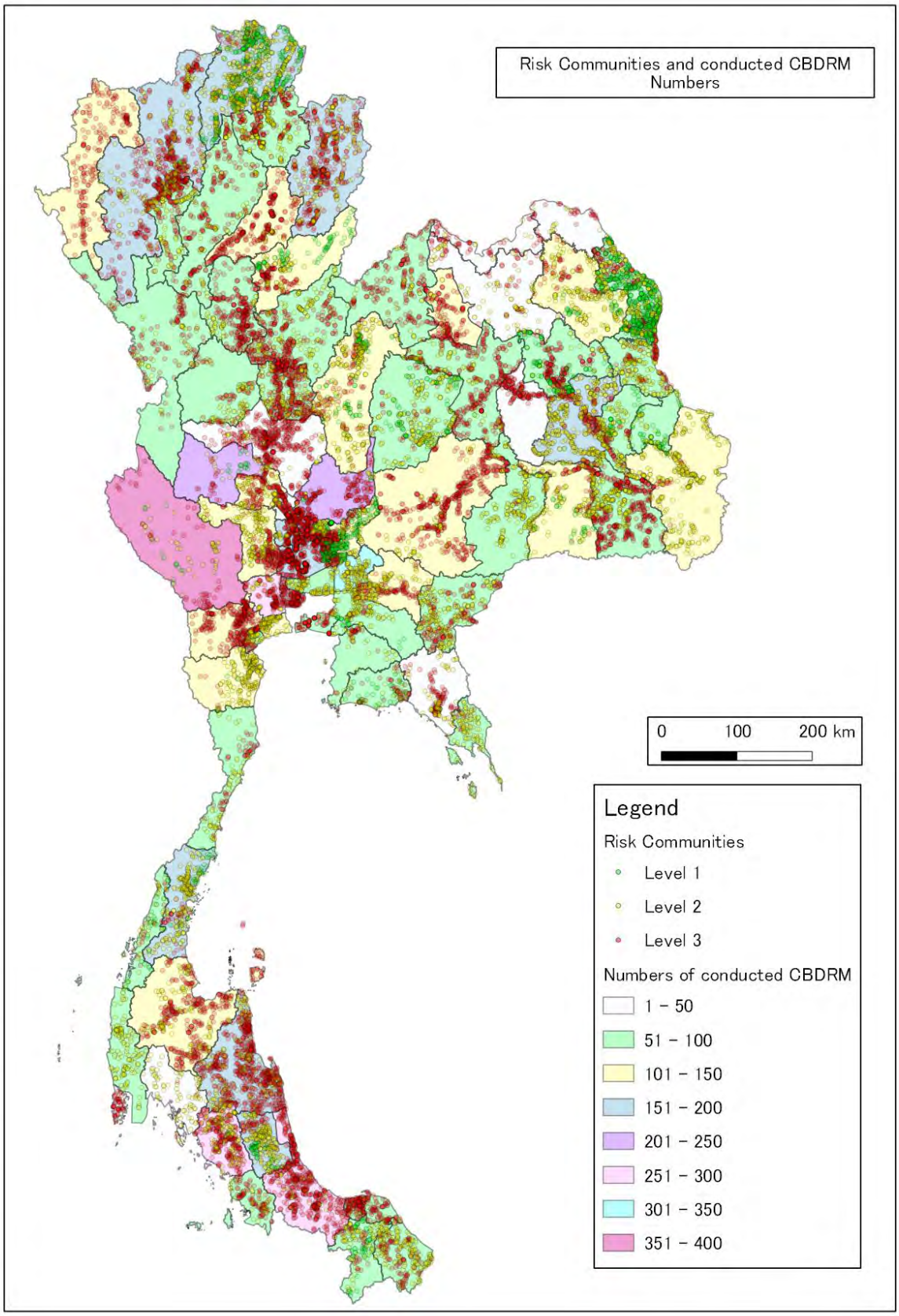


Figure 3.6.8 Distribution of risk communities (data from Research sub-bureau)

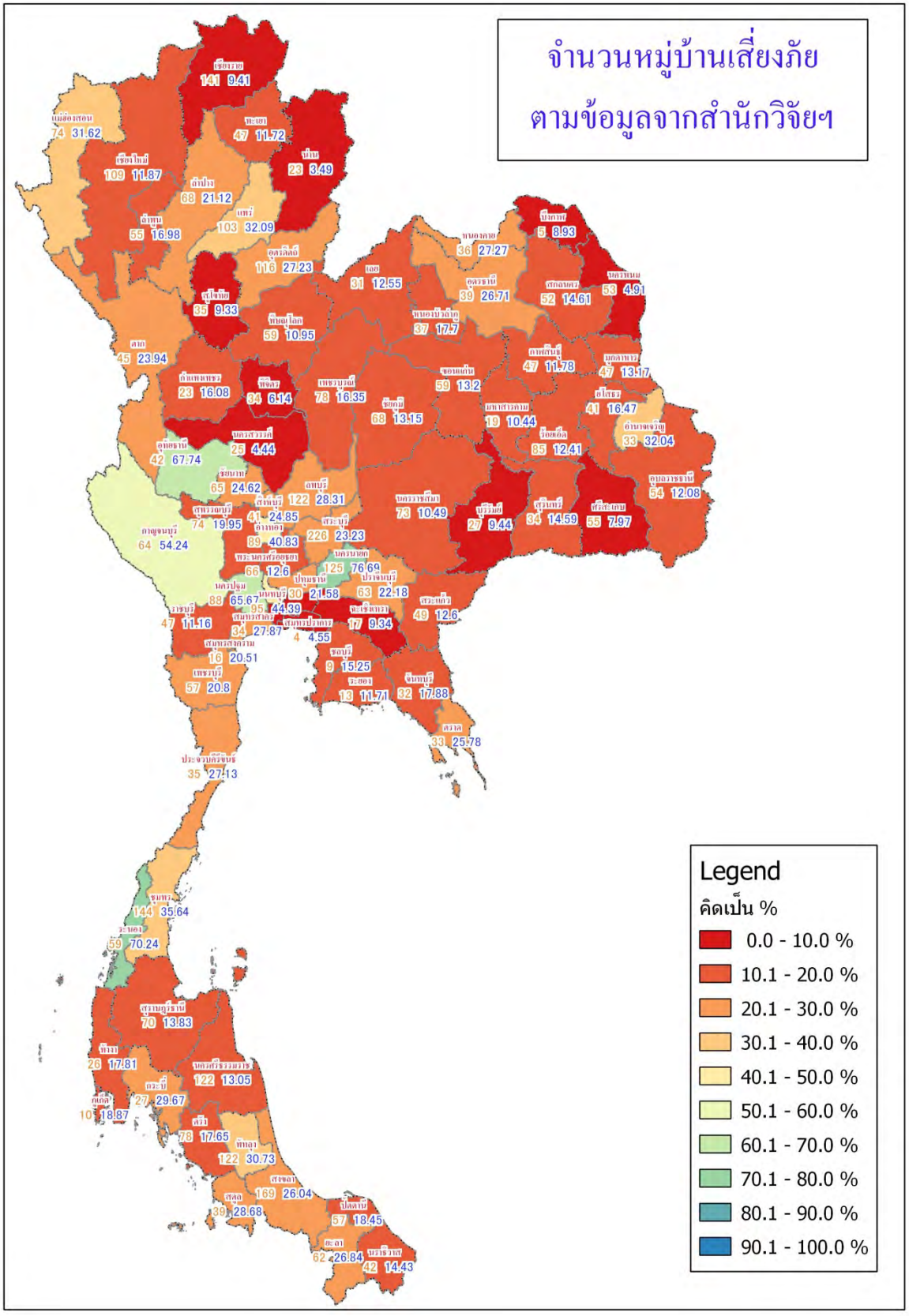


Figure 3.6.9 Percentage of communities where CBDRM was conducted in the risk communities (yellow number: total number of CBDRM, blue number: percentage)

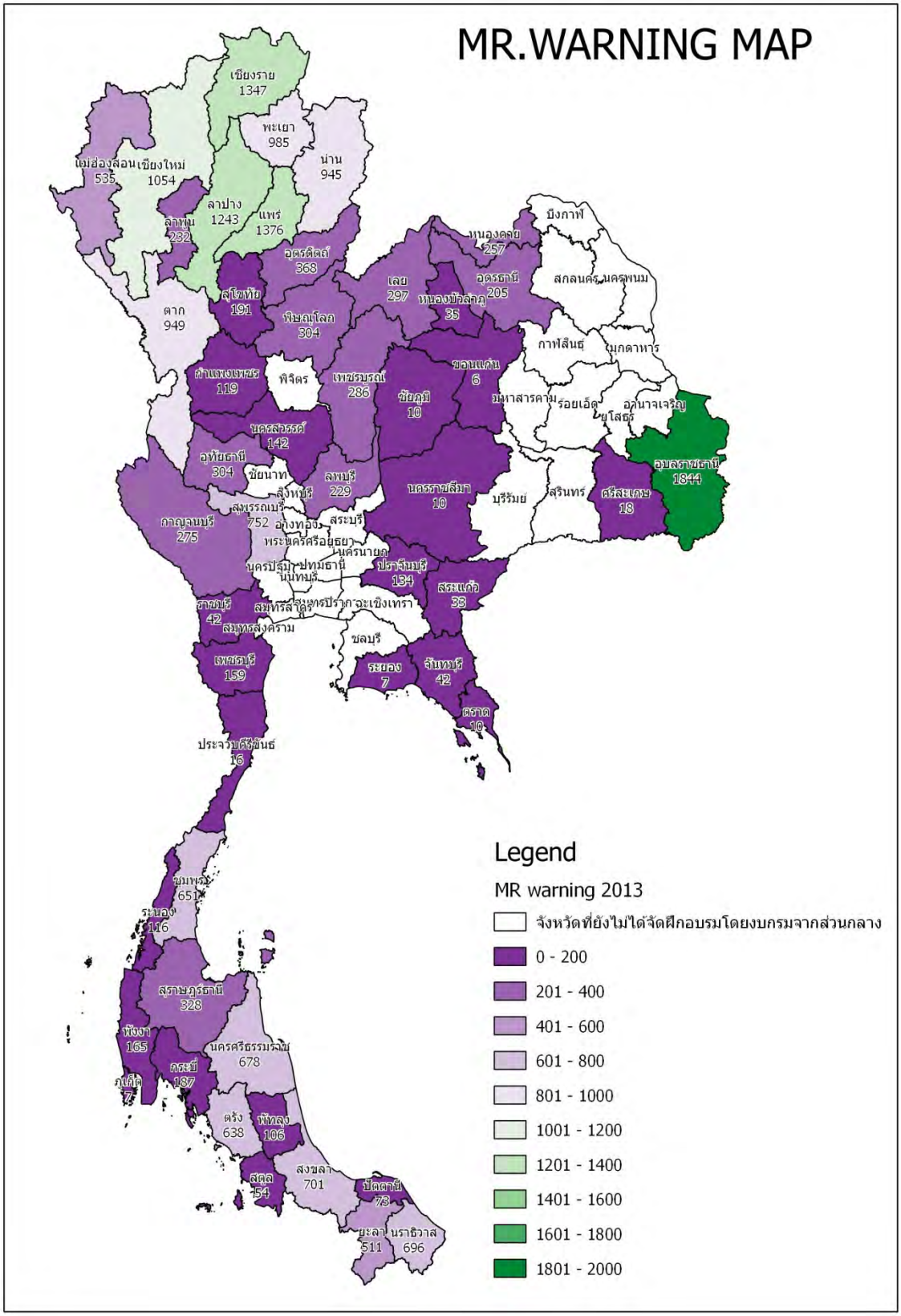


Figure 3.6.10 Numbers of Mr. Warning

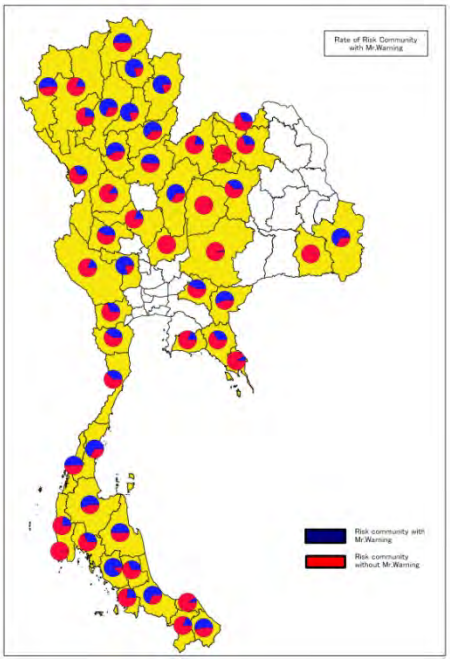


Figure 3.6.11 Rate of communities with Mr. Warning in the risk communities

(3) TF4

In the training for TF 4, Model/Pilot ESAOs and schools maps are made (Figure3.6.12). The Model/Pilot ESAOs were selected by TF 4 in consideration of their disaster education plan, and MoE distributed budget for them. However, conditions about natural hazard in each province were not reflected to the selection of Model/Pilot site. The natural hazard data may be key information to make decision about site selection. Therefore, the data about total numbers of risk communities in each ESAO is integrated under the Model/Pilot ESAOs map on GIS (Figure 3.6.13 and 3.6.14). This inventory map helps to detect which ESAO contains high risk area. The flood and sediment hazard area data were also integrated on GIS.

The actual activity progress data, such as total numbers of evacuation drill, are going to collect by annual monitoring activity and add to this GIS database. In the training, TF 4 members learned how to input and visualize the progress data on GIS in advance to complete data collection.

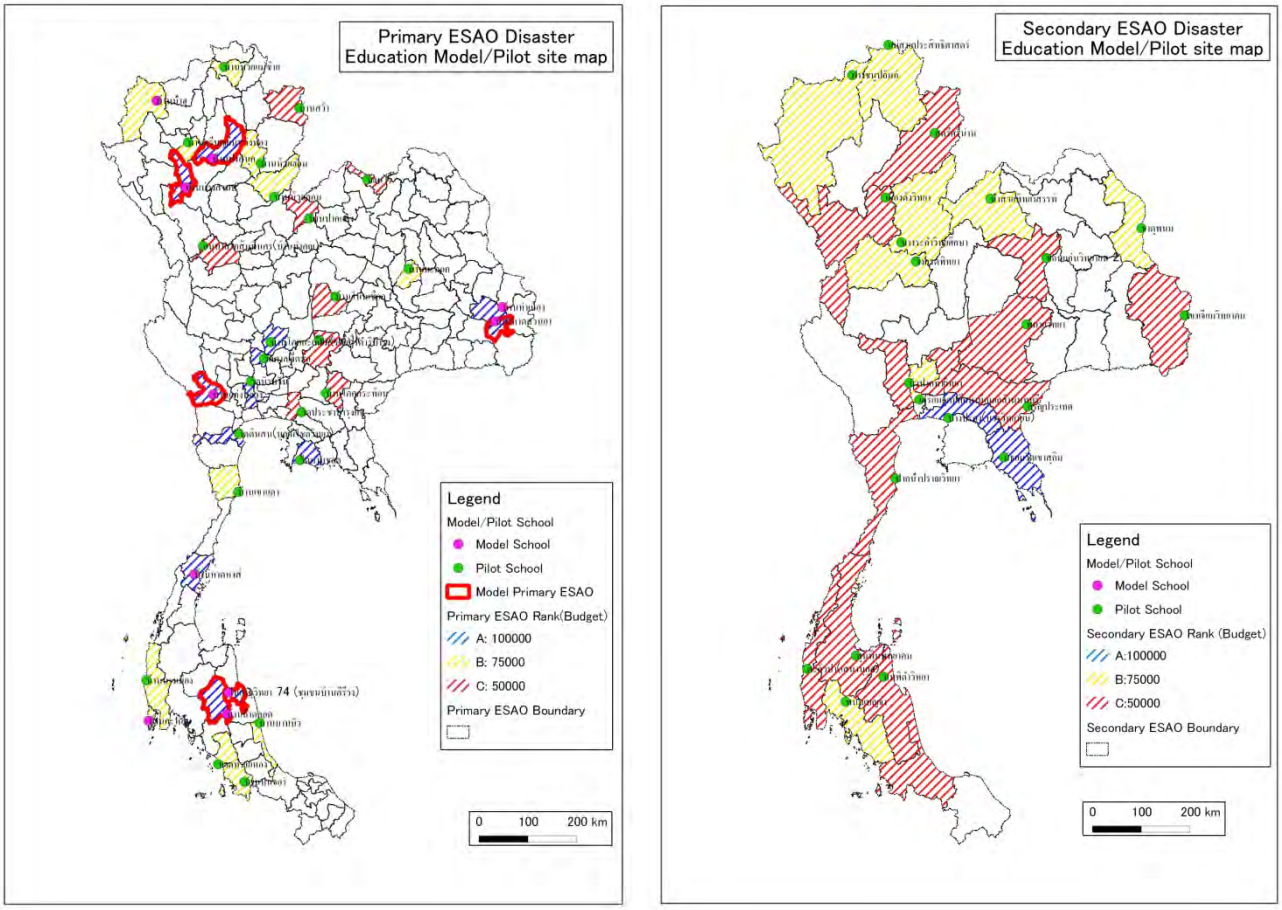


Figure 3.6.12 Map of Model/Pilot ESAO and schools
(left: Primary ESAO, right: Secondary ESAO)

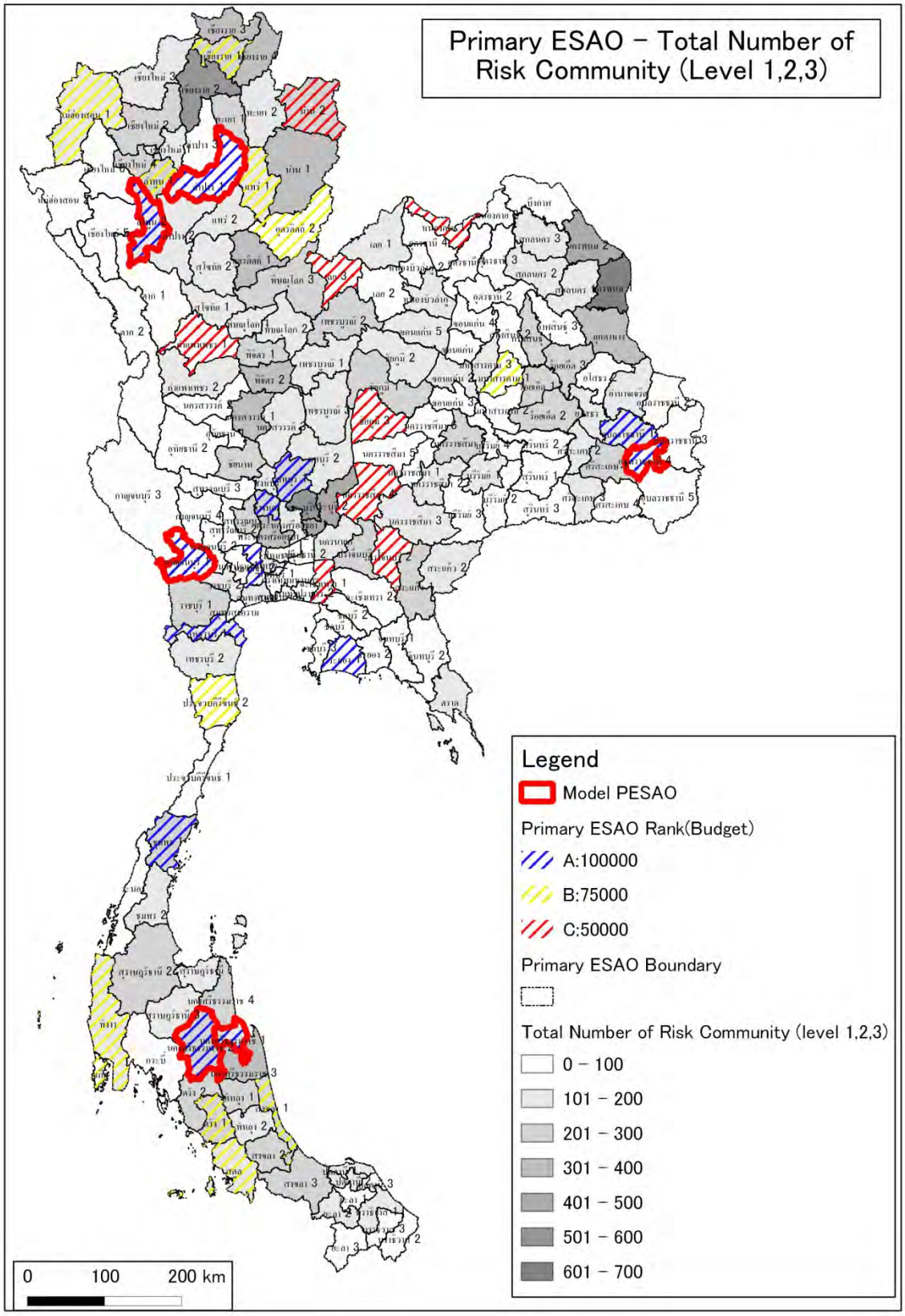


Figure 3.6.13 Map of Model/Pilot P-ESAO and total numbers of risk community

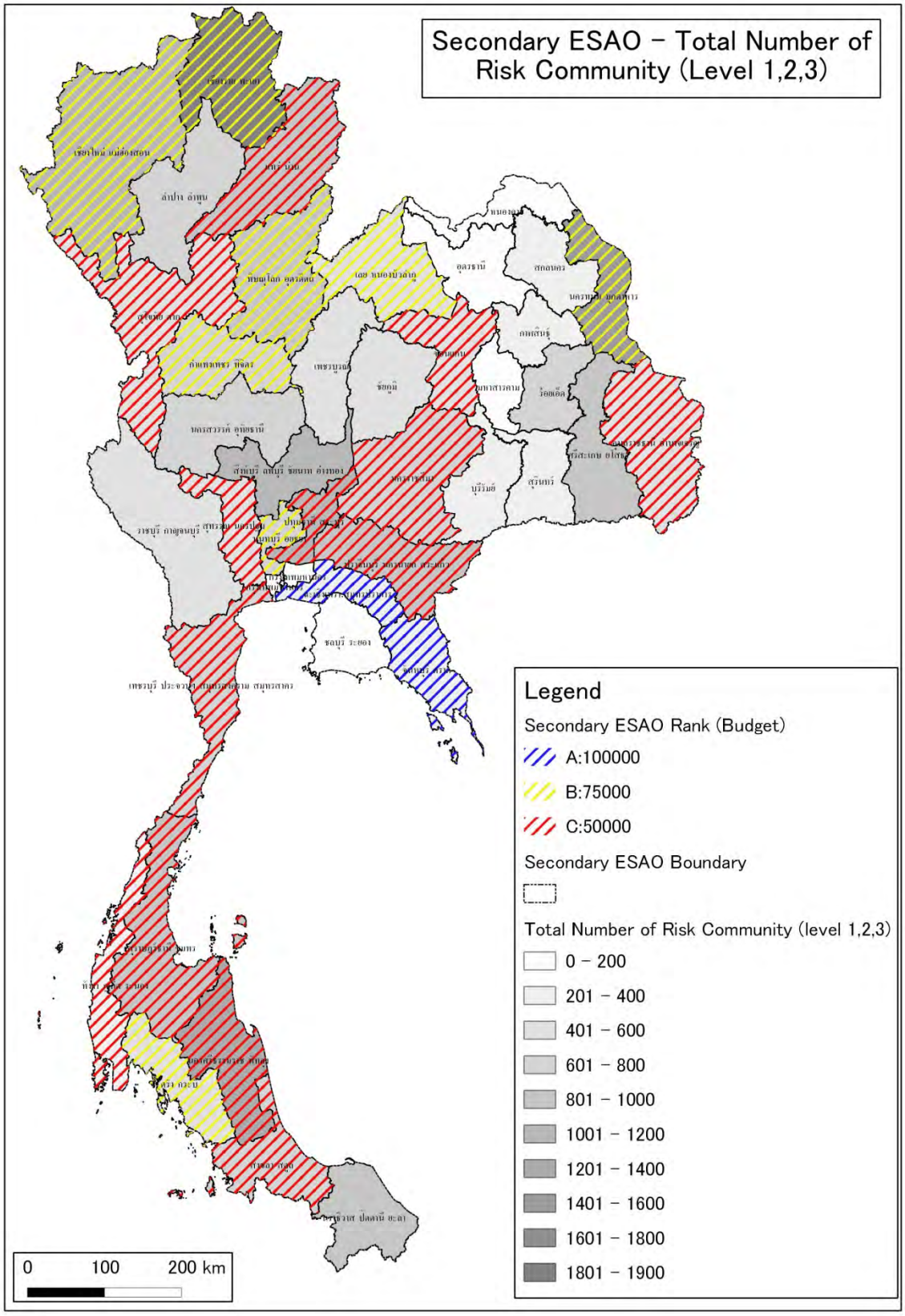


Figure 3.6.14 Map of Model/Pilot S-ESAO and total numbers of risk community

(4) Natural hazard information sharing

Natural hazard information is a key to select Model/Pilot site of DRM activities, however TF 4 had less hazard information to use as a reference. Thus, JICA Expert made sample hazard area maps to introduce them to TF 4. Figure 3.6.15 shows sediment disaster hazard area and location of Model school of disaster education. These hazard maps may be valuable for selecting Model/Pilot site as well as making disaster education text. These maps were introduced to TF 4 members and ESAO officers when JICA Expert joined in the monitoring activities of disaster education in ESAOs in September 2013. These hazard area data (flood, sediment disaster, risk community) is imported into GIS database of TF 4 in the training.

In addition, JICA Expert asked TF 5 to provide flood hazard data, and they agreed to supply local hazard maps (cf. Figure 3.6.16, as of Nov. 2013, the provision of hazard maps did not start).

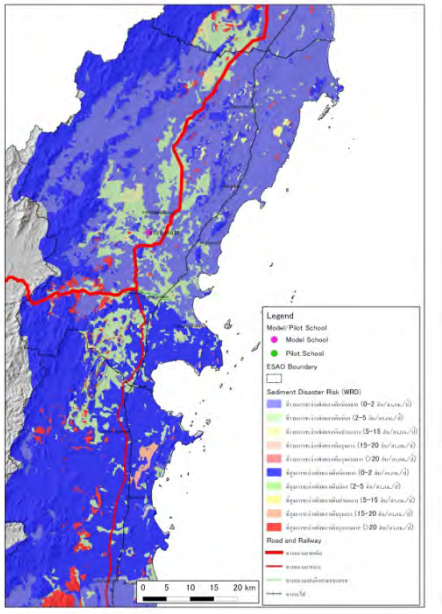


Figure 3.6.15 Sediment disaster hazard area and Model school

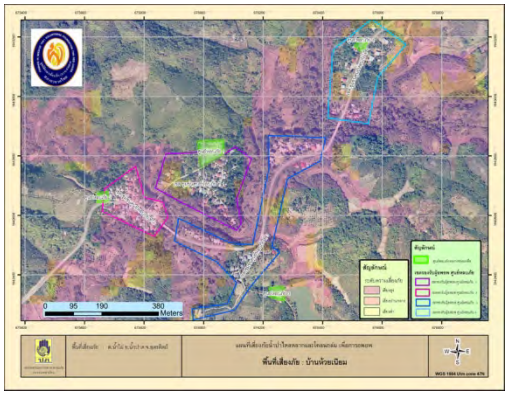


Figure 3.6.16 Sample of hazard map from TF 5

(5) Detecting problem with risk community list and site selection

Through GIS data operation, two problems were detected on the risk community list and site selection of CBDRM.

The first one is defect of the risk community list provided by Research sub-bureau. In some districts, no risk community exists, but there are many risk communities in surrounding neighborhood districts or same drainage area (Figure3.6.17). The geographical and hydrological conditions should be similar to those in neighborhoods, therefore this must be data missing.

The second problem is about rule of site selection on CBDRM. TF 2 had explained that communities where CBDRM was conducted were selected from the risk community list. However, it became clear that CBDRM was not conducted only in the risk community list. This conflict was caused by judgment of local officers in charge of community selection. Basically, they select communities where they conduct CBDRM from the risk community list, however, in any case, they select other communities which were judged as risk community but out of the list. Based on these facts, TF 2 members fixed and recounted the numbers of conducted CBDRM. Table 3.6.2 shows the revised total numbers of conducted CBDRM.

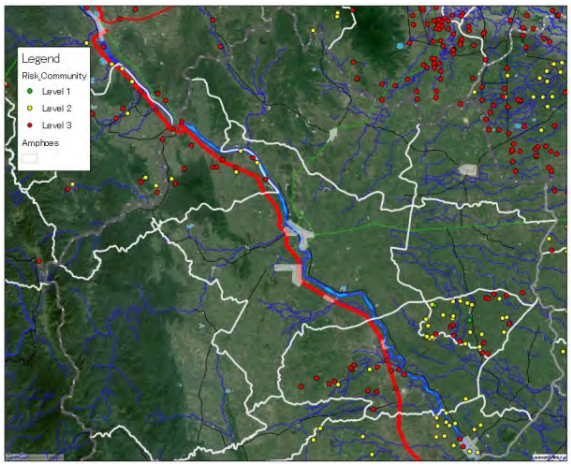


Figure 3.6.17 Blank of risk communities (there is no risk community (red, yellow and blue points) in the central area of this map)

Table 3.6.2 Numbers of conducted CBDRM

Communities in the risk community list (Flood and Sediment disaster) provided by Research sub-bureau			Conducted CBDRM (out of the risk community list)	Total number of conducted CBDRM in all communities
Total	Conducted CBDRM			
(1)	(2)	(3)=(1)-(2)	(4)	(5)=(2)+(4)
26,354	4,424	21,930	4,060	8,484

3.6.3 Evaluation of the Achievement

The GIS database for TF 1, 2 and 4 were prepared in the training, and TF members learned how to operate GIS software. TF 1 and 2 members inputted progress data of their activity into GIS and output as inventory maps. TF 4 members made Model/Pilot ESAO maps in the training. However, data input of DPM-Action Plan progress in 2013 and disaster education activities were not completed because data collection was not finished.

Natural hazard information is also imported into TF 2 and 4 GIS data and outputted to the maps. JICA Expert discussed and advised TF 2 and 4 members to prioritize high hazardous area when they will make following activity plan by using the inventory maps. The comparative maps of hazard area and DRM activity progress may contribute to detect suitable areas to conduct activities and improve efficiency of the activities.

Regarding GIS skills of trainees, TF 1 and 2 members updated GIS data by themselves in the interval term between the first and second training, thus they should understand basic GIS operation. Whereas, they had forgotten parts of GIS operation at the second training because of long blank of GIS operation in their routine work. It is necessary to keep their GIS skill and support to update the inventory maps by annual progress data of DRM activities, therefore manual was prepared from training handouts and distributed to them.

Problems on the risk community list and site selection of CBDRM could be detected by GIS data operation. Currently, TF 2 recognizes the existence of risk communities which are not in the risk community list provided by Research bureau and understands proper progress of CBDRM activity.

TF 4 had less natural hazard information, thus, JICA Expert introduced them to TF 4. They had much interest in the hazard area information. It seems that importance and usability of hazard area information was recognized by TF 4 members through the training and discussion with JICA Expert.
In addition, TF 5 will provide flood hazard maps (not start yet as of November 2013). The collaboration between TF 4 and 5 should also contribute to improve quality of disaster education.

3.6.4 Recommendation

- As mentioned above, risk community list provided by Research sub-bureau contains defects of data. It is necessary to pay attention when TFs use the list for activity planning. Updating the risk community data is desirable.
- The delay and blanks of data collection on DPM-Action plan and disaster education activities indicate deficient staff assignment for cumbersome data arrangement. The members of TFs and local officers can't take enough time to data arrangement due to their other routine works. TF 1 hence decided to post one more staff to input the activity progress data. Besides, TF 1 started to collect data by electrical file. It is expected that the data arrangement and input will become more efficient by using electrical form and additional staff.
- The government of Thailand provides several natural disaster hazard information, but those are not enough shared among organizations. Thus, it is important to promote information sharing. GIS is a good tool to promote data sharing since GIS make it possible to operate different data format on one frame. In this study, TF 5 agreed to provide hazard maps to TF 4. In the future, after TF 5 complete to transfer their flood analysis technique to regional officer, it is desirable that the hazard information will be shared at local office level.

4. Conclusion and Recommendations

4.1 Conclusion

This Phase 2 Project was started two years after completion of Phase 1. Although there were two years of time gap, activities of the Project have been started smoothly with participation of many counterpart officials who were involved in the activities of Phase 1. Especially, staff of Research and International Cooperation Bureau has supported all the activities of the Project continuously. Both DDPM and MOE have secured almost all the budget for activities of the Project except technical assistance of JICA experts.

In 2011 at the middle of the Project, very wide area of Thailand suffered from the severe flood with occurrence probability of 50 years. Almost all the Thai counterpart officials were devoted to play respective roles for disaster response in EOC, at site and respective provinces. Some of the Project activities were postponed due to the effect of the flood. On the other hand, after the severe flood, people and the government have recognized importance of flood management and preparedness for disasters.

One of the significant challenges is the large-scale water management project to be conducted by Thai Government. Since insufficient water management infrastructure caused severe flood damage, the project put more emphasis on construction of water management facilities and information system. It is indispensable to implement structural and non-structural measures with good balance for disaster risk reduction.

Since it was also difficult to secure appropriate shelter during the flood, DDPM has developed a database of the schools that can be safe shelters against flood nationwide in collaboration with MOE. Furthermore, officials of DDPM have been trained as shelter management trainers from IOM. They will play important role to disseminate the technique and know-how of shelter management to the schools and public facilities that become shelter during disasters.

Importance of CBDRM has also been recognized by the Government. CBDRM training has been conducted intensively in the flood affected regions after the flood.

People are being more focus on importance of disaster education based on the facts of successful evacuation of the students in Kamaishi City from Tsunami caused by the Great East Japan Earthquake in 2011 and many victim students during the severe flood in Thailand 2011. Disaster education has started to be defusing by both top-down and bottom-up approaches by OBEC, i.e. dissemination of guideline on disaster education from OBEC and promoting efforts by model schools.

The new national disaster prevention and mitigation plan, under preparation by DDPM and to be effective in 2015, will introduce importance of the ideas of "self-help" and "mutual-help" in addition to "public-help" that originally came from basic idea of disaster management in Japan. People are requested to have attitude to save their own lives without waiting for support from government. Communities are also requested to build resilient society against disasters by mutual cooperation. LAOs are required proactively to introduce CBDRM to the risk communities under their jurisdictions to promote prevention and preparedness against disasters based on their local disaster prevention and mitigation action plans.

Based on the interview during the Project terminal evaluation in January 2014, many good practices were heard from the concerned respondents as summarized below:

Table 4.1.1 Good Practices Performed by DDPM, MOE and Concerned Agencies

Category	Good Practices	Concerned agencies
Disaster management planning	• **(Improvement of Disaster Management System based on lessons from 2011 Flood)** After the calamity of 2011-flood, the national Disaster Prevention and Mitigation (DPM) Plan has been reviewed and flow of warning has been clarified applying bi-directional information flow. In addition, all the provinces reviewed DPM plan and prepared contingency plan employing SWOT analysis.	Policy Bureau
	• **(Enhancement of Disaster Management Capacity of LAOs)** LAOs were requested to prepare DPM-Action Plan (AP) mandatorily by a circular notice of Ministry of Interior. As of end of November 2013, draft plans were prepared in almost all LAOs in the model provinces (Lamphun and Lampang) and in 2,186 LAOs across the country (28% of all). Through these activities, disaster-related resource persons, equipment and materials available in the community are organized more firmly under Local Director.	Policy Bureau
	• **(Appling Table-top Exercise for Disaster Drill)** DDPM has been disseminating Table-top Exercise (TTX) using manual and video. TTX was effective for flood disaster occurred in Sukhothai. The TTX manual can be downloaded from DDPM web site.	Policy Bureau
	• **(Vitalization of Disaster Management Activities of Provincial Level)** After formulation of DPM plan of provincial level, cooperative system among relevant agencies has been established. Regular meeting and drill for flood before rainy season and that for fire before dry season are organized.	DPM Lamphun
	• **(Balanced Utilization of Budget for Disaster Management)** After formulation of DPM-AP of local level, more budget has been utilized for preparedness such as assessment of disaster risks, training for community leaders, installation of communication system, and implementation of drills.	Li Municipality
	• **(Monitoring of Progress of Disaster Management of LAOs)** DPM-AP is also submitted to Provincial Administrative Organization (PAO) for monitoring. Activities of disaster management such as implementation of DPM-AP and drills are one of key performance indicator (KPI) of LAOs.	DPM Lampang
CBDRM	• **(CBDRM Facilitator Guide)** The revised CBDRM facilitator guide will	Promotion

		be DDPM's official guide for CBDRM facilitation and will be disseminated by booklet and through DDPM's web site.	Bureau
		• **(Securing Budget for Disaster Management of LAO Level)** LAOs are instructed to allocate at least 2% of their budget for disaster management from Ministry of Interior.	Promotion Bureau
		• **(Budget Increment for CBDRM)** DDPM's budget for CBDRM has increased from 6-7 million Baht to 15 million Baht (FY2013 and FY2014) that provides CBDRM training for more than 700 communities.	Promotion Bureau
		• **(Awareness Raising for Youth)** Youth Volunteer Camp conducted by DDPM is a great opportunity to initiate young generation into disaster risk management.	Promotion Bureau
		• **(CBDRM in collaboration with School)** Community disaster management plan has been formulated including school director as a committee member. Evacuation drill is performed by collaboration of community and school.	Muong Sampee village
		• **(Linkage of Village Development Plan with Disaster Management Plan)** Village development plan is linked to village disaster management plan. Based on the needs in village disaster management plan, projects are proposed in the village development plan.	Muong Sampee village
		• **(Implementation of TTX in LAO)** TTX was examined in Tedsabaan after learning the procedure at DPM-RC10 under the Project. Imagination of disaster response has been enhanced.	Tedsabaan Kor
		• **(Utilization of Budget for DRR)** Approximately 10% of budget of a Tedsabaan is allocated for disaster risk reduction (DRR) both in structural and non-structural measures. After formulation of DPM-AP, Tedsabaan spends more budget for prevention and preparedness.	Tedsabaan Kor
		• **(Allocation of Budget for CBDRM by LAO)** Budget for CBDRM is allocated in community development budget of Tedsabaan. Tedsabaan is requested to conduct CBDRM for its risk communities based on circular notice of the Ministry of Interior.	Tedsabaan Wiangmok
		• **(Allocation of Budget for CBDRM by LAO)** According to the request of DPM-provincial office (PO), provincial governor issued circular notice for LAOs to allocate budget for CBDRM. Some of CBDRM workshops were conducted by initiative of LAOs with technical support of DPM-PO.	DPM Lampang
		• **(Effective Collaboration among Neighboring Communities)** Disaster risk management plan of community was developed together with neighbor community in downstream. The village headman gave flood information to the downstream village and the village could mitigate flood damage. CBDRM is to be disseminated to two neighbor villages by the village headman.	Tham Talod village
	Disaster management training	• **(Effective Utilization of Network of Relevant Agencies for Training)** Support of lecturers on specific area can be obtained through network with Royal Irrigation Department (RID), Thai Meteorological Department (TMD) and Department of Mineral Resources (DMR).	DPMA
		• **(Dissemination of TTX)** More than 300 DDPM officials have already learned how to conduct TTX through the training.	DPMA
		• **(Implementation of Post-Evaluation of Training)** Post evaluation of the training was conducted for JICA and other training courses. Results of the evaluation are utilized for improvement of training curriculum.	DPMA
		• **(Database of Human Resources and Training)** There is a database on DDPM's human resources including record of participation in trainings.	DPMA
		• **(Regional Cooperation on Human Resources Development)** DPMA conducted disaster management training for Laos and Myanmar trainees	DPMA

Human resources and materials development		including observation of CBDRM workshop at site. • **(Continuation of CBDRM Facilitator Training)** DPMA is ready to conduct CBDRM facilitators training if the number of CBDRM facilitator becomes insufficient and proposed by Disaster Prevention and Promotion Bureau. • **(Training for LAO Staff)** DPMA conducts disaster management trainings not only for DDPM staff but also for LAOs. • **(MOU for Mutual Technical Support)** DDPM and Asian Disaster Preparedness Center (ADPC) support mutually for human resources development based on a Minutes of Understanding.	DPMA DPMA DPMA DDPM
	Flood risk management	• **(Hazard Maps on Provincial Level)** Hazard maps on provincial level have already been prepared for all the provinces after Phase 1 of JICA project. They were officially approved by DDPM. • **(Utilization of Scientifically Analyzed Hazard Map for CBDRM)** Hydrologically analyzed hazard map for community level has been presented at a CBDRM workshop in collaboration with Disaster Prevention and Promotion Bureau of DDPM. • **(Expansion of Improvement of Early Warning System)** Improvement of early warning system will be examined at the other than project model site in March 2014. OJT for DPM-RCs will be also conducted by TF staff trained in the Project. • **(Dissemination of Technical Manuals)** DDPM will make the manuals on rainfall/ flood analysis, hazard mapping, improvement of early warning system and structural measures available for download for DPM-RC and DPM-PO staff. • **(Continuous Implementation of Technical Training)** The trainings on rainfall/ flood analysis, hazard mapping, improvement of early warning system and structural measures were highly appreciated by DPM-RCs. It will be continued every year to develop technical knowledge and skill of DPM-RC staff. • **(Organizational Reinforcement for Hazard Mapping and GIS)** Organization structure of Disaster Prevention Criteria Bureau was reformed to meet a need of hazard mapping and GIS after the training to DPM-RCs. A team in-charge of hazard mapping and GIS was newly launched to continue the Project activities sustainably.	Criteria Bureau Criteria Bureau Criteria Bureau DPM-RCs Criteria Bureau Criteria Bureau DPM-RCs Criteria Bureau DPM-RCs
Disaster Education		• **(Policy on Disaster Education)** Implementation of disaster education has been institutionalized with compulsory by the disaster education guideline. • **(Expansion of Disaster Education)** Disaster education has been introduced for all types of education, i.e. basic, private, vocational and non-formal education under MOE. • **(Integration of Disaster Education into Curriculum)** All model schools and many other schools have been addressing to integrate disaster education into the existing curriculums according to the guideline. • **(Evacuation Drill with Community)** All schools are required to conduct evacuation drill once a year by the disaster education guideline but many of model schools conduct the drill twice a year in collaboration with community, concerned local agencies and DPM provincial office. • **(Development of Disaster Learning Center)** Some model schools have already developed a disaster learning center (room) with books, various emergency goods, for students and for visitors. • **(New Disaster Education Material)** Disaster education side reader has been delivered for all 32,000 public schools throughout the country. • **(Competition of Proposals on Disaster Education)** Competition of	OBEC All MOE bureaus OBEC All MOE bureaus Muong Sampee Tham Talod OBEC OBEC

	ESAOs' proposals on disaster education conducted by OBEC is good challenge to increase motivation of ESAOs.	
	• **(Various Activities with Community)** School addresses disaster management, disaster education and environmental conservation in collaboration with community as a disaster education model school.	Muong Sampee Tham Talod
	• **(Accepting Study Visits)** Model schools have been playing important role in introducing its efforts in disaster education by accepting study visit groups.	Muong Sampee Pong Sanook Tham Talod
	• **(Evaluation Mechanism of Activities)** All the schools have to submit their Self Evaluation Report annually to ESAO as evaluation of activities.	Muong Sampee
	• **(Sharing Thailand Efforts to Other Countries)** Disaster education activities of a model school were presented at a conference of Southeast Asian Ministers of Education Organization (SEAMEO) in the Philippines.	Pong Sanook
	• **(Networking among School and Relevant Agencies)** Through introduction of disaster education, network on disaster management was formed among school, DDPM, police, forest bureau, PAO, etc.	Pong Sanook
	• **(Sharing Curriculum with Disaster Education to Other Schools)** Disaster education is integrated into curriculum of 9 subjects. The developed curriculum is open for other schools for their reference.	Pong Sanook
	• **(Disaster Education with Environmental Conservation)** Tree planting is performed as a part of disaster education together with community. The activity was awarded by Green Earth Institute.	Tham Talod

The outstanding practices performed by DDPM, MOE and concerned agencies can be a showcase for other non-model sites and other Asian countries. The 6th Asian Ministerial Conference on Disaster Risk Reduction (AMCDRR) will be a great opportunity for Thailand to share its good practices to other Asian countries.

4.2 Recommendations

4.2.1 Recommendations for Project Implementation

1) Cooperation with other agencies

The role of LAOs in disaster risk management is vitally important since they are the fundamental bodies for disaster response and closest to inhabitants. Their initial actions have higher possibility to mitigate losses and to prevent further expansion of disasters. Especially disaster management planning and promotion of CBDRM are a part of important roles of the LAOs. In order to accelerate disaster management function of LAOs, active cooperation between LAOs and DDPM is vitally important. Therefore, DDPM should take such measures as follows:

- To make efforts to make an MOU with DLA, which would include an instruction to the provincial offices of DDPM and DLA to jointly monitor and conduct follow-up activities, as well as to the LAOs to ensure a certain percentage of their budget for DPM activities and develop their DPM action plans as a priority task. The agreement should also mention other areas of cooperation. For

example, DDPM would be able to supply trainings to encourage executive members of LAOs to secure a budget for disaster prevention and mitigation.

- To approach the National Municipal League of Thailand and the Sub-district Administration Organization Association and discuss ways to promote results of model villages and schools (e.g., action planning with TTX, CBDRM and school disaster education) to other areas.

2) Cooperation among taskforces

- The current framework of taskforce is effective to sustain the outputs of the Project. Therefore, DDPM and MOE should maintain the current taskforces after the Project. Also, DDPM and MOE should organize inter-taskforce meeting regularly to exchange information and effective implementation of the activities for synergy effects.

3) Continuous monitoring

- DDPM, MOE and JICA Thailand Office should jointly monitor the recommendations made in the terminal evaluation report periodically after the termination of the project duration.

4.2.2 Recommendations to Taskforces

(1) Disaster Management Planning

1) Utilization of TTX

- Table-top exercise (TTX) is a useful tool to verify effectiveness of disaster management plan, and to train information handling and decision making in emergency operations. DDPM should guide LAOs to utilize TTX in their action planning and disaster drill.

2) Monitoring of Local DPM Action Planning

- Thorough discussion should be made to formulate the Plan in LAO committees consisting of key disaster-related persons and organizations of the area. In addition, there exist LAO as many as 7,700 across the country. Therefore, the plan formulation would need time to accomplish. In order to support the steady activities, particular consideration should be given on budget arrangements for assisting LAO.

- Local DPM action plan is submitted not only to DPM provincial office but also to Provincial Administrative Organization (PAO) for monitoring. Activities of disaster management such as implementation of DPM-AP and drills are one of key performance indicator (KPI) of LAOs. In

order to facilitate local DPM action planning nation-wide, DDPM should continue supporting LAOs in formulating DPM action plan in collaboration with DLA and provinces.

(2) CBDRM

1) Collaboration with LAOs

- In order to roll out CBDRM nation-wide, it is essential for LAO officials to understand concept and effectiveness of CBDRM in risk communities. The contents of CBDRM should be enhanced in LAO officials' training course on disaster management organized by DDPM.
- In order to sustain community's disaster management activities such as annual revision of disaster management plan and holding evacuation drill, it is crucial for LAO to secure budget for the activities. It is important for DDPM, DLA and provinces to encourage LAOs to secure budget for the activities.
- It should be defined that dissemination of CBDRM is one of the important task of LAO in the next revision of National DPM Plan.

2) Continuation and expansion of the activities in the Project

- All the materials for CBDRM facilitation produced by the Project should be distributed to all the provincial offices and regional centers of DDPM and LAOs. CBDRM facilitator guide and manual developed in the Projects should be reviewed and revised regularly.
- CBDRM facilitators should be cultivated in collaboration with DPMA to avoid deficit of the facilitators in number.
- To roll out CBDRM for all risk areas, DDPM should continually allocate budget to conduct activities every year. The risk communities that receive CBDRM training should be properly selected using the GIS database effectively.
- DDPM should continue collaboration with organizations which have DPM activities such as Thai Red Cross, COERR, Raks Thai Foundation and ADPC in CBDRM activities, technical and human resources development.

3) Development of model villages

- In order to enhance CBDRM activities of the model villages, DPM provincial offices should monitor and support them in cooperation with the LAOs. Promoting community leaders to be a facilitator for other communities or for relevant knowledge sharing platform will help to activate CBDRM activities.

(3) Disaster Management Training

1) Continuous Implementation of Training on Management of Natural Disasters

- In order to disseminate the knowledge on management of natural disasters (flood, flash flood and sediment disaster), DPMA should continue the training course supported by the Project as one of the human resources development strategy in a sustainable manner.

2) Continuous Improvement of Training Curriculum

- TF-DMT has developed the five days training curriculum on management of natural disasters (flood, flash flood and sediment disasters). It is recommended that the curriculum will be continuously improved including the latest information in collaboration with academic experts of universities and the curriculum development committee of DDPM.

3) Integration of the Project's Capacity Development Activities into the Training Courses

- The Project assisted capacity development of CBDRM facilitators, technical staff for flood risk management including hazard mapping and data analysis for early warning system, provincial staff to facilitate LAO's DPM action plans with TTX and teachers and ESAO officials to teach disaster management. These capacity development activities should be continued as training courses of DPMA in collaboration with relevant bureaus of DDPM and MOE in a systematic manner.

(4) Disaster Education

1) Disaster Management and Education Guideline

- Since many schools are designated as evacuation places during disaster, management of evacuation shelter or temporary schools should be described in the guideline additionally. DDPM has cultivated master trainers for shelter management with technical support of International Organization for Migration (IOM). It is recommended that DDPM will disseminate knowledge and skill on shelter management to educational officials.

- It is also important to describe school education system under emergency situation including securing educational opportunity during disaster and how to resume classes during and after disasters.

- There are vulnerable areas against disasters due to progress of urbanization and insufficient infrastructure development especially in deprived areas. In these areas, school facilities are also vulnerable against natural disasters. It is important to evaluate disaster risk of the areas properly and take necessary measures to strengthen school facilities.

2) The Continuation of the Model School Program and its National Annual Seminar

- OBEC's support for the scale-up of disaster education is quite effective. OBEC should continue the current program to support ESAOs to roll out model schools. It is also important to organize the national seminar to share good practice and lessons learned presented by model schools every year and the proceedings be available to all the schools nation-wide.

3) Continuing Collaboration with DDPM

- A training course for teachers and ESAO officials at DPMA, which was once organized by MOE in 2009, was a good opportunity for teachers and educational officers to learn disaster management. It is recommended that the training course will be resumed in the near future.

- A disaster risk assessment of school is important for formulating school disaster management plan. It is recommended that disaster risk assessment and disaster risk mapping of the school are conducted in collaboration with DDPM.

4) Recommendation on Organizational Reinforcement

- The JICA Expert suggests that OBEC creates a permanent unit for school safety promotion which includes not only risk management issues but also educational issues. Natural disaster management must be one of the major challenges which schools should address. It is recommended that OBEC establishes a permanent unit so as to continue disaster education promotion activities which have been organized by the Bureau of Academic Affairs of Educational Standards, OBEC. This unit is expected to have a wide ranging function which will cover preparedness, response, recovery and reconstruction for natural disasters. It is also desirable that the unit will be a window and work together with disaster management agencies, NGOs and international organizations for school safety promotion.

(5) Flood Risk Management

1) Effective Utilization of Flood Hazard Map

- Flood hazard map is an effective tool for a community to prepare disaster management plan, evacuation plan, flood control plan, etc. in CBDRM activities. Therefore, it is recommended that flood hazard map should be prepared in close coordination and cooperation with the agency responsible for CBDRM in consideration of making effective use of hazard map.

2) Conduct Regular Technical Training

- DDPM should regularly conduct technical training targeting staffs of DPM regional centers and provincial offices. Disaster Prevention Criteria Bureau will dispatch appropriate trainer for the

training. DDPM should ensure to secure the budget for the training. It is recommended that the training will be programmed in the annual training course of DPMA.

3) Ensuring the Availability of Technical Support by DPM Regional Centers to LAOs

- DDPM should develop a plan to make sure necessary technical support can be available to LAOs to produce hazard maps, data for the development of early warning system and advice on structural measures.

(6) GIS Database

1) Promotion of Sharing Hazard Information

- The Government provides several natural hazard information, but those are not enough shared among relevant agencies. It is important to promote hazard information sharing using GIS, since GIS make it possible to operate different data format on one frame. In the future, after TF-FRM complete to transfer their flood analysis technique to DPM regional centers and DPM provincial offices, it is desirable that the hazard information will be shared at local level.

4.3 Sustainable Efforts to up-scale the Project Outputs

The Project Outputs Sustainability Seminar (Final Seminar) was held on February 26, 2014 at Royal River Hotel Bangkok. In the seminar, a panel discussion was conducted by the Project taskforce members as panels. Effective and practical efforts were proposed from panels to up-scale the Project outputs. The proposed efforts were welcomed by the seminar participants. Outline of major efforts to upscale the Project outputs discussed in the panel discussion is presented in Table 4.3.1.

Table 4.3.1 Major Efforts to upscale the Project Outputs

Taskforce	Major Efforts to upscale the Project Outputs
Disaster Management Planning (TF-DMP)	1. Develop manual of standard operating procedures for emergency operation centers. 2. Organize the workshop for local administrative organizations' (LAOs') Directors on disaster management 3. Disseminate essential knowledge on disaster management planning to LAO officials including disaster risk assessment in risk prone areas and disaster risk management through workshop in collaboration with DPM regional centers. 4. In Fiscal Year 2015, enable and promote LAOs disaster Prevention and Mitigation Action Plan as a main policy of Ministry of Interior 5. Develop LAOs Disaster Prevention and Mitigation Action Plan to comply with Provincial and National Disaster Prevention and Mitigation Plans. 6. Request DPM provincial office to collaborate with LAOs to update, review LAOs Disaster Prevention and Mitigation action plans annually or as necessary in collaboration with some provinces that have not developed the LAOs' DPM action plans yet.

	7. Request LAOs to conduct working group meeting to review and update DPM Action Plan, and ask LAOs to send DPM action plan to DPM Provincial office for review before Executive Director or Mayor announce for implementing the LAOs Action plan. 8. Integrate LAOs DPM Action Plan with 3 year Development Plan of LAOs 9. Order DPM Provincial office to monitor, revise and update LAOs action plan then report to DDPM HQ 10. Request DPM provincial office to disseminate knowledge and support LAOs to conduct Table Top Exercise (TTX) at the local level or between LAOs (DDPM HQ can distribute DVD of TTX in Nakhon Si Thammarat as an example)
CBDRM (TF-CBDRM)	1. CBDRM Expansion at community level 1) CBDRM is recognized as a main policy of DDPM 2) Organize CBDRM training in risk prone communities throughout the country. At present, 8,720 communities have received CBDRM trainings out of 26,354 risk prone communities (by both DDPM budget and Other organizations budget) 3) Expansion from CBDRM communities (already received CBDRM training) Disaster Preparedness Center will be set up at Community Level; 251 Disaster Preparedness Centers in 76 provinces 2. Promote Model Community under the Project as a showcase with best practice 1) Promote Disaster Preparedness Center at the Community Level 2) Recommend the model community (Disaster Preparedness Center) as a learning center on Disaster Management or study visit place to other agencies / communities. 3) Support the model community representatives to participate in the platform to exchange their experience and knowledge between communities on disaster management. 3. Information dissemination / knowledge of CBDRM. 1) Interpolate CBDRM as a part of the training materials (media or tool kits) in order to provide knowledge on Disaster Prevention and Mitigation to LAOs 2) Deliver CBDRM facilitator guide under this Project to related agency under DDPM 3) Disseminate CBDRM relevant document through DDPM's website 4) Upload EXCEL file and GIS of CBDRM trained communities data in DDPM's website for advance planning of relevant agencies
Disaster Management Training (TF-DMT)	1. Registration of the trained DDPM staffs under JICA Project from each TF to support DPMA training course on Natural Disaster and Table Top Exercise for DPMA campuses, DPM Provincial offices and agencies concerned. 2. Invite all task force members as resource persons to DPMA and DPMA campuses on Natural Disaster Management Course including Table Top Exercise. 3. Designate Natural Disaster Management Course and Table Top Exercise as DPMA's a main curriculum and upgrade to international curriculum for ASEAN community
Disaster Education (TF-DE)	1. MOE will allocate its budget to ESAOs annually for implementation the disaster education planning. 2. MOE will continue to support to scale-up disaster education for teachers and model schools 3. Integrate disaster education in MOE's curriculum and develop disaster education plan 4. Implement disaster education activities and collaborate with other relevant agencies and technical assistance projects

Flood Risk Management (TF-FRM)	1. Disaster risk maps have already been prepared for all the provinces. TF-FRM has already conducted training on hazard mapping for staff of DPMPO and DPMRC nation-wide. It is important to verify the hazard maps if they are suited to actual local condition or not. The hazard maps will be improved with involvement of local residents. 2. Topographic maps of 1:4000 and 1：50,000 scales are available for DDPM to utilize. If they are utilized with GIS, they will be effective for various disaster risk management activities. TF-FRM can provide the map in various formats. The maps can be utilized for preparedness, structure designing, disaster response, and decision making. 3. Manuals for hazard mapping, structural planning, and improvement of early warning system are under preparation by TF-FRM in Thai. By utilizing the manuals, trainings will be conducted for staff of DPMRC, DPMPO and local administrative organizations by necessary knowledge level. 4. It is important to register the latest hazard maps on a database so that anyone can access the latest hazard map online.

As described above, all the task forces have proposed diligent efforts to enhance disaster management activities and to roll out outputs of the Project. In accordance with the proposed activities mention above together with "The Project Outputs Sustainability Plan" attached in Appendix 6, it is expected that the efforts will be continued to achieve the overall goal and the super goal of the Project.

Appendix 1

PDM1, PDM2, PDM3 and PDM4

Project Design Matrix (PDM)

Project Title: The Project on Capacity Development in Disaster[1] Management (Phase-2) Period: 2010 - 2014 (4 years)
Implementing Agency: Department of Disaster Prevention and Mitigation: DDPM, Co-Implementing Agency: Ministry of Education: MOE
Target Groups: (direct) DDPM staff at central and provincial levels. (indirect) community people in the target areas.
Target Provinces: (to be selected. Two provinces as "model province A" and "model province B")

Version 1

(Version 1)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal (<u>in 3-5 years after the Project ends</u>): Implementation of disaster risk management activities is improved and scaled up.	1. Provincial Disaster Prevention and Mitigation Plans and Action Plans are formulated in at least Y provinces other than the target provinces. 2. Evacuation plans are prepared by Y communities (other than the Project target communities) with support of DDPM Regional Centers and Provincial offices. 3. Disaster education is implemented by at least Y schools.	1. Provincial Disaster Prevention and Mitigation Plans and Action Plans 2. Evacuation plans 3. Record of schools	
Project Purpose (<u>by the end of the Project</u>) Capacity of DDPM is enhanced to scale up Disaster Prevention and Mitigation Action Plans, Community Based Disaster Risk Management: CBDRM and disaster education, collaborating with concerned agencies, provincial and local levels.	1. Plans for up-scaling are included in the National Disaster Prevention and Mitigation Action Plan. 2. Plans for up-scaling within the provinces are included in the Provincial Disaster Prevention and Mitigation Action Plans of the target provinces.	Disaster Prevention and Mitigation Action Plans	Mission and responsibility of DDPM regarding disaster management is maintained by law.
Outputs **<Task force – Disaster Management Planning>** 1. Disaster Prevention and Mitigation Action Plans with considerations for vulnerable people are formulated for national, provincial and local authorities[2] (in the target provinces).	1. Disaster Prevention and Mitigation Action Plans are formulated at national, provincial (target provinces) and local levels (X local authorities).	1 Disaster Prevention and Mitigation Action Plans at national, provincial and local levels	
<Task force - CBDRM> 2. Capacity of DDPM staff as facilitators on implementation of Community Based Disaster Risk Management (CBDRM) is enhanced.	2-1 CBDRM manuals and facilitator's guide developed by the JICA Project Phase I (for facilitators and for communities) are improved and are utilized in the target communities. 2-2 Disaster training and educational materials (for facilitators and for communities) are improved and are utilized in the target communities. 2-3 CBDRM action plan for implementation is developed by DDPM.	2-1-1 CBDRM manuals and activity reports 2-1-2 CBDRM Knowledge of facilitators and community people (confirmed by observation) 2-2-1 Educational materials 2-2-2 CBDRM Knowledge of facilitators and community people (confirmed by observation) 2-3 CBDRM implementation action plan and activity reports	

[1] "Disaster" means "natural disaster" in this PDM. Man-made disasters such as fire and chemical disasters are not included.
[2] "Local authorities" refers to sub-district (or Tambon) administrations, municipalities, or other local administrations by law.

<Task force – Disaster Management Training > 3. Training curriculum at DPMA is improved.	3-1 At least one curriculum on disaster management on natural disaster (flood, flash flood and mud flow) for DDPM staff is improved.	3-1 Curriculum	
<Task force – Disaster Education> 4. Based on the Natural disaster preparedness educational curriculum, schools have improved preparedness for disaster.	4-1 At least three schools in the target provinces implement disaster education on natural disasters as model schools supported by MOE headquarters and the first model schools from Phase I. 4-2 100 teachers from natural disaster prone areas are trained on disaster education.	4-1 Record of model schools observation of classes 4-2 Records of training, workshops and seminars (Number of participants, content of training, date, level of achievement, etc.)	
Activities 0-0 DDPM, in consultation with the Japanese experts, selects target areas: ➢ Model province A, Model community (MOOBAN) a1 and a2 in the model province A, ➢ Model province B, Model community (MOOBAN) b1 in the model province B. **<TF Disaster Management Planning>** 1-1 TF Disaster Management Planning designs capacity development plan on their activities and monitoring/ evaluation. 1-2 TF conduct training for 300 DDPM staff at central, regional and provincial levels how to formulate disaster prevention and mitigation plans and action plans, focusing on priority items. 1-3 DDPM staff at central and provincial levels review and/or develop provincial disaster prevention and mitigation plans, focusing on priority items, in consideration of vulnerable people for disasters, for the model province A, followed by the model province B. 1-4 DDPM staff at central and provincial levels prepares national and provincial disaster prevention and mitigation action plans, and target local authorities in target provinces prepare local disaster prevention and mitigation action plans, focusing on priority items, in which method of up-scaling, staffing and budget are identified and incorporated in the model province A, followed by the model province B. 1-5 TF conducts table-top exercises to revise disaster prevention and mitigation plans and action plans with concerned organizations. 1-6 TF and concerned provincial staff modify disaster prevention and mitigation plans and action plans, based on the experience of table top exercises. 1-7 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staff such as study tour, case study forum, seminars, and newsletters. **<TF CBDRM>** 2-1 TF-CBDRM designs capacity development plan on TF-CBDRM activities and monitoring/evaluation. 2-2 TF reviews and revises CBDRM manuals and facilitator's guide seeking comments from 76 provinces and tests them at the model community (MOOBAN) a1 and finalizes them for publication.			
		Inputs **<Thai side>** Counterparts Project Director Project Manager Task force members Administrative staff Project office and facilities at DDPM Working space at MOE Operational costs **<Japanese Side>** Experts Disaster Management Plan Disaster Management Institution Sediment Disaster Management Flood Management Community Based Disaster Risk Management Disaster Education Counterpart Training in Japan Operational costs	**Preconditions** Human resources and budget necessary for the implementation of the Project are provided by the Thai side.

2-3 TF conducts training for at least 80 DDPM staff at central, regional and provincial levels to facilitate CBDRM. 2-4 Trained DDPM provincial staff in the model province A facilitates CBDRM activities, including Disaster Prevention and Mitigation Action Plans for local authorities at model community (MOOBAN) a1 in collaboration with the local model school. 2-5 Trained DDPM provincial staff in the model province B facilitates CBDRM activities, including Disaster Prevention and Mitigation Action Plans for local authorities at model community b1 in collaboration with the local model school. 2-6 Trained DDPM provincial staff in the model province A facilitates CBDRM activities, including Disaster Prevention and Mitigation Action Plans for local authorities at model community a2 in the model province A in collaboration with the local model school. 2-7 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staff such as study tour, case study forum, seminars, and newsletters. **<TF Disaster Management Training>** 3-1 TF-Disaster Management Training designs a capacity development plan for its activities and monitoring/evaluation. 3-2 TF develops guidelines for evaluation and monitoring of training. 3-3 TF conducts needs assessment for training in collaboration with other task forces. 3-4 TF revises standard disaster management curriculum in DPMA training courses on flood, flash flood and mud flow. 3-5 TF, in collaboration with concerned organizations, develops training modules and materials to synchronize training curriculum on disaster management (flood, flash flood and mud flow), CBDRM. 3-6 TF, in collaboration with concerned organizations, train master trainers for DDPM staff. 3-7 Master trainers train 100 DDPM staff of disaster management on flood, flash flood and mud flow. 3-8 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staffs such as study tour, case study forum, seminars, and newsletters. **<TF Disaster Education>** 4-1 DDPM and Ministry of Education discuss and agree on the roles of each agency to implement TF-disaster education activities. 4-2 TF in collaboration with OBEC develops model curriculum of disaster education in schools on flood, flash flood and mudflow. 4-3 TF in collaboration with OBEC modifies textbooks and teachers' guide. 4-4 TF selects one model school a1 in the model community a1, one model school a2 in the model community a2 in the model province A and one model school b1 in the model community b1 in the model province B for planning curriculum of school disaster education and conducting model lessons. 4-5 TF in collaboration with MOE trains 40 master teachers. 4-6 Master teachers train at least 100 teachers how to teach disaster education at schools in cooperation with local		

communities. 4-7 Master teachers conduct model classes for disaster education at the model school a1 in the model community (MOOBAN) a1, followed by one model school a2 in model community a2 in model province A and one model school b1 in model community b1 in model province B. 4-8 Trained teachers by Master teachers conduct disaster education at their own schools. 4-9 TF in collaboration with MOE develops one model school as information center of disaster education, followed by two model schools in two provinces. 4-10 TF in collaboration with OBEC reviews the process and revises curriculum. 4-11 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staffs such as study tour, case study forum, seminars, and newsletters.		

Project Design Matrix (PDM)

Project Title: The Project on Capacity Development in Disaster Management (Phase-2) Period: 2010 - 2014 (4 years)
Implementing Agency: Department of Disaster Prevention and Mitigation: DDPM, Co-Implementing Agency: Ministry of Education: MOE
Target Groups: (direct) DDPM staff at central and provincial levels. (indirect) staff of local authorities and community people in the target areas.
Target Provinces: Lampang and Lamphun Provinces, additionally CBDRM and disaster education is conducted in Nakhon Si Thammarat Province (Version **2**)

Version 2

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal (<u>in 3-5 years after the Project ends</u>): Implementation of disaster risk management activities is improved and scaled up.	1. Provincial Disaster Prevention and Mitigation Plans and Action Plans are formulated in all **76** provinces and revised (if necessary). 2. All 76 provinces conduct table-top exercise (TTX) at least one district (Amphur) together with the province to verify the disaster prevention and mitigation action plan at local level. 3. Evacuation plans are prepared by more than **100** communities every year (other than the Project target communities) with support of DDPM Regional Centers and Provincial offices. 4. Disaster education is implemented by at least four schools. Each school functions as a learning center at the initiative of ESA Office in four major regions in Thailand, respectively.	1. Provincial Disaster Prevention and Mitigation Plans and Action Plans 2. Evaluation report of TTX 3. Evacuation plans 4. Record of workshop report.	
Project Purpose (<u>by the end of the Project</u>) Capacity of DDPM is enhanced to scale up Disaster Prevention and Mitigation Action Plans, Community Based Disaster Risk Management: CBDRM and disaster education, collaborating with concerned agencies, provincial and local levels.	1. Plans for up-scaling are included in the National Disaster Prevention and Mitigation Action Plan. 2. Plans for up-scaling within the provinces are included in the Provincial Disaster Prevention and Mitigation Action Plans of the target provinces.	Disaster Prevention and Mitigation Action Plans	Mission and responsibility of DDPM regarding disaster management is maintained by law.
Outputs **<Task force – Disaster Management Planning>** 1. Disaster Prevention and Mitigation Action Plans with considerations for vulnerable people are formulated for national, provincial and local authorities (in the target provinces).	1. Disaster Prevention and Mitigation Action Plans are formulated at national, provincial (target provinces) and local levels (At least **80** local authorities or 80% in Lampang and **45** local authorities or 80% in Lamphun).	1. Disaster Prevention and Mitigation Action Plans at national, provincial and local levels	
<Task force - CBDRM> 2. Capacity of DDPM staff as facilitators on implementation of Community Based Disaster Risk Management (CBDRM) is enhanced.	2-1 CBDRM manuals and facilitator's guide developed by the JICA Project Phase I (for facilitators and for communities) are improved and are utilized in the target communities. 2-2 Disaster training and educational materials (for facilitators and for communities) are improved and are utilized in the target communities. 2-3 CBDRM action plan for implementation is developed by	2-1-1 CBDRM manuals and activity reports 2-1-2 CBDRM Knowledge of facilitators and community people (confirmed by observation) 2-2-1 Educational materials 2-2-2 CBDRM Knowledge of facilitators and community people (confirmed by observation) 2-3 CBDRM implementation action plan and	

	DDPM.	activity reports	
<Task force – Disaster Management Training > 3. Training curriculum at DPMA is improved.	3-1 At least one curriculum on disaster management on natural disaster (flood, flash flood and mud flow) for DDPM staff is improved.	3-1 Curriculum	
<Task force – Disaster Education> 4. Based on the Natural disaster preparedness educational curriculum, schools have improved preparedness for disaster.	4-1 At least three schools in the target provinces implement disaster education on natural disasters as model schools supported by MOE headquarters and the first model schools from Phase I. 4-2 100 teachers from natural disaster prone areas are trained on disaster education.	4-1 Record of model schools observation of classes 4-2 Records of training, workshops and seminars (Number of participants, content of training, date, level of achievement, etc.)	
Activities 0-0 DDPM, in consultation with the Japanese experts, selects target areas: ➢ Model province A, Model community (MOOBAN) a1 and a2 in the model province A, ➢ Model province B, Model community (MOOBAN) b1 in the model province B. **<TF Disaster Management Planning>** 1-1 TF Disaster Management Planning designs capacity development plan on their activities and monitoring/ evaluation. 1-2 TF conduct training for 300 DDPM staff at central, regional and provincial levels how to formulate disaster prevention and mitigation plans and action plans, focusing on priority items. 1-3 DDPM staff at central and provincial levels review and/or develop provincial disaster prevention and mitigation plans, focusing on priority items, in consideration of vulnerable people for disasters, for the model province A, followed by the model province B. 1-4 DDPM staff at central and provincial levels prepares national and provincial disaster prevention and mitigation action plans, and target local authorities in target provinces prepare local disaster prevention and mitigation action plans, focusing on priority items, in which method of up-scaling, staffing and budget are identified and incorporated in the model province A, followed by the model province B. 1-5 TF conducts table-top exercises to revise disaster prevention and mitigation plans and action plans with concerned organizations. 1-6 TF and concerned provincial staff modify disaster prevention and mitigation plans and action plans, based on the experience of table top exercises. 1-7 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staff such as study tour, case study forum, seminars, and newsletters. **<TF CBDRM>** 2-1 TF-CBDRM designs capacity development plan on TF-CBDRM activities and monitoring/evaluation. 2-2 TF reviews and revises CBDRM manuals and facilitator's guide seeking comments from 76 provinces and tests them at the model community (MOOBAN) a1 and finalizes them for publication.		**Inputs** **<Thai side>** Counterparts Project Director Project Manager Task force members Administrative staff Project office and facilities at DDPM Working space at MOE Operational costs **<Japanese Side>** Experts Disaster Management Plan Disaster Management Institution Sediment Disaster Management Flood Management Community Based Disaster Risk Management Disaster Education Counterpart Training in Japan Operational costs	**Preconditions** Human resources and budget necessary for the implementation of the Project are provided by the Thai side.

2-3 TF conducts training for at least 80 DDPM staff at central, regional and provincial levels to facilitate CBDRM. 2-4 Trained DDPM provincial staff in the model province A facilitates CBDRM activities, including Disaster Prevention and Mitigation Action Plans for local authorities at model community (MOOBAN) a1 in collaboration with the local model school. 2-5 Trained DDPM provincial staff in the model province B facilitates CBDRM activities, including Disaster Prevention and Mitigation Action Plans for local authorities at model community b1 in collaboration with the local model school. 2-6 Trained DDPM provincial staff in the model province A facilitates CBDRM activities, including Disaster Prevention and Mitigation Action Plans for local authorities at model community a2 in the model province A in collaboration with the local model school. 2-7 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staff such as study tour, case study forum, seminars, and newsletters. **<TF Disaster Management Training>** 3-1 TF-Disaster Management Training designs a capacity development plan for its activities and monitoring/evaluation. 3-2 TF develops guidelines for evaluation and monitoring of training. 3-3 TF conducts needs assessment for training in collaboration with other task forces. 3-4 TF revises standard disaster management curriculum in DPMA training courses on flood, flash flood and mud flow. 3-5 TF, in collaboration with concerned organizations, develops training modules and materials to synchronize training curriculum on disaster management (flood, flash flood and mud flow), CBDRM. 3-6 TF, in collaboration with concerned organizations, train master trainers for DDPM staff. 3-7 Master trainers train 100 DDPM staff of disaster management on flood, flash flood and mud flow. 3-8 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staffs such as study tour, case study forum, seminars, and newsletters. **<TF Disaster Education>** 4-1 DDPM and Ministry of Education discuss and agree on the roles of each agency to implement TF-disaster education activities. 4-2 TF in collaboration with OBEC develops model curriculum of disaster education in schools on flood, flash flood and mudflow. 4-3 TF in collaboration with OBEC modifies textbooks and teachers' guide. 4-4 TF selects one model school a1 in the model community a1, one model school a2 in the model community a2 in the model province A and one model school b1 in the model community b1 in the model province B for planning curriculum of school disaster education and conducting model lessons. 4-5 TF in collaboration with MOE trains 40 master teachers. 4-6 Master teachers train at least 100 teachers how to teach disaster education at schools in cooperation with local communities. 4-7 Master teachers conduct model classes for disaster education at the model school a1 in the model community		

(MOOBAN) a1, followed by one model school a2 in model community a2 in model province A and one model school b1 in model community b1 in model province B. 4-8 Trained teachers by Master teachers conduct disaster education at their own schools. 4-9 TF in collaboration with MOE develops one model school as information center of disaster education, followed by two model schools in two provinces. 4-10 TF in collaboration with OBEC reviews the process and revises curriculum. 4-11 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staffs such as study tour, case study forum, seminars, and newsletters.		

Project Design Matrix (PDM)

Project Title: The Project on Capacity Development in Disaster Management (Phase-2) Period: 2010 - 2014 (4 years)
Implementing Agency: Department of Disaster Prevention and Mitigation: DDPM, Co-Implementing Agency: Ministry of Education: MOE
Target Groups: (direct) DDPM staff at central and provincial levels. (indirect) staff of local authorities and community people in the target areas.
Target Provinces: Lampang and Lamphun Provinces, additionally CBDRM and disaster education is conducted in Nakhon Si Thammarat Province (Version **3**)

Version 3

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal (<u>in 3-5 years after the Project ends</u>): Implementation of disaster risk management activities is improved and scaled up.	1. Provincial Disaster Prevention and Mitigation Plans and Action Plans are formulated in all **76** provinces and revised (if necessary). 2. All 76 provinces conduct table-top exercise (TTX) at least one district (Amphur) together with the province to verify the disaster prevention and mitigation action plan at local level. 3. Evacuation plans are prepared by more than **100** communities every year (other than the Project target communities) with support of DDPM Regional Centers and Provincial offices. 4. Disaster education is implemented by at least four schools. Each school functions as a learning center at the initiative of ESA Office in four major regions in Thailand, respectively.	1. Provincial Disaster Prevention and Mitigation Plans and Action Plans 2. Evaluation report of TTX 3. Evacuation plans 4. Record of workshop report.	
Project Purpose (<u>by the end of the Project</u>) Capacity of DDPM is enhanced to scale up Disaster Prevention and Mitigation Action Plans, Community Based Disaster Risk Management: CBDRM and disaster education, collaborating with concerned agencies, provincial and local levels.	1. Plans for up-scaling are included in the National Disaster Prevention and Mitigation Action Plan. 2. Plans for up-scaling within the provinces are included in the Provincial Disaster Prevention and Mitigation Action Plans of the target provinces.	Disaster Prevention and Mitigation Action Plans	Mission and responsibility of DDPM regarding disaster management is maintained by law.
Outputs **<Task force – Disaster Management Planning>** 1. Disaster Prevention and Mitigation Action Plans with considerations for vulnerable people are formulated for national, provincial and local authorities (in the target provinces).	1. Disaster Prevention and Mitigation Action Plans are formulated at national, provincial (target provinces) and local levels (At least **80** local authorities or 80% in Lampang and **45** local authorities or 80% in Lamphun).	1. Disaster Prevention and Mitigation Action Plans at national, provincial and local levels	
<Task force - CBDRM> 2. Capacity of DDPM staff as facilitators on implementation of Community Based Disaster Risk Management (CBDRM) is enhanced.	2-1 CBDRM manuals and facilitator's guide developed by the JICA Project Phase I (for facilitators and for communities) are improved and are utilized in the target communities. 2-2 Disaster training and educational materials (for facilitators and for communities) are improved and are utilized in the target communities.	2-1-1 CBDRM manuals and activity reports 2-1-2 CBDRM Knowledge of facilitators and community people (confirmed by observation) 2-2-1 Educational materials 2-2-2 CBDRM Knowledge of facilitators and community people (confirmed by observation)	

	2-3 CBDRM action plan for implementation is developed by DDPM.	2-3 CBDRM implementation action plan and activity reports	
<Task force – Disaster Management Training > 3. Training curriculum at DPMA is improved.	3-1 At least one curriculum on disaster management on natural disaster (flood, flash flood and mud flow) for DDPM staff is improved.	3-1 Curriculum	
<Task force – Disaster Education> 4. Based on the Natural disaster preparedness educational curriculum, schools have improved preparedness for disaster.	4-1 At least three schools in the target provinces implement disaster education on natural disasters as model schools supported by MOE headquarters and the first model schools from Phase I. 4-2 100 teachers from natural disaster prone areas are trained on disaster education.	4-1 Record of model schools observation of classes 4-2 Records of training, workshops and seminars (Number of participants, content of training, date, level of achievement, etc.)	
<Task force – Flash Flood Risk Management> 5. Knowledge and technical capacity of DDPM on hazard mapping, early warning system and design of structural measures are enhanced.	5-1 Manuals on rainfall / flood analysis and hazard mapping are developed. 5-2 Manuals on early warning system and structural measures for flood mitigation and prevention are developed. 5-3 Training targeting on all of 18 DPM regional centers using the above manuals.	5-1 Manuals on rainfall / flood analysis and hazard mapping 5-2 Manuals on early warning system and structural measures. 5-3 Record of training (number of regional centers participating in the trainings)	
Activities 0-0 DDPM, in consultation with the Japanese experts, selects target areas: ➢ Model province A, Model community (MOOBAN) a1 and a2 in the model province A, ➢ Model province B, Model community (MOOBAN) b1 in the model province B. **<TF Disaster Management Planning>** 1-1 TF Disaster Management Planning designs capacity development plan on their activities and monitoring/ evaluation. 1-2 TF conduct training for 300 DDPM staff at central, regional and provincial levels how to formulate disaster prevention and mitigation plans and action plans, focusing on priority items. 1-3 DDPM staff at central and provincial levels review and/or develop provincial disaster prevention and mitigation plans, focusing on priority items, in consideration of vulnerable people for disasters, for the model province A, followed by the model province B. 1-4 DDPM staff at central and provincial levels prepares national and provincial disaster prevention and mitigation action plans, and target local authorities in target provinces prepare local disaster prevention and mitigation action plans, focusing on priority items, in which method of up-scaling, staffing and budget are identified and incorporated in the model province A, followed by the model province B. 1-5 TF conducts table-top exercises to revise disaster prevention and mitigation plans and action plans with concerned		**Inputs** **<Thai side>** Counterparts Project Director Project Manager Task force members Administrative staff Project office and facilities at DDPM Working space at MOE Operational costs **<Japanese Side>** Experts Disaster Management Plan Disaster Management Institution Sediment Disaster Management Flood Management	**Preconditions** Human resources and budget necessary for the implementation of the Project are provided by the Thai side.

organizations. 1-6 TF and concerned provincial staff modify disaster prevention and mitigation plans and action plans, based on the experience of table top exercises. 1-7 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staff such as study tour, case study forum, seminars, and newsletters. **<TF CBDRM>** 2-1 TF-CBDRM designs capacity development plan on TF-CBDRM activities and monitoring/evaluation. 2-2 TF reviews and revises CBDRM manuals and facilitator's guide seeking comments from 76 provinces and tests them at the model community (MOOBAN) a1 and finalizes them for publication. 2-3 TF conducts training for at least 80 DDPM staff at central, regional and provincial levels to facilitate CBDRM. 2-4 Trained DDPM provincial staff in the model province A facilitates CBDRM activities, including Disaster Prevention and Mitigation Action Plans for local authorities at model community (MOOBAN) a1 in collaboration with the local model school. 2-5 Trained DDPM provincial staff in the model province B facilitates CBDRM activities, including Disaster Prevention and Mitigation Action Plans for local authorities at model community b1 in collaboration with the local model school. 2-6 Trained DDPM provincial staff in the model province A facilitates CBDRM activities, including Disaster Prevention and Mitigation Action Plans for local authorities at model community a2 in the model province A in collaboration with the local model school. 2-7 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staff such as study tour, case study forum, seminars, and newsletters. **<TF Disaster Management Training>** 3-1 TF-Disaster Management Training designs a capacity development plan for its activities and monitoring/evaluation. 3-2 TF develops guidelines for evaluation and monitoring of training. 3-3 TF conducts needs assessment for training in collaboration with other task forces. 3-4 TF revises standard disaster management curriculum in DPMA training courses on flood, flash flood and mud flow. 3-5 TF, in collaboration with concerned organizations, develops training modules and materials to synchronize training curriculum on disaster management (flood, flash flood and mud flow), CBDRM. 3-6 TF, in collaboration with concerned organizations, train master trainers for DDPM staff. 3-7 Master trainers train 100 DDPM staff of disaster management on flood, flash flood and mud flow. 3-8 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staffs such as study tour, case study forum, seminars, and newsletters. **<TF Disaster Education>** 4-1 DDPM and Ministry of Education discuss and agree on the roles of each agency to implement TF-disaster education activities.	Community Based Disaster Risk Management Disaster Education Counterpart Training in Japan Operational costs	

4-2 TF in collaboration with OBEC develops model curriculum of disaster education in schools on flood, flash flood and mudflow. 4-3 TF in collaboration with OBEC modifies textbooks and teachers' guide. 4-4 TF selects one model school a1 in the model community a1, one model school a2 in the model community a2 in the model province A and one model school b1 in the model community b1 in the model province B for planning curriculum of school disaster education and conducting model lessons. 4-5 TF in collaboration with MOE trains 40 master teachers. 4-6 Master teachers train at least 100 teachers how to teach disaster education at schools in cooperation with local communities. 4-7 Master teachers conduct model classes for disaster education at the model school a1 in the model community (MOOBAN) a1, followed by one model school a2 in model community a2 in model province A and one model school b1 in model community b1 in model province B. 4-8 Trained teachers by Master teachers conduct disaster education at their own schools. 4-9 TF in collaboration with MOE develops one model school as information center of disaster education, followed by two model schools in two provinces. 4-10 TF in collaboration with OBEC reviews the process and revises curriculum. 4-11 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staffs such as study tour, case study forum, seminars, and newsletters. **<TF Flash Flood Risk Management>** 5-1 TF designs capacity development plan on its activities and monitoring/evaluation. 5-2 TF selects one sub-basin model site in Lampang or Lamphun province based on GIS base risk area maps which are being prepared by DDPM.. 5-3 TF prepares manuals for rainfall / flood analysis and hazard mapping through the process of the practical training taking the model site as an example. 5-4 TF prepares manuals for improvement of early warning system and for evaluation of structural measures, in which the result of 5-3 will be functionally utilized. 5-5 TF conducts training on hazard mapping, early warning system and structural measures targeting DPM regional centers using the above manuals.		

Project Design Matrix (PDM)

Project Title: The Project on Capacity Development in Disaster Management (Phase-2) Period: 2010 - 2014 (4 years)
Implementing Agency: Department of Disaster Prevention and Mitigation: DDPM, Co-Implementing Agency: Ministry of Education: MOE
Target Groups: (direct) DDPM staff at central and provincial levels. (indirect) staff of local authorities and community people in the model areas.
Target Provinces: Lampang and Lamphun Provinces, additionally CBDRM and disaster education is conducted in Nakhon Si Thammarat and Other Provinces (Version **4**)

Version 4

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal (<u>in 3-5 years after the Project ends</u>): Implementation of disaster risk management activities is improved and scaled up.	1. Provincial Disaster Prevention and Mitigation Plans and Action Plans are formulated in all **76** provinces and BMA, and revised (if necessary). 2. All 76 provinces and BMA conduct table-top exercise (TTX) at least one municipality/SAO (Tedsabaan/Oobortor) together with the province to verify the disaster prevention and mitigation action plan at local level. 3. Evacuation plans are prepared by more than **100** communities every year (other than the Project model communities) with support of DPM Regional Centers and Provincial offices. 4. Disaster education is implemented by at least four schools. Each school functions as a learning center at the initiative of ESA Office in four major regions in Thailand, respectively.	1. Provincial Disaster Prevention and Mitigation Plans and Action Plans 2. Evaluation report of TTX 3. Evacuation plans 4. Record of workshop report.	
Project Purpose (<u>by the end of the Project</u>) Capacity of DDPM is enhanced to scale up Disaster Prevention and Mitigation Action Plans, Community Based Disaster Risk Management: CBDRM and disaster education, collaborating with concerned agencies, provincial and local levels.	1. Plans for up-scaling are included in the National Disaster Prevention and Mitigation Action Plan. 2. Plans for up-scaling within the provinces are included in the Provincial Disaster Prevention and Mitigation Action Plans of the model provinces.	Disaster Prevention and Mitigation Action Plans	Mission and responsibility of DDPM regarding disaster management is maintained by law.
Outputs **<Task force – Disaster Management Planning>** 1. Disaster Prevention and Mitigation Action Plans with considerations for vulnerable people are formulated for national, provincial and local authorities (in the model provinces).	1. Disaster Prevention and Mitigation Action Plans are formulated at national, provincial (model provinces) and local levels (At least **80** local authorities or 80% in Lampang and **45** local authorities or 80% in Lamphun).	1. Disaster Prevention and Mitigation Action Plans at national, provincial and local levels	
<Task force - CBDRM> 2. Capacity of DDPM staff as facilitators on implementation of Community Based Disaster Risk Management (CBDRM) is enhanced.	2-1 CBDRM manuals and facilitator's guide developed by the JICA Project Phase I (for facilitators and for communities) are improved and are utilized in the model communities. 2-2 Disaster training and educational materials (for facilitators and for communities) are improved and are utilized in the model communities. 2-3 CBDRM action plan for implementation is developed by	2-1-1 CBDRM manuals and activity reports 2-1-2 CBDRM Knowledge of facilitators and community people (confirmed by observation) 2-2-1 Educational materials 2-2-2 CBDRM Knowledge of facilitators and community people (confirmed by observation) 2-3 CBDRM implementation action plan and	

	DDPM.	activity reports	
<Task force – Disaster Management Training > 3. Training curriculum at DPMA is improved.	3-1 At least one curriculum on disaster management on natural disaster (flood, flash flood and mud flow) for DDPM staff is improved.	3-1 Curriculum	
<Task force – Disaster Education> 4. Based on the Natural disaster preparedness educational curriculum, schools have improved preparedness for disaster.	4-1 At least three schools in the model provinces implement disaster education on natural disasters as model schools supported by MOE headquarters and the first model schools from Phase I. 4-2 100 teachers from natural disaster prone areas are trained on disaster education.	4-1 Record of model schools observation of classes 4-2 Records of training, workshops and seminars (Number of participants, content of training, date, level of achievement, etc.)	
<Task force – Flash Flood Risk Management> 5. Knowledge and technical capacity of DDPM on hazard mapping, early warning system and design of structural measures are enhanced.	5-1 Manuals on rainfall / flood analysis and hazard mapping are developed. 5-2 Manuals on early warning system and structural measures for flood mitigation and prevention are developed. 5-3 Training targeting on all of 18 DPM regional centers using the above manuals.	5-1 Manuals on rainfall / flood analysis and hazard mapping 5-2 Manuals on early warning system and structural measures. 5-3 Record of training (number of regional centers participating in the trainings)	
Activities 0-0 DDPM, in consultation with the Japanese experts, selects model areas: ➢ Model province A: Lampang Model community a1: Ban Chai Chom Phu (Moo 10) and Ban Mae Salaem (Moo 6) Model community a2: Ban Chawfa (Moo 5: Chowfa and Jokfa) ➢ Model province B: Lamphun Model community b1: Ban Muong Sam Pee (Moo 8) Additional model community b2: Ban Koornong (Moo 2) Additionally, TF-CBDRM selected Ban Tham Talod (Moo 4) as a model community in Nakhon Si Thammarat Province. **<TF Disaster Management Planning>** 1-1 TF Disaster Management Planning designs capacity development plan on their activities and monitoring/ evaluation. 1-2 TF conduct training for 300 DDPM staff at central, regional and provincial levels how to formulate disaster prevention and mitigation plans and action plans, focusing on priority items. 1-3 DDPM staff at central and provincial levels review and/or develop provincial disaster prevention and mitigation plans, focusing on priority items, in consideration of vulnerable people for disasters, for the model provinces of Lampang and Lamphun. 1-4 DDPM staff at central and provincial levels prepares national and provincial disaster prevention and mitigation action plans, and model local authorities in model provinces prepare local disaster prevention and mitigation action plans, focusing on priority items, in which method of up-scaling, staffing and budget are identified and incorporated in the model provinces of Lampang and Lamphun.		**Inputs** **<Thai side>** Counterparts Project Director Project Manager Task force members Administrative staff Project office and facilities at DDPM Working space at MOE Operational costs **<Japanese Side>** Experts Disaster Management Plan Disaster Management Institution Sediment Disaster Management Flood Management Community Based Disaster Risk Management Disaster Education Disaster Management Exercise	**Preconditions** Human resources and budget necessary for the implementation of the Project are provided by the Thai side.

1-5 TF conducts table-top exercises to revise disaster prevention and mitigation plans and action plans with concerned organizations. 1-6 TF and concerned provincial staff modify disaster prevention and mitigation plans and action plans, based on the experience of table top exercises. 1-7 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staff such as study tour, case study forum, seminars, and newsletters. **<TF CBDRM>** 2-1 TF-CBDRM designs capacity development plan on TF-CBDRM activities and monitoring/evaluation. 2-2 TF reviews and revises CBDRM manuals and facilitator's guide seeking comments from 76 provinces and tests them at the model communities and finalizes them for publication. 2-3 TF conducts training for at least 80 DDPM staff at central, regional and provincial levels to facilitate CBDRM. TF conducts training for staff of local authorities in the model provinces to enhance the knowledge of CBDRM for at least 220 staffs (300 staffs in total). 2-4 Trained DDPM provincial staff in Lampang Province facilitates CBDRM activities, including Disaster Prevention and Mitigation Action Plans for local authorities at the model communities of Ban Chai Chom Phu (Moo 10) and Ban Mae Salaem (Moo 6) in collaboration with the local model school. 2-5 Trained DDPM provincial staff in Lamphun Province facilitates CBDRM activities, including Disaster Prevention and Mitigation Action Plans for local authorities at the model community of Ban Muong Sam Pee (Moo 8) in collaboration with the local model school. 2-6 Trained DDPM provincial staff in Lampang Province facilitates CBDRM activities, including Disaster Prevention and Mitigation Action Plans for local authorities at the model community of Ban Chawfa (Moo 5: Chowfa and Jokfa) in collaboration with the local model school. 2-7 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staff such as study tour, case study forum, seminars, and newsletters. **<TF Disaster Management Training>** 3-1 TF-Disaster Management Training designs a capacity development plan for its activities and monitoring/evaluation. 3-2 TF develops guidelines for evaluation and monitoring of training. 3-3 TF conducts needs assessment for training in collaboration with other task forces. 3-4 TF revises standard disaster management curriculum in DPMA training courses on flood, flash flood and mud flow. 3-5 TF, in collaboration with concerned organizations, develops training modules and materials to synchronize training curriculum on disaster management (flood, flash flood and mud flow), CBDRM. 3-6 TF, in collaboration with concerned organizations, train master trainers for DDPM staff. 3-7 Master trainers train 300 DDPM staff of disaster management on flood, flash flood and mud flow. 3-8 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staffs such as study tour, case study forum, seminars, and newsletters.	Counterpart Training in Japan Operational costs	

<TF Disaster Education> 4-1 DDPM and Ministry of Education discuss and agree on the roles of each agency to implement TF-disaster education activities. 4-2 TF in collaboration with OBEC develops model curriculum of disaster education in schools on flood, flash flood, mudflow, and Tsunami. 4-3 TF in collaboration with OBEC modifies textbooks and teachers' guide. 4-4 TF selects at least four model schools and ESAOs in northern, north-eastern, central, and southern part of Thailand for disaster education planning and implementation. 4-5 TF in collaboration with MOE trains at least four model schools collaboration with ESAOs. 4-6 ESAOs that supervise model schools prepare disaster education strategic plan and curriculum design to enhance the outcome to other schools including private schools. 4-7 Model schools train at least 100 teachers how to teach disaster education at schools in cooperation with local communities, cooperation with local authorities and DPM offices. 4-8 TF in collaboration with MOE develops at least one master school as information center of disaster education. 4-9 TF in collaboration with OBEC reviews the process and revises curriculum. 4-10 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staffs such as study tour, case study forum, seminars, and newsletters. **<TF Flood Risk Management>** 5-1 TF designs capacity development plan on its activities and monitoring/evaluation. 5-2 TF selects one sub-basin model site in Lampang or Lamphun province based on GIS base risk area maps which are being prepared by DDPM.. 5-3 TF prepares manuals for rainfall / flood analysis and hazard mapping through the process of the practical training taking the model site as an example. 5-4 TF prepares manuals for improvement of early warning system and for evaluation of structural measures, in which the result of 5-3 will be functionally utilized. 5-5 TF conducts training on hazard mapping, early warning system and structural measures targeting DPM regional centers using the above manuals.		

Appendix 2

Record of Joint Coordination Committee (JCC)

MINUTES OF MEETINGS
ON
INCEPTION REPORT
FOR
THE PROJECT ON CAPACITY DEVELOPMENT IN DISASTER MANAGEMENT IN THAILAND (PHASE-2)

AGREED UPON BETWEEN
THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF THE KINGDOM OF THAILAND
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

Bangkok, 18 June 2010

前原 規利

Mr. Noritoshi Maehara
Chief Advisor, Expert Team
Japan International Cooperation Agency (JICA)
Japan

Mr. Anucha Mokkhavesa
Director-General
Department of Disaster
Prevention and Mitigation,
Ministry of Interior

Mrs. Sivika Mektavatchaikul
Deputy Permanent Secretary,
Ministry of Education

In response to the request of the Government of the Kingdom of Thailand, the Government of Japan has decided to conduct the technical cooperation concerning the "Project on Capacity Development in Disaster Management in Thailand (Phase 2)"(hereinafter refereed to as "the Project"). The Japan side and the Thai side came to an agreement on the Record of Discussion (hereinafter referred to as "R/D") which was signed on 9 March 2010 between the Department of Disaster Prevention and Mitigation, Ministry of Interior (hereinafter referred to as "DDPM") and the Ministry of Education (hereinafter referred to as "MOE"), and Japan International Cooperation Agency (hereinafter referred to as "JICA").

Based on the R/D, JICA dispatched the Expert Team (hereinafter referred to as "the Team") headed by Mr. Noritoshi MAEHARA from 7 June 2010 for the commencement of the Project. The Team held a series of meeting with the officials of DDPM, MOE and other authorities concerned on the Project and explained the contents of the Inception Report (hereinafter referred to as "IC/R"). The list of the participants is attached as Annex 1.

The IC/R was accepted by the Thai side in principle. The following are the main points discussed and agreed by the both sides.

1. Implementation of the Project

   The Team explained and the Thai side understood that the Project will be implemented by the Thai initiative and supported by the Team.

2. Role of DDPM in the Project

   DDPM, the implementing agency of the Project, takes the leadership of the Project implementation in collaboration with other authorities concerned and assumes overall responsibility for spreading and developing the Project outputs to other areas in Thailand after completion of the Project.

3. Role of MOE in the Project

   MOE, the co-implementing agency of the Project, shall be responsible for spreading and developing school disaster education and supporting related activities with DDPM in creating synergistic effects of community based disaster risk management (CBDRM) and disaster education in Thailand.

4. Involvement of other related organizations

   DDPM shall collaborate with concerned agencies, and utilize the knowledge and information accumulated in such agencies for enhancement of disaster management capacity of DDPM.

5. The Project will partially support achievement for the National Disaster Prevention and Mitigation Plan (2010 - 2014) by preparation of the road map with quantitative targets in preparation of disaster prevention and mitigation action plans, promotion of CBDRM, disaster management training, and disaster education.

6. The first Joint Coordination Committee (hereinafter referred to as "JCC") meeting was held on 18 June 2010 at DDPM and was chaired by Mr. Prateep Keeratirekha, Deputy Director-General of DDPM. The list of participants (hereinafter referred to as the "Thai side") is attached as Annex 2.

7. Nomination of Counterpart Personnel for Each Output/ (Activity) of the Project

The Team requested the Thai side to assign enough number of counterparts for respective outputs/ (activities). The Thai side agreed to assign the counterparts as shown in Annex 3.

8. Acceptance of the Inception Report (IC/R)

The Team, headed by Mr. Noritoshi MAEHARA, explained the contents of IC/R and outlined outputs of the Project. The Thai side agreed upon the contents of IC/R and the outlined outputs.

9. Proposal from the Team

The Team proposed the following matters to DDPM and MOE for implementation of the Project. The Thai side agreed upon the proposal.

9.1 Formation of Task Force

The following Task Forces (hereinafter referred to as "TF") will be established to facilitate implementation of the activities in the Project.

TF-1: Disaster Management Planning

TF-2: Community Based Disaster Risk Management (hereinafter referred to as "CBDRM")

TF-3: Disaster Management Training

TF-4: Disaster Education

9.2 Formation of Inter-Task Force Meeting

Inter-Task Force Meeting will be organized from representatives of the Task Force (hereinafter referred to as "Inter-TF") members from DDPM, DPMA and MOE having the following functions;

a) To share information on activities of Four (4) Task Forces;
b) To discuss on effective implementation in collaboration among Task Forces; and
c) To serve as representative of Task Forces for communications and discussions in case of corporation and collaboration with other organizations.

The meeting will be held once every two weeks to perform the functions mentioned above. The Team will attend the meeting as supporting member(s) during the Project period.

9.3 Sub-Task Forces

In order to carry out the activities for preparation of Disaster Prevention and Mitigation Action Plans, CBDRM and School Disaster Education effectively, the Team proposes to form sub-task forces consisting of staffs of Provincial DDPM, Educational Service Area Office (ESAO), local administrative organizations and concerned agencies/organizations.

9.4 Review of Phase-1 Project Results

To begin with the Project, outputs of the Phase-1 Project should be reviewed together with TF members. Reviewing the successful and unsuccessful cases, tasks for future activities will be found out and their improvement measures will be discussed in collaboration with TF. Based on the review results, activities for the Project shall be adjusted.

9.5 Proper Selection of Model Areas

DDPM proposed eight communities in the four candidate model provinces based on the criteria stated in ANNEX 4 of the minutes of meeting dated October 8, 2009 between JICA and the authorities concerned as shown in Annex 4. Both DDPM and JICA Experts will confirm the appropriateness of the candidate provinces based on the past flood records.

Criteria for selection of the model sites from candidate provinces will be decided by the end of June 2010 considering 1) flood types and 2) convenience of spreading and developing the Project outputs. Model provinces, model communities and model schools will be decided based on the criteria and information obtained through site visit by the end of July 2010.

9.6 Counterpart Training in Japan

Activities of the TFs are closely related each other and it is important to solidify cooperative tie among them. It is essential to acquire the basic knowledge of other TFs' activities and to establish personal networks. For that purpose, the training in Japan shall be implemented for the participants under the consideration and the mutual agreement between DDPM and MOE.

(1) Objectives:

a) To acquire extensive knowledge and skills for disaster management through watching, hearing and experiencing the efforts of central and local governments, communities and schools in Japan.
b) To exchange knowledge with the people in charge of disaster management in the central and local governments, communities, and schools in Japan
c) To exchange views and strengthen coordination among participants from different TFs and Japanese experts
d) To prepare action plans to improve TF activities by feeding back the knowledge and skills acquired through the training

(2) Time and Duration:

For about two (2) weeks in November 2010, 2011, and in June and November 2012 (4 times in total)

(3) Participants:

Four (4) to five (5) people from each TF (16 to 20 people in total)

9.7 Public Relations of the Project Activities

Public relations of the project activities is important to raise public awareness on the necessity of the disaster management activities. Press release, newsletters, web-sites, and pamphlets on the project activities shall be effectively utilized for public relations.

It is one of the good measures to exchange newsletters and/or email on activities of CBDRM and school disaster education with the communities and schools that work on disaster management in Japan, Indonesia, Sri Lanka, Pakistan, etc. It shall help understanding the variation of the activities by country each other. It shall also be a good opportunity to share good practices of Thailand with the other countries. Such international exchange may attract attention of the public.

9.8 Trainings/Workshops in Thailand

Outline of trainings/workshops is presented as shown in Table 1. Training place, method, and number of participants of the trainings/workshops are tentative one and their details shall be decided at the commencement of the Project.

10. Discussion with Representatives of Task Forces

10.1 TF-1: Disaster Management Planning

(1) Disaster Prevention and Mitigation Policy Bureau of DDPM will be in charge of TF-1: Disaster Management Planning.

(2) Disaster prevention and mitigation action plan will be formulated for the model area as a role model. Then, the model will be utilized for the trainings of DDPM staff for preparation of the action plans for other areas. This approach will make it easy to spread and develop the activities to other areas.

10.2 TF-2: CBDRM

(1) Disaster Prevention and Promotion Bureau of DDPM will be in charge of TF-2: CBDRM.

(2) Due to the limitation of the budget allocation, 100 DDPM staff will be trained as facilitators for promotion of CBDRM in the 1st year and 200 DDPM and local administration staff in the 2nd to 4th years.

(3) The training will be held at the DPMA center in the 1st year since the facilities are sufficient. It will be continued at local levels from the 2nd year.

10.3 TF-3: Disaster Management Training

(1) DPMA will be in charge of TF-3: Disaster Management Training.

(2) Although the training of DDPM staff as master trainers is planed to start from the second year (from April 2011), its budget for the fiscal year 2011 (October 2010 - September 2011) has not been prepared. Based on the cost estimate of the training, DPMA will search for ways to realize the training with JICA Expert.

(3) The Thai side agrees to secure the budget for the fiscal year 2012 (October 2011 - September

2012) and afterward so that the training can be conducted on schedule.

(4) The curriculum for the training will be prepared by DPMA with assistance of JICA expert for budgetary request for the fiscal year 2011 by November 2010.

10.4 TF-4: Disaster Education

(1) MOE will be in charge of TF-4: Disaster Education.

(2) Teachers will also participate in the seminars on management of earthquake and other natural disasters to acquire basic knowledge about it.

(3) The training of master teachers for disaster education will be implemented at the Phase-2 model schools inviting teachers from the Phase-1 model schools as trainers for efficient implementation of the training.

(4) Establishment and functions of the information center on education (including disaster education) will be discussed between MOE and JICA expert.

10.5 Supporting Agencies

10.5.1 Disaster Mitigation Directing Center, DDPM

(1) Disaster Mitigation Directing Center of DDPM will be a supporting agency of the Phase-2 Project.

(2) The Center will support the trainings for emergency response by the central, regional, provincial, and community levels including the table-top exercises to be held in the Phase-2 Project.

(3) JICA Experts will observe the large-scale exercise for flash flood to be held in Trat Province in August 2010.

10.5.2 Disaster Prevention Criteria Bureau, DDPM

(1) Disaster Prevention Criteria Bureau of DDPM will be a supporting agency of the Phase-2 Project.

(2) The Bureau will support the Phase-2 Project in preparation of the flood hazard maps for the model communities (Scale 1:4,000).

(3) The Bureau will support the training of DDPM staff for disaster prevention planning with regard to hazard mapping.

10.5.3 Research and Development Sub-Bureau, Research and International Cooperation Bureau, DDPM

(1) Research and Development Sub-Bureau will be a supporting agency of the Phase-2 Project.

(2) The Sub-Bureau will be responsible for hazard information and also evaluation of the process of activities of the Project such as Disaster Prevention and Mitigation Planning, CBDRM, etc.

Table 1 Outline of Trainings/Workshops in Thailand (Tentative)

	Outline of Training	1st yr	2nd yr	3rd yr	4th yr	Forward
TF-Disaster Management Planning (DMP)	**1. Training of DDPM Staff for Disaster Prevention Planning:** 1) TF-DMP and DPMA 2) Preparation/revision of Disaster Prevention and Action Plans 3) DDPM staff at central/regional/provincial levels 4) DPMA regional campus (6 places) 5) Workshop 6) 50 persons x 3 places x 2 years = 300 persons	▲	▲	To be continued by GOT		
	2. Table-top Exercise for Verification of Disaster Prevention Plans: 1) TF-DMP and DPMA 2) Verification of Disaster Prevention and Action Plans 3) DDPM staff at central/regional/provincial levels 4) Central office of DPMA 5) Workshop, role playing, and table-top exercise 6) About 50 persons per year		▲	▲	▲	To be continued by GOT
TF-CBDRM	**3. Training of DDPM Staff as Facilitators for Promotion of CBDRM:** 1) TF-CBDRM 2) Training of facilitators for promotion of CBDRM 3) DDPM and local administration staff 4) 1st year in the central campus, 2-4 years in local levels 5) Workshop, DIG and evacuation drill 6) 50 persons x 2 batches x 3-4 years = more than 300 persons	▲	▲	To be continued by GOT		
TF-Disaster Management Training (DMT)	**4. Training of DDPM Staff as Master Trainers:** 1) TF-DMT and DPMA 2) Training of master trainers for natural disaster management 3) DDPM staff at central/regional/provincial levels 4) Central office of DPMA 5) Workshop and DIG 6) 30 persons x 3 years = 90 persons		▲	▲	▲	To be continued by GOT
	5. Training of DDPM Staff for Natural Disaster Management: 1) TF-DMT and DPMA 2) Training of DDPM staff for natural disaster management 3) DDPM staff at central/regional/provincial levels 4) DPMA regional campus (6 places) 5) Workshop and DIG 6) 50 persons x 2 places x 3 years = 300 persons		▲	▲	▲	To be continued by GOT
TF-Disaster Education (DE)	**6. Training of Master Teachers for Disaster Education:** 1) TF-DE and MOE 2) Training of master teachers for disaster education 3) Teachers in model provinces 4) At Phase-2 model school's inviting the teachers in Phase-1 model schools 5) Lecture, model lesson, DIG, evacuation drill, etc. 6) More than 40 teachers in 1st year	▲	▲	To be continued by GOT		
	7. Training of Teachers in Model Schools: 1) TF-DE and MOE 2) Training of teachers for school disaster education 3) Teachers in model provinces and others 4) Phase-2 model schools and others 5) Lecture, model lesson, DIG, evacuation drill, etc 6) 35 teachers x 3 years = 105 teachers		▲	▲	▲	To be continued by GOT
Common	**8. Seminars for Management of Earthquake and Other Natural Disasters:** 1) All TF and JICA Experts 2) Management of earthquake and other natural disasters 3) Staff of DDPM, MOE, and other organizations concerned 4) Meeting hall in Bangkok 5) Lectures by experts including Phase-1 JICA Experts 6) 100 persons x 2 years = 200 persons	▮	▮			

Note:
1) Held by (executing agency), 2) Theme of training, 3) Participants/trainee, 4) Training place, 5) Type of training, 6) Remarks

▲ :Assistance by JICA Experts which will decrease gradually and finally conducted fully by GOT.

Annex-1

List of the Participants of IC/R Meetings

Thai Side:

Mr. Adthaporn Singhawichai	Director, Research and International Cooperation Bureau (RICB), DDPM
Ms. Chatchadaporn Boonyavaha	Chief of Foreign Relations Sub-Bureau, RICB, DDPM
Mr. Chainarong Vasanasomsithi	Director, Natural Disaster Policy Division, Disaster Prevention and Mitigation Policy Bureau, DDPM
Mr. Sitthigon Kwandee	Natural Disaster Policy Division, Disaster Prevention and Mitigation Policy Bureau, DDPM
Ms. Kamonwan Jitpakdi	Disaster Prevention and Promotion Bureau, DDPM
Ms. Amornthip Paksuchon	Disaster Prevention and Promotion Bureau, DDPM
Ms. Chakreeya Setthaseree	Disaster Prevention and Mitigation Academy (DPMA), DDPM
Mr. Somsong Ngamwong	Chief of International Cooperation Unit, Bureau of International Cooperation, Office of the Permanent Secretary, MOE
Ms. Sararat Leepaiboon	Bureau of Academic Affairs and Educational Standards, OBEC, MOE
Ms. Rungkan Punpukdee	Bureau of International Cooperation, MOE
Ms. Angsumalin Angsusingma	Disaster Mitigation Directing Center, DDPM
Mr. Dusit Pongsapipat	Disaster Mitigation Directing Center, DDPM
Mr. Paitoon Naktakae	Director, Safety Standard Section, Disaster Prevention Criteria Bureau, DDPM
Mr. Amnat Phonmart	Civil Engineer, Safety Standard Section, Disaster Prevention Criteria Bureau, DDPM
Ms. Duangnapa Uttamangkapong	RICB, DDPM
Ms. Kornisnan Wilawan	RICB, DDPM
Mr. Thaweep Limpakornwanich	RICB, DDPM

Japanese Side:

Ms. Mamiko Tanaka	Program Officer, Disaster Management Division 1, Water Resources and Disaster Management Group, Global Environment Department, JICA HQ
Ms. Kiyoka Takeuchi	Representative, JICA Thailand Office
Ms. Nutthakan Thasnanipan	Program Officer, JICA Thailand Office
Mr. Noritoshi Maehara	Chief Advisor/Disaster Management Institution Expert
Mr. Noboru Jitsuhiro	Co-Chief Advisor/Disaster Management Plan Expert
Mr. Makoto Kodama	Flood Management Expert/Project Coordinator

Annex-2

List of the Participants of JCC

Thai Side:

Deputy Permanent Secretary of MOE (Advisor of Committee)

Director-General of Department of Disaster Prevention and Mitigation (Chairman)

Deputy Director-General of DDPM (Vice Chairman)

Director of International Relation Bureau, MOE (Vice Chairman)

Director of Research and International Cooperation Bureau, DDPM (Secretariat)

Director of Disaster Prevention and Mitigation Policy Bureau, DDPM

Director of Disaster Prevention and Promotion Bureau, DDPM

Director of Disaster Prevention and Mitigation Academy: DPMA

Director, Bureau of International Cooperation, Office of Permanent Secretary for Education, MOE

Director of Bureau of Academic Affairs and Educational Standards, Office of Basic Education Commission, MOE

Representative(s) of Department of Mineral Resources: DMR

Representative(s) of Department of Local Administration: DOLA

Representative(s) of National Disaster Warning Center: NDWC

Representative(s) of Royal Irrigation Department: RID

Representative(s) of Thai Meteorological Department: TMD

Representative(s) of Water Resource Department: WRD

Representative(s) of Office of Women's Affairs and Family Development, Ministry of Social Development and Human Security

Representative of Thailand International Development Cooperation Agency: TICA

Personnel assigned by the Chairperson, if necessary

Japanese Side:

Ms. Mamiko Tanaka	Program Officer, Disaster Management Division 1, Water Resources and Disaster Management Group, Global Environment Department, JICA HQ
Mr. Akihisa Tanaka	Senior Representative, JICA Thailand Office
Ms. Kiyoka Takeuchi	Representative, JICA Thailand Office
Ms. Nutthakan Thasnanipan	Program Officer, JICA Thailand Office
Mr. Noritoshi Maehara	Chief Advisor/Disaster Management Institution Expert
Mr. Noboru Jitsuhiro	Co-Chief Advisor/Disaster Management Plan Expert
Mr. Makoto Kodama	Flood Management Expert/Project Coordinator

Annex-3

List of C/P Personnel

Name	Position	Remarks
Inter-Task Force Meeting		
1 Mr. Adthaporn Singhawichai	Director of Research and International Cooperation Bureau	Head
2 Ms.Luckkana Manimmanakorn	Deputy Director of Technical Sub-Bureau, DPMA	Representative of TF 3
3 Mr. Chainarong Vasanasomsithi	Director of Natural Disaster Policy Division, Disaster Prevention and Mitigation Policy Bureau	Representative of TF 1
4 Mr. Natchanon Sonprasert	Director of Participation Promotion Division, Disaster Prevention and Promotion Bureau	Representative of TF 2
5 Ms.Sararat Leepaiboon	MOE	Representative of TF 4
6 Mr. Arun Pinta	Acting Chief of Foreign Relations Sub-Bureau, RICB	Member and Secretary
7 Ms.Duangnapa Uttamangkapong	Plan and Policy Analyst	Coordinator,RICB,DDPM
8 Ms.Kornisnan Wilawan	Plan and Policy Analyst	Coordinator,RICB,DDPM
TF1: Disaster Managomont Planning		
1 Director of Disaster Prevention and Mitigation Policy Bureau, DDPM	Head	
2 Representative of MOE	Member	
3 Representative of DMR	Member	
4 Representative of DOLA	Member	
5 Representative of NDWC	Member	
6 Representative of RID	Member	
7 Representative of TMD	Member	
8 Representative of WRD	Member	
9 Representative of Disaster Prevention and Promotion Bureau, DDPM	Member	
10 Representative of DPMA	Member	
11 Representative of Disaster Prevention Criteria Bureau, DDPM	Member	
12 Director of Planning and Budget Division, Disaster Prevention and Mitigation Policy Bureau, DDPM	Member	
13 Japanese Experts	Member	
14 Mr. Chainarong Vasanasomsithi Director of Natural Disaster Policy Division, Disaster Prevention and Mitigation Policy Bureau	Member and Secretary	
15 Ms.Siriporn Wachirasuriya Plan and Policy Analyst	Member and Assistant Secretary	
16 Mr.Sithigon Kwandee Plan and Policy Analyst	Member and Assistant Secretary	

Name	Position	Remarks
TF2: CBDRM		
1 Director of Disaster Prevention and Promotion Bureau, DDPM	Head	
2 Representative of MOE	Member	
3 Representative of DMR	Member	
4 Representative of DOLA	Member	
5 Representative of Disaster Prevention and Mitigation Policy Bureau, DDPM	Member	
6 Representative of DPMA	Member	
7 Representative of Research and Development Sub-Bureau, Research and International Cooperation Bureau, DDPM	Member	
8 Representative from the target province (Demonstration and Replication)	Member	
9 Japanese Experts	Member	
10 Mr. Natchanon Sonprasert Director of Participation Promotion Division, Disaster Prevention and Promotion Bureau	Member and Secretary	
11 Ms. Oranuth Lo-Ounlum Plan and Policy Analyst Disaster Prevention and Promotion Bureau	Member and Assistant Secretary	
12 Mr. Dusit Pong Sapipat Plan and Policy Analyst Disaster Mitigation Directing Center	Member and Assistant Secretary	
TF3: Disaster Management Training		
1 Director of Disaster Prevention and Mitigation Academy: DPMA, DDPM	Head	
2 Representative of MOE	Member	
3 Representative of DMR	Member	
4 Representative of RID	Member	
5 Representative of TMD	Member	
6 Representative of Disaster Prevention and Promotion Bureau, DDPM	Member	
7 Japanese Experts	Member	
8 Ms. Luckkana Manimmanakorn Deputy Director of Technical Sub-Bureau, DPMA	Member and Secretary	
9 Ms. Paorumpai Janya Human Resources Development Official, DPMA	Member and Assistant Secretary	
10 Ms. Chakreeya Selthaseree Plan and Policy Analyst, DPMA	Member and Assistant Secretary	

Name	Position	Remarks
TF. 4 Disaster Education		
1 Deputy Permanent Secretaries	Head	
2 Representative of Office of the Vocational Education Commission	Member	
3 Director of Bureau of Academic Affairs and Educational Standards, Office of the Basic Education Commission	Member	
4 Director of Bureau of International Cooperation or Representative, Office of the Permanent Secretary	Member	
5 Director of Bureau of Policy and Strategy or Representative, Office of the Permanent Secretary	Member	
6 Director of Bureau of the Private Education Commission or Representative, Office of the Permanent Secretary	Member	
7 Director of Bureau of Inspection and Evaluation or Representative, Office of the Permanent Secretary	Member	
8 Director of Office of the Non-Formal and Informal Education or Representative, Office of the Permanent Secretary	Member	
9 JICA Experts	Member	
10 Representative of Department of Disaster Prevention and Mitigation (DDPM)	Member	
11 Chief of International Cooperation Unit Bureau of International Cooperation	Member and Secretary	
12 Foreign Relations Officer, Professional Bureau of International Cooperation	Member and Assistant Secretary	

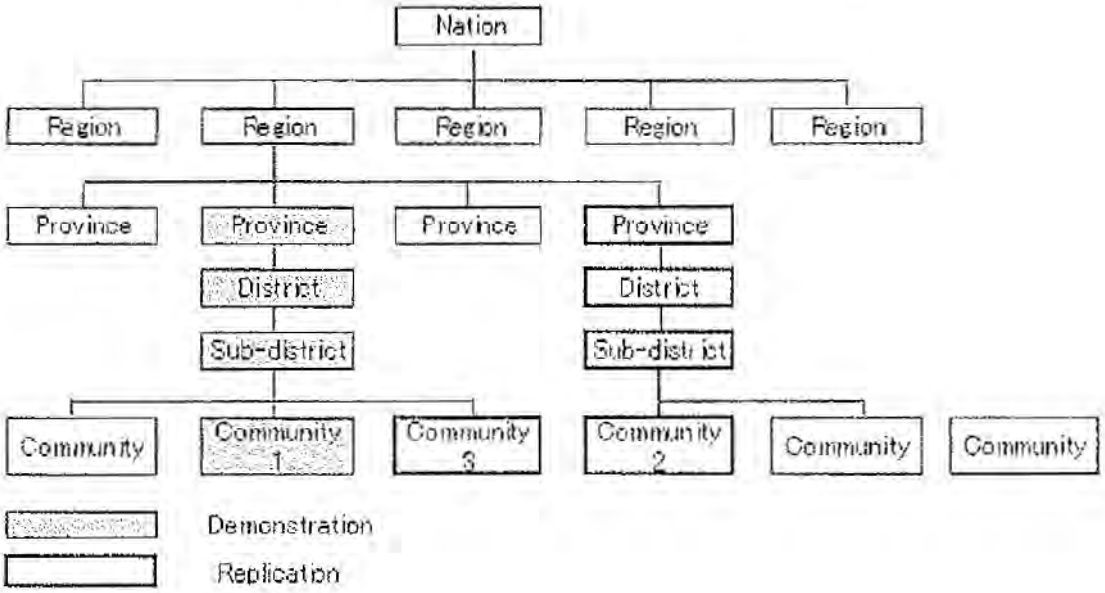
Annex-4 ANNEX 4 of the Minutes of Meeting dated October 8, 2009 between JICA and the Authorities Concerned

ANNEX 4: CRITERIA Of SELECTING TARGET AREAS

Both sides agreed to select two target provinces (Demonstration province and Replication Province) according to the criteria as follows,

(Controlling Factors)
1. Vulnerabilities of flood, flash flood and mudflow (Past disasters)
2. Accessibility from Bangkok and other provinces
3. Other factors aggravate disaster situations, such as deforestation, urbanization etc.

(Second Priority Social Factors)
1. Leadership, willingness, understanding and cooperation of leaders of province, district, and local administrations toward the Project
2. Good collaboration network among province, district, and local administrations
3. Human resources and budget allocation to implement the Project activities at province, district, and local administrations
4. Existing CBOs (Community Based Organizations)



notes

<English>		<Thai>
Region	:	DDPM Regional Centers and MOE Regional Offices
Province	:	Province
District	:	AMPUR
Sub-district	:	TAMBON
Community	:	MOOBAN

MINUTES OF MEETINGS
ON
JOINT COORDINATING COMMITTEE
FOR
THE PROJECT
ON
CAPACITY DEVELOPMENT IN DISASTER MANAGEMENT
IN THAILAND (PHASE-2)

AGREED UPON BETWEEN
THE AUTHORITIES CONCERNED OF THE GOVERNMENT
OF THE KINGDOM OF THAILAND
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

Bangkok, September 5, 2011

前原 規利

Mr. Noritoshi MAEHARA
JICA Expert
Japan International Cooperation Agency
Japan

W. Sanguanpong

Mr. Wiboon Sanguanpong
Director -General
Department of Disaster Prevention and
Mitigation,
Ministry of Interior

Churairat Sangboonnum

Ms. Churairat Sangboonnum
Deputy Permanent Secretary of Education
Ministry of Education

In response to the request of the Government of the Kingdom of Thailand, the Government of Japan has decided to conduct the technical cooperation concerning the "Project on Capacity Development in Disaster Management in Thailand (Phase 2)"(hereinafter referred to as "the Project"). The Japan side and the Thai side came to an agreement on the Record of Discussion (hereinafter referred to as "R/D") which was signed on March 9, 2010 between the Department of Disaster Prevention and Mitigation, Ministry of Interior (hereinafter referred to as "DDPM") and the Ministry of Education (hereinafter referred to as "MOE"), and Japan International Cooperation Agency (hereinafter referred to as "JICA").

Based on the R/D, JICA dispatched the Expert Team (hereinafter referred to as "the Team") headed by Mr. Noritoshi MAEHARA from June 7, 2010 as the first batch. The Team and Thai side (DDPM, MOE and other authorities concerned of the Project) had a series of discussion on the revision of the Project Design Matrix (hereinafter referred to as "PDM"), establishment of the New Task Forces for Flood Risk Management and Baseline Survey and Monitoring of CBDRM in Joint Coordinating Committee (hereinafter referred to as "JCC").

The list of the participants of JCC is attached as Annex 1.

Both sides come to agreement as follows;

1. Revision of the PDM

Both sides agreed upon the PDM Version 2.

The target groups, the target provinces and indicators of PDM have been revised as attached Annex 3.

The PDM Version 1 is also attached as Annex 2.

2. Establishment of New Task Forces

The following new Task Forces (hereinafter referred to as "TF") have been additionally proposed by Thai side to facilitate implementation of the Project.

2-1. TF-5: Flood Risk Management

The objectives and activities were explained by DDPM and JICA Experts as attached Annex 4. It was suggested from the representatives from several agencies that the scope of work and output should be clarified so that the output will have been attained in the project period.

The detail activity and output of the TF will be discussed among the related agencies and agreed upon in the next JCC.

The Proposed Activities and Output of TF-5 are as attached Annex 4 (the activities and output of TF-5 will be integrated into PDM after approval by the JCC).

The Proposed Plan of Operation of TF-5 is as attached Annex 5.

The Proposed members of the TF-5 are listed as Annex 6.

2-2. TF-6: Baseline Survey and Monitoring of CBDRM

In order to assess the present condition of the community and the progress of disaster management capacity by application of CBDRM, the baseline survey and monitoring survey will be conducted by Research and Development Sub-bureau of DDPM in collaboration with other bureau (if necessary). The representative of JICA Headquarters and JICA Expert proposed that the TF to be included in TF-CBDRM (TF-2). The status of the TF will be agreed upon in the next JCC.

Annex 1 The list of the participants for JCC
Annex 2 Project Design Matrix (Version 1)
Annex 3 Revised Project Design Matrix (Version 2)
Annex 4 Proposed Activity and Output of TF-5
Annex 5 Proposed Plan of Operation of TF-5
Annex 6 The members of the TF-5

ANNEX 1

The Second Joint Coordinating Committee Meeting (JCC)
on September 5, 2011 at Room 352, DDPM
LIST OF ATTENDANTS

No.	Name	Position	Organization
1	Mr. Srisombat Phornprasidhi	Deputy Director General	DDPM
2	Mr. Adthaporn Singhawichai	Director, Research and International Cooperation Bureau	DDPM
3	Mr. Paisal Wisaraporn	Director, Bureau of International Cooperation	MOE
4	Mr. Songchai Rohitachart	Director, Disaster Prevention and Promotion Bureau	DDPM
5	Mr. Montree Chanachaiwiboonwat	Director, Disaster Prevention and Mitigation Policy Bureau	DDPM
6	Mr. Suwith Kosuwan	Director, Active Fault Research Division	DMR
7	Mr. Sompop Sucharit	Senior Expert/ Geneal Inspector	RID
8	Ms. Sararat Leepaiboon	Office of Basic Education Commission	MOE
9	Ms. Rungarn Punpukdee	Foreign Relation Official	MOE
10	Ms. Watcharee Virapun	Director of Weather Forecast Bureau	TMD
11	Mr. Supon Sodsoon	Chief of MEKHALA Center	DWR
12	Ms. Somorn Srisiri	Social Officer	OWAF
13	Mr. Sirichai Manachai	Director, Monitoring and Evaluation Section	DOLA
14	Mr. Nathapong Wongwaen	General Administrative Officer	DOLA
15	Mr. Wattanawit Gajaseni	Director, Countries Partnership Branch	TICA
16	Ms. Pantila Saengchan	Foreign Relation Official	TICA
17	Mr. Yoichi ONO	Section Chief	ESCAP
18	Mr. Tetsuo HASEGAWA	First Secretary	Embassy of Japan
19	Mr. Ryotaro HAYASHI	Secondary Secretary	Embassy of Japan
20	Ms. Chatchadaporn Boonpeeranat	Director Section of Natural Disaster	DDPM
21	Mr. Sittigorn Kwandee	Plan and Policy Analyst	DDPM
22	Mr. Natchanon Sonprasert	Director Section of Participation Promotion	DDPM
23	Ms. Wilairat Kahasatien	Human Resources Development Officer	DDPM
24	Ms. Kamonwan Chidpakdee	Plan and Policy Analyst	DDPM
25	Ms. Oranuth Lo-unlum	Plan and Policy Analyst	DDPM
26	Ms. Pallarin Phukit	Plan and Policy Analyst	DDPM
27	Mrs. Krongphan Sudsai	Scientist	DDPM
28	Mr. Paitoon Naktae	Chief of Standard Safety Division	DDPM
29	Ms. Luckana Manimmanakorn	Deputy Director of DPMA	DDPM
30	Mr. Raywat Pongsuwan	Deputy Director of DPMA	DDPM
31	Mr. Chaitawat Siwabowon	Deputy Director of DPMA	DDPM
32	Mr. Kittikorn Thepyooamnuay	Chief of Technical Support Side	DDPM
33	Ms. Paorumpai Janya	Chief of Technical Side	DDPM
34	Ms. Chakreeya Setthaseree	Plan and Policy Analyst	DDPM
35	Ms. Saisanom Lugtong	Chief of Research and Development	DDPM
36	Ms. Woraphak Krearjaiwang	Plan and Policy Analyst	DDPM
37	Ms. Chanida Timjarath	Plan and Policy Analyst	DDPM
38	Mr. Anusorn Keawkangwan	Director of Regional Center 10 Lampang	DDPM
39	Mr. Chumporn Intathep	Chief of DDPM Provincial Office, Lamphun	DDPM
40	Ms. Kamolwan Klubsri	Human Resources Development Officer	DDPM
41	Mr. Nattawut Singkaew	DPM Provincial Office Lampang	DDPM
42	Mrs. Panadda Puchareonsilp	Chief of Foreign Relations Sub-Bureau	DDPM
43	Ms. Duangnapa Uttamangkapong	Plan and Policy Analyst	DDPM
44	Ms. Kornisnan Wilanwan	Plan and Policy Analyst	DDPM
45	Ms. Yaowapapan Khongkhasri	Plan and Policy Officer	DDPM
46	Ms. Sippaka Bimol	Plan and Policy Officer	DDPM
47	Ms. Yuki TANAKA	Program Officer	JICA HQ
48	Mr. Hajime TANIGUCHI	Representative	JICA Thailand Office
49	Mr. Kobchai Songsrisanga	Program Officer	JICA Thailand Office
50	Mr. Noritoshi MAEHARA	Leader of JICA Expert Team	JICA
51	Ms. Hiroko KONDO	Disaster Education Advisor	Nagoya University
52	Mr. Toru KOIKE	JICA Expert	JICA
53	Mr. Jun ONODERA	JICA Expert	JICA
54	Mr. Arata SASAKI	JICA Expert	JICA

ANNEX 7: Project Design Matrix (PDM)

Project Title: The Project on Capacity Development in Disaster[1] Management (Phase-2) Period: 2010 - 2014 (4 years)
Implementing Agency: Department of Disaster Prevention and Mitigation: DDPM, Co-Implementing Agency: Ministry of Education: MOE
Target Groups: (direct) DDPM staff at central and provincial levels. (indirect) community people in the target areas.
Target Provinces: (to be selected. Two provinces as "model province A" and "model province B")

Version 1

(Version 1)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal (in 3-5 years after the Project ends): Implementation of disaster risk management activities is improved and scaled up.	1. Provincial Disaster Prevention and Mitigation Plans and Action Plans are formulated in at least **Y** provinces other than the target provinces. 2. Evacuation plans are prepared by **Y** communities (other than the Project target communities) with support of DDPM Regional Centers and Provincial offices. 3. Disaster education is implemented by at least **Y** schools.	1. Provincial Disaster Prevention and Mitigation Plans and Action Plans 2. Evacuation plans 3. Record of schools	
Project Purpose (by the end of the Project) Capacity of DDPM is enhanced to scale up Disaster Prevention and Mitigation Action Plans, Community Based Disaster Risk Management: CBDRM and disaster education, collaborating with concerned agencies, provincial and local levels.	1. Plans for up-scaling are included in the National Disaster Prevention and Mitigation Action Plan. 2. Plans for up-scaling within the provinces are included in the Provincial Disaster Prevention and Mitigation Action Plans of the target provinces.	Disaster Prevention and Mitigation Action Plans	Mission and responsibility of DDPM regarding disaster management is maintained by law.
Outputs **<Task force – Disaster Management Planning>** 1. Disaster Prevention and Mitigation Action Plans with considerations for vulnerable people are formulated for national, provincial and local authorities[2] (in the target provinces).	1. Disaster Prevention and Mitigation Action Plans are formulated at national, provincial (target provinces) and local levels (**X** local authorities).	1 Disaster Prevention and Mitigation Action Plans at national, provincial and local levels	

No revision is necessary for below:

Annex 2

[1] "Disaster" means "natural disaster" in this PDM. Man-made disasters such as fire and chemical disasters are not included.
[2] "Local authorities" refers to sub-district (or Tambon) administrations, municipalities, or other local administrations by law.

Project Design Matrix (PDM)

Project Title: The Project on Capacity Development in Disaster Management (Phase-2) Period: 2010 - 2014 (4 years)
Implementing Agency: Department of Disaster Prevention and Mitigation: DDPM, Co-Implementing Agency: Ministry of Education: MOE
Target Groups: (direct) DDPM staff at central and provincial levels, (indirect) staff of local authorities and community people in the target areas.
Target Provinces: Lampang and Lamphun Provinces, additionally CBDRM and disaster education is conducted in Nakhon Si Thammarat Province

Version 2

(Version **2**)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal (in 3-5 years after the Project ends): Implementation of disaster risk management activities is improved and scaled up.	1. Provincial Disaster Prevention and Mitigation Plans and Action Plans are formulated in all **76** provinces and revised (if necessary). 2. All 76 provinces conduct table-top exercise (TTX) at least one district (Amphur) together with the province to verify the disaster prevention and mitigation action plan at local level. 3. Evacuation plans are prepared by more than **100** communities every year (other than the Project target communities) with support of DDPM Regional Centers and Provincial offices. 4. Disaster education is implemented by at least four schools. Each school functions as a learning center at the initiative of ESA Office in four major regions in Thailand, respectively.	1. Provincial Disaster Prevention and Mitigation Plans and Action Plans 2. Evaluation report of TTX 3. Evacuation plans 4. Record of workshop report.	
Project Purpose (by the end of the Project) Capacity of DDPM is enhanced to scale up Disaster Prevention and Mitigation Action Plans, Community Based Disaster Risk Management: CBDRM and disaster education, collaborating with concerned agencies, provincial and local levels.	3. Plans for up-scaling are included in the National Disaster Prevention and Mitigation Action Plan. 4. Plans for up-scaling within the provinces are included in the Provincial Disaster Prevention and Mitigation Action Plans of the target provinces.	Disaster Prevention and Mitigation Action Plans	Mission and responsibility of DDPM regarding disaster management is maintained by law.
Outputs **<Task force – Disaster Management Planning>** 1. Disaster Prevention and Mitigation Action Plans with considerations for vulnerable people are formulated for national, provincial and local authorities (in the target provinces).	1. Disaster Prevention and Mitigation Action Plans are formulated at national, provincial (target provinces) and local levels (At least **80** local authorities or 80% in Lampang and **45** local authorities or 80% in Lamphun).	1. Disaster Prevention and Mitigation Action Plans at national, provincial and local levels	
<Task force - CBDRM> 2. Capacity of DDPM staff as facilitators on implementation of Community Based Disaster Risk Management (CBDRM) is enhanced.	2-1 CBDRM manuals and facilitator's guide developed by the JICA Project Phase I (for facilitators and for communities) are improved and are utilized in the target communities. 2-2 Disaster training and educational materials (for facilitators and for communities) are improved and are utilized in the target communities. 2-3 CBDRM action plan for implementation is developed by	2-1-1 CBDRM manuals and activity reports 2-1-2 CBDRM Knowledge of facilitators and community people (confirmed by observation) 2-2-1 Educational materials 2-2-2 CBDRM Knowledge of facilitators and community people (confirmed by observation) 2-3 CBDRM implementation action plan and	

Annex 3

	DDPM.	activity reports	
<Task force – Disaster Management Training > 3. Training curriculum at DPMA is improved.	3-1 At least one curriculum on disaster management on natural disaster (flood, flash flood and mud flow) for DDPM staff is improved.	3-1 Curriculum	
<Task force – Disaster Education> 4. Based on the Natural disaster preparedness educational curriculum, schools have improved preparedness for disaster.	4-1 At least three schools in the target provinces implement disaster education on natural disasters as model schools supported by MOE headquarters and the first model schools from Phase I. 4-2 100 teachers from natural disaster prone areas are trained on disaster education.	4-1 Record of model schools observation of classes 4-2 Records of training, workshops and seminars (Number of participants, content of training, date, level of achievement, etc.)	
Activities 0-0 DDPM, in consultation with the Japanese experts, selects target areas: ➢ Model province A, Model community (MOOBAN) a1 and a2 in the model province A. ➢ Model province B, Model community (MOOBAN) b1 in the model province B. **<TF Disaster Management Planning>** 1-1 TF Disaster Management Planning designs capacity development plan on their activities and monitoring/ evaluation. 1-2 TF conduct training for 300 DDPM staff at central, regional and provincial levels how to formulate disaster prevention and mitigation plans and action plans, focusing on priority items. 1-3 DDPM staff at central and provincial levels review and/or develop provincial disaster prevention and mitigation plans, focusing on priority items, in consideration of vulnerable people for disasters, for the model province A, followed by the model province B. 1-4 DDPM staff at central and provincial levels prepares national and provincial disaster prevention and mitigation action plans, and target local authorities in target provinces prepare local disaster prevention and mitigation action plans, focusing on priority items, in which method of up-scaling, staffing and budget are identified and incorporated in the model province A, followed by the model province B. 1-5 TF conducts table-top exercises to revise disaster prevention and mitigation plans and action plans with concerned organizations. 1-6 TF and concerned provincial staff modify disaster prevention and mitigation plans and action plans, based on the experience of table top exercises. 1-7 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staff such as study tour, case study forum, seminars, and newsletters. **<TF CBDRM>** 2-1 TF-CBDRM designs capacity development plan on TF-CBDRM activities and monitoring/evaluation. 2-2 TF reviews and revises CBDRM manuals and facilitator's guide seeking comments from 76 provinces and tests them at the model community (MOOBAN) a1 and finalizes them for publication.		**Inputs** **<Thai side>** Counterparts Project Director Project Manager Task force members Administrative staff Project office and facilities at DDPM Working space at MOE Operational costs **<Japanese Side>** Experts Disaster Management Plan Disaster Management Institution Sediment Disaster Management Flood Management Community Based Disaster Risk Management Disaster Education Counterpart Training in Japan Operational costs	**Preconditions** Human resources and budget necessary for the implementation of the Project are provided by the Thai side.

2-3 TF conducts training for at least 80 DDPM staff at central, regional and provincial levels to facilitate CBDRM.

2-4 Trained DDPM provincial staff in the model province A facilitates CBDRM activities, including Disaster Prevention and Mitigation Action Plans for local authorities at model community (MOOBAN) a1 in collaboration with the local model school.

2-5 Trained DDPM provincial staff in the model province B facilitates CBDRM activities, including Disaster Prevention and Mitigation Action Plans for local authorities at model community b1 in collaboration with the local model school.

2-6 Trained DDPM provincial staff in the model province A facilitates CBDRM activities, including Disaster Prevention and Mitigation Action Plans for local authorities at model community a2 in the model province A in collaboration with the local model school.

2-7 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staff such as study tour, case study forum, seminars, and newsletters.

<TF Disaster Management Training>

3-1 TF-Disaster Management Training designs a capacity development plan for its activities and monitoring/evaluation.

3-2 TF develops guidelines for evaluation and monitoring of training.

3-3 TF conducts needs assessment for training in collaboration with other task forces.

3-4 TF revises standard disaster management curriculum in DPMA training courses on flood, flash flood and mud flow.

3-5 TF, in collaboration with concerned organizations, develops training modules and materials to synchronize training curriculum on disaster management (flood, flash flood and mud flow), CBDRM.

3-6 TF, in collaboration with concerned organizations, train master trainers for DDPM staff.

3-7 Master trainers train 100 DDPM staff of disaster management on flood, flash flood and mud flow.

3-8 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staffs such as study tour, case study forum, seminars, and newsletters.

<TF Disaster Education>

4-1 DDPM and Ministry of Education discuss and agree on the roles of each agency to implement TF-disaster education activities.

4-2 TF in collaboration with OBEC develops model curriculum of disaster education in schools on flood, flash flood and mudflow.

4-3 TF in collaboration with OBEC modifies textbooks and teachers' guide.

4-4 TF selects one model school a1 in the model community a1, one model school a2 in the model community a2 in the model province A and one model school b1 in the model community b1 in the model province B for planning curriculum of school disaster education and conducting model lessons.

4-5 TF in collaboration with MOE trains 40 master teachers.

4-6 Master teachers train at least 100 teachers how to teach disaster education at schools in cooperation with local communities.

4-7 Master teachers conduct model classes for disaster education at the model school a1 in the model community

(MOOBAN) a1, followed by one model school a2 in model community a2 in model province A and one model school b1 in model community b1 in model province B. 4-8 Trained teachers by Master teachers conduct disaster education at their own schools. 4-9 TF in collaboration with MOE develops one model school as information center of disaster education, followed by two model schools in two provinces. 4-10 TF in collaboration with OBEC reviews the process and revises curriculum. 4-11 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staffs such as study tour, case study forum, seminars, and newsletters.		

Project Design Matrix for TF5 (Flood Risk Management)

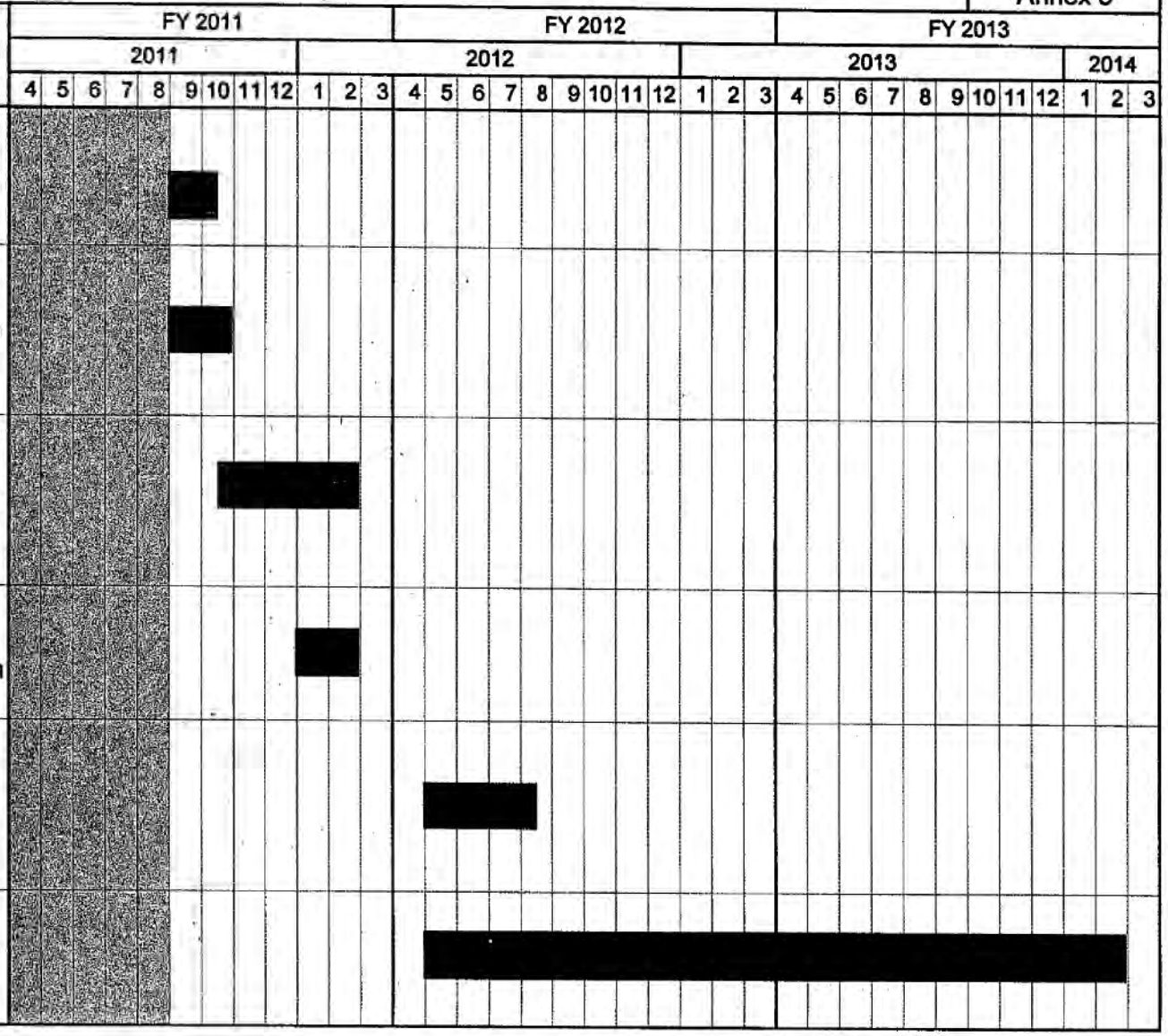
Annex 4

Narrative Summary	Objectively Verifiable Indicators	Means of Verification
【Output】 <Task force – Flood Risk Management> Knowledge and technical capacity of DDPM on hazard mapping, early warning system and design of structural measures are enhanced.	5-1 Technical tutorial manuals on hydrologic analysis, flood modeling and hazard mapping are developed. 5-2 Technical tutorial manuals on early warning system and structural measures for flood mitigation and prevention are developed. 5-3 TF conducts training on hazard mapping, early warning system and structural measures targeting all of 18 DPM regional centers using the above manuals.	5-1 Tutorial manuals on hydrologic analysis, flood modeling and hazard mapping 5-2 Tutorial manuals on early warning system and structural measures for flood mitigation and prevention 5-3 Record of training (number of regional centers participating in the trainings)
【Activity】 <Task force – Flood Risk Management> 5-1 TF Hazard Mapping designs capacity development plan on its activities and monitoring/evaluation. 5-2 TF selects one (1) model site in Lampang or Lamphun provinces based on risk area maps which are being prepared by the both provinces. 5-3 TF analyzes design rainfall and hydrograph of the model site using hydrologic/runoff analysis, and prepares a hazard map of the model site. 5-4 TF prepares the technical tutorial manuals of hydrologic analysis, flood modeling and hazard mapping taking the model site as an example. 5-5 TF evaluates the effect of flood control structures using flood analysis model, and prepare the technical tutorial manual on early warning system and plan/design of flood control structures. 5-6 TF conducts training on hazard mapping, early warning system and structural measures targeting DPM regional centers using the above manuals.		

Plan of Operation

Annex 5

No	Activity
5-1	TF Hazard Mapping designs capacity development plan on its activities and monitoring/evaluation.
5-2	TF selects a model site in Lampang or Lamphun provinces based on risk area maps which are being prepared by the both provinces.
5-3	TF analyzes design rainfall and hydrograph of the model site using hydrologic/runoff analysis, and prepares a flood hazard map of the model site.
5-4	TF prepares the technical tutorial manuals of hydrologic analysis, flood modeling and hazard mapping taking the model site as an example.
5-5	TF evaluates the effect of flood control structures using flood analysis model, and prepare the technical tutorial manual on early warning system and plan/design of flood control structures.
5-6	TF conducts training on hazard mapping, early warning system and structural measures targeting DPM regional centers using the above manuals.



Annex 6

The members of the TF-5

Name	Position
Mr. Suraphol Lekkao	Director of Disaster Prevention Criteria Bureau, DDPM
Mr. Paitoon Naktae	Chief of Safety Standard Sub-Bureau, Disaster Prevention Criteria Bureau, DDPM
Mr. Monchai Manosamuth	Safety Standard Sub-Bureau, Disaster Prevention Criteria Bureau, DDPM
Mr. Amnart Pholmart	Safety Standard Sub-Bureau, Disaster Prevention Criteria Bureau, DDPM
Mr. Banyat Yaiqnoo Luam	Safety Standard Sub-Bureau, Disaster Prevention Criteria Bureau, DDPM
Mr. Somsak Wan-Seng	Safety Standard Sub-Bureau, Disaster Prevention Criteria Bureau, DDPM
Mr. Kriruit Danpitak	Safety Standard Sub-Bureau, Disaster Prevention Criteria Bureau, DDPM
Mr. Somchy Luengchatchi	Safety Standard Sub-Bureau, Disaster Prevention Criteria Bureau, DDPM
Ms. Ladda Noycomesin	Safety Standard Sub-Bureau, Disaster Prevention Criteria Bureau, DDPM
Representative	Department of Mineral Resources (DMR)
Representative	Royal Irrigation Department (RID)
Representative	Thai Meteorological Department (TMD)
Representative	Water Resources Department (RID)
Representative	Land Development Department (LDD)

MINUTES OF MEETING

ON

JOINT COORDINATING COMMITTEE

FOR

THE PROJECT

ON

CAPACITY DEVELOPMENT IN DISASTER MANAGEMENT IN THAILAND (PHASE-2)

AGREED UPON BETWEEN

THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF THE KINGDOM OF THAILAND

AND

JAPAN INTERNATIONAL COOPERATION AGENCY

Bangkok, October 4, 2011

前原 規利

Mr. Noritoshi MAEHARA
JICA Expert
Japan International Cooperation Agency
Japan

W. Sanguanpong

Mr. Wiboon Sanguanpong
Director -General
Department of Disaster Prevention and Mitigation,
Ministry of Interior

Churairat Sangboonnum

Ms. Churairat Sangboonnum
Deputy Permanent Secretary of Education
Ministry of Education

In response to the request of the Government of the Kingdom of Thailand, the Government of Japan has decided to conduct the technical cooperation concerning the "Project on Capacity Development in Disaster Management in Thailand (Phase 2)"(hereinafter referred to as "the Project"). The Japan side and the Thai side came to an agreement on the Record of Discussion (hereinafter referred to as "R/D") which was signed on March 9, 2010 between the Department of Disaster Prevention and Mitigation, Ministry of Interior (hereinafter referred to as "DDPM") and the Ministry of Education (hereinafter referred to as "MOE"), and Japan International Cooperation Agency (hereinafter referred to as "JICA"). Based on the R/D, JICA dispatched the Expert Team (hereinafter referred to as "the Team") headed by Mr. Noritoshi MAEHARA from June 7, 2010.

The Team and Thai Side (DDPM, MOE and other authorities concerned of the Project) discussed on 1) establishment of a new task force for flash flood risk management, 2) implementation of baseline and monitoring survey of CBDRM by the Research and Development Sub-bureau of DDPM, and 3) other matters in the third (3rd) Joint Coordinating Committee (hereinafter referred to as "JCC"). The list of the participants is attached as ANNEX-1. As a result of the discussion, the Team and Thai Side agreed upon the matters as follows:

1. Establishment of Task Force - Flash Flood Risk Management

   Task Force - Flash Flood Risk Management (TF-5) will be established to enhance knowledge and technical capacity of DDPM on hazard mapping, early warning system and design of structural measures. The project activity will be started from October 2011. The project design matrix (PDM), plan of operation (PO), and member list of TF-5 are presented in ANNEX-2 and the integrated PDM Version 3 is shown in ANNEX-3.

2. Baseline and Monitoring Survey of CBDRM

   In order to assess the present condition and the progress of disaster management capacity of the target communities, a series of baseline and monitoring surveys is indispensable. The baseline survey of the first two communities had been conducted by sub-contractor with social scientists.

   However, since Research and Development Sub-bureau of DDPM is capable to conduct such survey, a series of baseline and monitoring surveys for the remaining two communities will be conducted by the officers of Research and Development Sub-bureau as the Inter-Task Force members of the Project.

Annexes:

Annex 1 The list of the participants for the third (3rd) JCC

Annex 2 Project Design Matrix, Plan of Operation, and member list of TF-5

Annex 3 Project Design Matrix (Version 3)

JCC Meeting Participant List as of October 4, 2011

1. Mr.Prateep Kiratirekha	Deputy Director General, DDPM
2. Mr.Adthaporn Singhawichai	Director RICB
3. Mr.Suwit Kosuwan	Director of Active Fault Research Division. DMR
4. Mr.Sompop Sucharit	Senior Expert/ General Inspector, RID
5. Ms.Sararat Leepaiboon	OBEC, MOE
6. Mr.Somsong Ngamwong	Permanent Secretary, MOE
7. Ms.Rungarn Punpukdee	Foreign Relations Official, Permanent Secretary, MOE
8. Ms.Watcharee Virapun	Director of Weather Forecast Bureau, TMD
9. Mr.Supon Sodsoon	Chief of Mekhala, DWR
10. Ms.Samorn Srisiri	Social Worker, Office of Women's Affair and Family Development Ministry of Social Development and Human Security
11. Ms.Chutinan Phoomglin	Social Worker, Office of Women's Affair and Family Development Ministry of Social Development and Human Security
12. Mr. Chayakorn Wittayawoch	Social Worker, Office of Women's Affair and Family Development Ministry of Social Development and Human Security
13. Ms.Pantila Saengchan	Program Development, TICA
14. Ms.Donhatai Jirasingh	Development Cooperation Officer, TICA
15. Mr. Phuthon Chantanavivate	Hydrologist, NDWC
16. Ms. Chachadaporn Boonperanat	Director Section c Natural Disaster, DDPM
17. Mr.Sittigorn Kwandee	Plan and Policy Analyst, DDPM
18. Ms.Daowan Saeng- Ong	Plan and Policy Analyst, DDPM
19. Mr.Natchanon Sonprasert	Director Section of Participation Promotion, DDPM
20. Mr.Kamonwan Chidpakdee	Plan and Policy Analyst, DDPM
21. Ms.Oranuth Lo-unlum	Plan and Policy Analyst, DDPM
22. Ms. Pallarin Phukit	Plan and Policy Analyst, DDPM

23. Mrs .Krongpan Sudsai	Scientist, DDPM
24. Mr. Paitoon Naktae	Chief of Standard Safety Division, DDPM
25. Mr. Amnart Polmart	Civil Engineer, DDPM
26. Mr. Sittiporn Petchdee	Civil Engineer, DDPM
27. Mrs. Ampaporn Kongkhane	Plan and Policy / alyst, DDPM
28. Ms. Luckana Manimmanakorn	Deputy Director of DPMA, DDPM
29. Mr. Raywat Pongsuwan	Deputy Director of DPMA, DDPM
30. Mr. Chaitawat Siwabovorn	Deputy Director of DPMA, DDPM
31. Mr. Kittikorn Thepyooamnuay	Chief of Technician Support side, DPMA, DDPM
32. Ms.Paorumpai Janya	Chief of Technician Side, DPMA, DDPM
33. Ms. Chakreeya Setthaseree	Plan and Policy Analyst, DPMA, DDPM
34. Ms.Woraphak Krearjaiwang	Plan and Policy Analyst, DDPM
35. Ms. Cha Ja Timjaras	Plan and Policy Analyst, DDPM
36. Ms. Kamolwan Klubsri	Plan and Policy Analyst, DDPM
37. Mrs. Panadda Puchareonsilp	Chief of Foreign Relations Official, DDPM
38. Ms. Duangnapa Uttamangkapong	Foreign Relations Official, DDPM
39. Ms. Kornisnan Wilawan	Plan and Policy Analyst. DDPM
40. Ms. Yaowapapan Khongkhasri	Plan and Policy Officer, DDPM
41. Ms.Sippaka Bimol	Plan and Policy Officer, DDPM
42. Mr. Hajime TANIGUCHI	Representative, JICA Thailand Office
43. Mr.Kobchai Songsrisanga	Program Officer JICA Thailand Office
44. Mr.Noritoshi Maehara	Chief of JICA Expert
45. Mr.Toru KOIKE	JICA Expert

Project Design Matrix for TF5 (Flash Flood Risk Management)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification
【Output】 **<Task force - Flash Flood Risk Management>** Knowledge and technical capacity of DDPM on hazard mapping, early warning system and design of structural measures are enhanced.	5-1 Manuals on rainfall / flood analysis and hazard mapping are developed. 5-2 Manuals on early warning system and structural measures for flood mitigation and prevention are developed. 5-3 Training targeting on all of 18 DPM regional centers using the above manuals.	5-1 Manuals on rainfall / flood analysis and hazard mapping 5-2 Manuals on early warning system and structural measures. 5-3 Record of training (number of regional centers participating in the trainings)
【Activity】 **<Task force - Flash Flood Risk Management>** 5-1 TF designs capacity development plan on its activities and monitoring/evaluation. 5-2 TF selects one sub-basin model site in Lampang or Lamphun province based on GIS base risk area maps which are being prepared by DDPM.. 5-3 TF prepares manuals for rainfall / flood analysis and hazard mapping through the process of the practical training taking the model site as an example. 5-4 TF prepares manuals for improvement of early warning system and for evaluation of structural measures, in which the result of 5-3 will be functionally utilized. 5-5 TF conducts training on hazard mapping, early warning system and structural measures targeting DPM regional centers using the above manuals.		

Annex 2

Plan of Operation

No	Activity	FY 2011												FY 2012												FY 2013												
		2011												2012												2013												2014
		4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
5-1	TF designs capacity development plan on its activities and monitoring/evaluation.							■	■																												
5-2	TF selects one sub-basin model site in Lam Pang or Lam Phun provinces based on GIS base risk area maps which are being prepared by DDPM.							■	■	■																											
5-3	TF prepares manuals for rainfall / flood analysis and hazard mapping through the process of the practical training taking the model site as an example.								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
5-4	TF prepares manuals for improvement of early warning system and for evaluation of structural measures, in which the result of 5-3 will be functionally utilized.													■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
5-5	TF conducts training on hazard mapping, early warning system and structural measures targeting DPM regional centers using the above manuals.															■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

The members of the TF-5

Name	Position
Mr. Suraphol Lekkao	Director of Disaster Prevention Criteria Bureau, DDPM
Mr. Paitoon Naktae	Chief of Safety Standard Sub-Bureau, Disaster Prevention Criteria Bureau, DDPM
Mr. Monchai Manosamuth	Safety Standard Sub-Bureau, Disaster Prevention Criteria Bureau, DDPM
Mr. Amnart Pholmart	Safety Standard Sub-Bureau, Disaster Prevention Criteria Bureau, DDPM
Mr. Banyat Yaiqnoo Luam	Safety Standard Sub-Bureau, Disaster Prevention Criteria Bureau, DDPM
Mr. Somsak Wan-Seng	Safety Standard Sub-Bureau, Disaster Prevention Criteria Bureau, DDPM
Mr. Kriruit Danpitak	Safety Standard Sub-Bureau, Disaster Prevention Criteria Bureau, DDPM
Mr. Somchy Luengchatchi	Safety Standard Sub-Bureau, Disaster Prevention Criteria Bureau, DDPM
Ms. Ladda Noycomesin	Safety Standard Sub-Bureau, Disaster Prevention Criteria Bureau, DDPM
Representative	Department of Mineral Resources (DMR)
Representative	Royal Irrigation Department (RID)
Representative	Thai Meteorological Department (TMD)
Representative	Water Resources Department (RID)
Representative	Land Development Department (LDD)

Project Design Matrix (PDM)

Project Title: The Project on Capacity Development in Disaster Management (Phase-2) Period: 2010 - 2014 (4 years)
Implementing Agency: Department of Disaster Prevention and Mitigation: DDPM, Co-Implementing Agency: Ministry of Education: MOE
Target Groups: (direct) DDPM staff at central and provincial levels. (indirect) staff of local authorities and community people in the target areas.
Target Provinces: Lampang and Lamphun Provinces, additionally CBDRM and disaster education is conducted in Nakhon Si Thammarat Province

Version 3

(Version **3**)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal (in 3-5 years after the Project ends): Implementation of disaster risk management activities is improved and scaled up.	1. Provincial Disaster Prevention and Mitigation Plans and Action Plans are formulated in all **76** provinces and revised (if necessary). 2. All 76 provinces conduct table-top exercise (TTX) at least one district (Amphur) together with the province to verify the disaster prevention and mitigation action plan at local level. 3. Evacuation plans are prepared by more than **100** communities every year (other than the Project target communities) with support of DDPM Regional Centers and Provincial offices. 4. Disaster education is implemented by at least four schools. Each school functions as a learning center at the initiative of ESA Office in four major regions in Thailand, respectively.	1. Provincial Disaster Prevention and Mitigation Plans and Action Plans 2. Evaluation report of TTX 3. Evacuation plans 4. Record of worksbop report.	
Project Purpose (by the end of the Project) Capacity of DDPM is enhanced to scale up Disaster Prevention and Mitigation Action Plans, Community Based Disaster Risk Management: CBDRM and disaster education, collaborating with concerned agencies, provincial and local levels.	1. Plans for up-scaling are included in the National Disaster Prevention and Mitigation Action Plan. 2. Plans for up-scaling within the provinces are included in the Provincial Disaster Prevention and Mitigation Action Plans of the target provinces.	Disaster Prevention and Mitigation Action Plans	Mission and responsibility of DDPM regarding disaster management is maintained by law.
Outputs **<Task force – Disaster Management Planning>** 1. Disaster Prevention and Mitigation Action Plans with considerations for vulnerable people are formulated for national, provincial and local authorities (in the target provinces).	1. Disaster Prevention and Mitigation Action Plans are formulated at national, provincial (target provinces) and local levels (At least **80** local authorities or 80% in Lampang and **45** local authorities or 80% in Lamphun).	1. Disaster Prevention and Mitigation Action Plans at national, provincial and local levels	
<Task force - CBDRM> 2. Capacity of DDPM staff as facilitators on implementation of Community Based Disaster Risk Management (CBDRM) is enhanced.	2-1 CBDRM manuals and facilitator's guide developed by the JICA Project Phase I (for facilitators and for communities) are improved and are utilized in the target communities. 2-2 Disaster training and educational materials (for facilitators and for communities) are improved and are utilized in the target communities.	2-1-1 CBDRM manuals and activity reports 2-1-2 CBDRM Knowledge of facilitators and community people (confirmed by observation) 2-2-1 Educational materials 2-2-2 CBDRM Knowledge of facilitators and community people (confirmed by observation)	

Annex 3

	2-3 CBDRM action plan for implementation is developed by DDPM.	2-3 CBDRM implementation action plan and activity reports	
<Task force – Disaster Management Training > 3. Training curriculum at DPMA is improved.	3-1 At least one curriculum on disaster management on natural disaster (flood, flash flood and mud flow) for DDPM staff is improved.	3-1 Curriculum	
<Task force – Disaster Education> 4. Based on the Natural disaster preparedness educational curriculum, schools have improved preparedness for disaster.	4-1 At least three schools in the target provinces implement disaster education on natural disasters as model schools supported by MOE headquarters and the first model schools from Phase 1. 4-2 100 teachers from natural disaster prone areas are trained on disaster education.	4-1 Record of model schools observation of classes 4-2 Records of training, workshops and seminars (Number of participants, content of training, date, level of achievement, etc.)	
<Task force – Flash Flood Risk Management> 5. Knowledge and technical capacity of DDPM on hazard mapping, early warning system and design of structural measures are enhanced..	5-1 Manuals on rainfall / flood analysis and hazard mapping are developed. 5-2 Manuals on early warning system and structural measures for flood mitigation and prevention are developed. 5-3 Training targeting on all of 18 DPM regional centers using the above manuals.	5-1 Manuals on rainfall / flood analysis and hazard mapping 5-2 Manuals on early warning system and structural measures. 5-3 Record of training (number of regional centers participating in the trainings)	
Activities 0-0 DDPM, in consultation with the Japanese experts, selects target areas: ➢ Model province A, Model community (MOOBAN) a1 and a2 in the model province A, ➢ Model province B, Model community (MOOBAN) b1 in the model province B. **<TF Disaster Management Planning>** 1-1 TF Disaster Management Planning designs capacity development plan on their activities and monitoring/ evaluation. 1-2 TF conduct training for 300 DDPM staff at central, regional and provincial levels how to formulate disaster prevention and mitigation plans and action plans, focusing on priority items. 1-3 DDPM staff at central and provincial levels review and/or develop provincial disaster prevention and mitigation plans, focusing on priority items, in consideration of vulnerable people for disasters, for the model province A, followed by the model province B. 1-4 DDPM staff at central and provincial levels prepares national and provincial disaster prevention and mitigation action plans, and target local authorities in target provinces prepare local disaster prevention and mitigation action plans, focusing on priority items, in which method of up-scaling, staffing and budget are identified and incorporated in the model province A, followed by the model province B. 1-5 TF conducts table-top exercises to revise disaster prevention and mitigation plans and action plans with concerned		**Inputs** **<Thai side>** Counterparts Project Director Project Manager Task force members Administrative staff Project office and facilities at DDPM Working space at MOE Operational costs **<Japanese Side>** Experts Disaster Management Plan Disaster Management Institution Sediment Disaster Management Flood Management	**Preconditions** Human resources and budget necessary for the implementation of the Project are provided by the Thai side.

organizations. 1-6 TF and concerned provincial staff modify disaster prevention and mitigation plans and action plans, based on the experience of table top exercises. 1-7 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staff such as study tour, case study forum, seminars, and newsletters. **<TF CBDRM>** 2-1 TF-CBDRM designs capacity development plan on TF-CBDRM activities and monitoring/evaluation. 2-2 TF reviews and revises CBDRM manuals and facilitator's guide seeking comments from 76 provinces and tests them at the model community (MOOBAN) a1 and finalizes them for publication. 2-3 TF conducts training for at least 80 DDPM staff at central, regional and provincial levels to facilitate CBDRM. 2-4 Trained DDPM provincial staff in the model province A facilitates CBDRM activities, including Disaster Prevention and Mitigation Action Plans for local authorities at model community (MOOBAN) a1 in collaboration with the local model school. 2-5 Trained DDPM provincial staff in the model province B facilitates CBDRM activities, including Disaster Prevention and Mitigation Action Plans for local authorities at model community b1 in collaboration with the local model school. 2-6 Trained DDPM provincial staff in the model province A facilitates CBDRM activities, including Disaster Prevention and Mitigation Action Plans for local authorities at model community a2 in the model province A in collaboration with the local model school. 2-7 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staff such as study tour, case study forum, seminars, and newsletters. **<TF Disaster Management Training>** 3-1 TF-Disaster Management Training designs a capacity development plan for its activities and monitoring/evaluation. 3-2 TF develops guidelines for evaluation and monitoring of training. 3-3 TF conducts needs assessment for training in collaboration with other task forces. 3-4 TF revises standard disaster management curriculum in DPMA training courses on flood, flash flood and mud flow. 3-5 TF, in collaboration with concerned organizations, develops training modules and materials to synchronize training curriculum on disaster management (flood, flash flood and mud flow), CBDRM. 3-6 TF, in collaboration with concerned organizations, train master trainers for DDPM staff. 3-7 Master trainers train 100 DDPM staff of disaster management on flood, flash flood and mud flow. 3-8 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staffs such as study tour, case study forum, seminars, and newsletters. **<TF Disaster Education>** 4-1 DDPM and Ministry of Education discuss and agree on the roles of each agency to implement TF-disaster education activities.	Community Based Disaster Risk Management Disaster Education Counterpart Training in Japan Operational costs	

4-2 TF in collaboration with OBEC develops model curriculum of disaster education in schools on flood, flash flood and mudflow. 4-3 TF in collaboration with OBEC modifies textbooks and teachers' guide. 4-4 TF selects one model school a1 in the model community a1, one model school a2 in the model community a2 in the model province A and one model school b1 in the model community b1 in the model province B for planning curriculum of school disaster education and conducting model lessons. 4-5 TF in collaboration with MOE trains 40 master teachers. 4-6 Master teachers train at least 100 teachers how to teach disaster education at schools in cooperation with local communities. 4-7 Master teachers conduct model classes for disaster education at the model school a1 in the model community (MOOBAN) a1, followed by one model school a2 in model community a2 in model province A and one model school b1 in model community b1 in model province B. 4-8 Trained teachers by Master teachers conduct disaster education at their own schools. 4-9 TF in collaboration with MOE develops one model school as information center of disaster education, followed by two model schools in two provinces. 4-10 TF in collaboration with OBEC reviews the process and revises curriculum. 4-11 TF proposes and DDPM institutionalizes up-scaling mechanism and establishes networks of sharing knowledge for all province staffs such as study tour, case study forum, seminars, and newsletters. <TF Flash Flood Risk Management> 5-1 TF designs capacity development plan on its activities and monitoring/evaluation. 5-2 TF selects one sub-basin model site in Lampang or Lamphun province based on GIS base risk area maps which are being prepared by DDPM.. 5-3 TF prepares manuals for rainfall / flood analysis and hazard mapping through the process of the practical training taking the model site as an example. 5-4 TF prepares manuals for improvement of early warning system and for evaluation of structural measures, in which the result of 5-3 will be functionally utilized. 5-5 TF conducts training on hazard mapping, early warning system and structural measures targeting DPM regional centers using the above manuals.		