

## 2-4 Regional Disaster Management

Capacity of DDPM staff and village people is enhanced to promote disaster management activities at village level

### 2-4-1 Understanding the current situation in Thailand

#### **1) Administration units in Thailand and disaster management plan**

The administration unit in Thailand is composed of Province (Chanwat), District (Amphoe), Tambon and Community (Muban). The biggest administration unit is Province (Chanwat). There are 75 provinces in Thailand and the governor of the province is appointed by the Ministry of Interior.

Under the province, lies the district (Amphoe). There are 877 districts in Thailand. The chief of the district is called “Nai Amphoe : The district Chief Officer is appointed by the Ministry of Interior. The Tambon is situated under the district. There are 7,254 Tambons in Thailand. With the Tambon Council and Tambon Administrative Authority Act BE 2537 (1994)[2] and later by the constitution of 1997 the Tambon were decentralized into local government units with an elected Tambon Council. Depending on the size and tax income, Tambons may either be administrated by Tambon Administrative Organization (TAO) or a Tambon Council (TC). The TAO or TC consists of two representatives from each village (Muban) in the Tambon. From the group a leader is chosen, who is called “kamnan”.

Village (Muban) is the smallest administration unit in Thailand. There are 69,307 villages in Thailand. The head of the village called “Phu Yai Ban” is elected by direct election.

**Table 2-4-1 Administration Unit in Thailand and Pilot Project Site**

	Phuket	Mae Hong Son	Chumpong
Region	South	North	North
Province (Chanwat)	Phuket	Mae Hong Son	Chumpong
District (Amphoe)	Tha Lang District	Pai District	Tha Sae
Tambon	Moo.5 mai Kao	Wieng Tai	Tha Kham
Community (Muban)	Baan Tha Chat Chai	Baan Nam Hu	Baan Nong Rieng

\* There is no administration unit for region now, but sometimes used to point rough area

#### **<Regional Disaster Management Plan>**

The new Disaster Prevention and Mitigation Act (2007), stipulates that the Disaster Prevention and Mitigation Plan shall be formulated at the national and provincial

level. Also, that the formulation of disaster prevention and mitigation plan at the provincial level shall be vested upon a committee with members representing municipalities and the Tambon administrative office and chaired by the Provincial Governor.

While the Act does not require separate disaster prevention and mitigation plans at the Tambon and Village Levels, the Provincial Governor may require disaster prone Tambon to prepare a disaster mitigation plan. Thus, the present situation of disaster prevention and mitigation plan is as shown below.

**Table 2-4-2 Required Disaster Management Plan in New Act**

DPM Plan	Required by Act /Existing	Not Required by Act
National DPM Plan	○	
Provincial DPM Plan	○	
District/Municipality		
Bangkok only	○	
Tambon		○
Village		○

In the selected pilot areas, the situation is as follows.

**Table 2-4-3 Situation of Regional Disaster Management Plan in Pilot Project Area**

DPM Plan	Required by Act /Existing	Not Required by Act/Existing	Not Required by Act/not existing
Phuket (tsunami)			
Province DPM Plan	○		
Tambon Mai Khao		○	
V. Baan Tha Chat Chai			○
Chumporn (Flood)			
Province DPM Plan	○		
Tha Sae District		○	
Tambon Tha Kam			○
V. Baan Nong Rieng			○
Mae Hong Sorn (Landslides and mudflow)			
Province DPM Plan	○		
Pai District (individual hazard plan)		○	
V. Baan Nam Hu			○

\* V. : Village

## **2-4-2 Activity and Output**

### **1) Select three pilot areas, one each for tsunami, floods and landslides**

In the first meeting between DDPM and the JICA expert team, it was agreed that the basic policy of this theme shall be the bottom-up principal. The regional disaster management plan shall be revised / created by the result of a pilot project in three areas.

Three pilot project areas shown in Table 2-4 were proposed in the inception report by the JICA Expert Team and were approved by the JCC. Target communities in the three pilot project areas were decided based on site reconnaissance and several discussions among the related organizations and participants. The selection criteria of the target communities are tabulated in Table 2-4-4 and the three selected target communities are tabulated in Table 2-4-5.

**Table 2-4-4 Selection Criteria of Target Community for the Pilot Project**

1. Disaster history of the proposed pilot area
2. Willingness of the Tambon officials and communities to participate in the pilot project
3. Number of people prone to the hazard (exposure level of community to the risk)
4. No existing community based disaster management projects currently implemented or have been implemented
5. Presence of a school within the community and willingness of school officials to participate in the pilot project
6. Accessibility of the pilot area
7. Safety of Experts and DDPM counterpart staff while working in the pilot area

**Table 2-4-5 Concluded Pilot Areas**

Target disaster and Area	Selected Community for the Pilot Project	Reasons of the Selection
Phuket (Tsunami)	Baan Tha Chat Chai Moo.5 mai Kao Sub-district, Tha Lang District	<ol style="list-style-type: none"> <li>1. Baan Tha Chat is the ancient community more than other candidate villages. The people in the community are willing to cooperate.</li> <li>2. School is ready to participate with the project.</li> <li>3. The community never participated with the CBDRM before</li> </ol>
Mae Hong Son (Landslide)	Baan Nam Hu Wieng Tai Sub-district Pai District	<ol style="list-style-type: none"> <li>1. This area will get the advantage more than other candidate villages because this area covers 2 villages which got the effect from landslide. There are Baan Son Ti Chon and Baan Mai Sa Ha Sampan.</li> <li>2. The area has 2 schools that area ready to participate in the project; Pai Wittayakom School and Prachanukroh School.</li> <li>3. The people in the community would like to participate very much because there is a high risk and they experienced a land slide before.</li> </ol>
Chumpon (Flood)	Baan Nong Rieng Tha Kham Sub-district, Tha Sae District	<ol style="list-style-type: none"> <li>1. The location of Baan Nong Rieng is the place where 2 rivers meet. There are Lab Lor River and Tha Sae River. So that this area is at risk more than other candidate villages.</li> <li>2. Baan Nong Rieng is flooded every year so the community needs to prepare themselves for disaster prevention and mitigation.</li> <li>3. The area has 2 schools that are ready to participate in the project; Baan Hard Hong School and Tha Kham Wittaya School.</li> </ol>

## **2) Implement CBDRM, DIG and Evacuation drill**

### **a) Background**

The “Bottom-top approach” was employed in this project. Using the bottom-top approach, this project calls for the involvement of the people at the village level to develop a village level disaster prevention plan, which will then be integrated into the Tambon plan. The Tambon plan will input the provincial plan that will be collated to form the regional plan.

The participatory approach was employed in all activities. Participation was envisioned at

different levels, to wit:

1. Creation of a Sub-task Force in each participating Province.
2. Conduct of disaster prevention planning at the village level using the community-based disaster risk management (CBDRM) process.

Part of the enhancement strategy is to create task forces with members coming from various disaster management-related agencies. For this achievement, Task Forces 3 and 4 were created, initially separately, which was immediately combined under the chairmanship of DDPM.

Several meetings were held in order to thresh out the approach and detailed activities for this achievement. Inasmuch as the members of Task Force 3&4 are based in Bangkok, while the activities are mostly concentrated in the pilot provinces, more specifically in the pilot village, there was identified the need to create sub-task forces in the pilot provinces. These sub-task forces will work closely with Task Force 3&4.

Sub-task Forces were created by the Command of the pilot provinces, namely Mae Hong Sorn, Chumporn and Phuket. The Command identified the members of the Sub-task Force. It also enumerated the functions of the Sub-task Force, to wit:

- a. Provide support and full cooperation on the Project implementation in the pilot area
- b. Select the pilot area
- c. Decide on the methodology and form of cooperation and support to the project implementation that is consistent with the Civil Defense Plan of the Province
- d. Decide on the methodology and process of hazard mapping in the pilot area
- e. Decide and cooperate on the development of early warning systems in the pilot area
- f. Participate on the conduct of evacuation drill in the pilot area

#### **b) Outline of the Activities**

The activities are sequentially executed during the Expert's assignment in Thailand. By the end of year one of the Project implementation, the pilot areas have tested the evacuation procedures (evacuation drill) and the warning system installed by the project. The activities leading to the evacuation drill are shown below.

- I. September to November 2006
  - a. Organization of Sub-task force in pilot areas
  - b. Selection of Pilot Area
  - c. Data collection on disaster prevention and mitigation plans at all levels
- II. January to March 2007

- a. Conduct of CBDRM in pilot areas
    - i. Prepare community-based hazard map in each pilot area
    - ii. Prepare community-based risk map in each pilot area
    - iii. Organization of Village Disaster Prevention and Mitigation (VDPM) Group in the pilot area
  - b. Preliminary review of disaster prevention and mitigation plans at all levels
- III. May to August 2007
- a. Development of community-based early warning system
  - b. Preparation of evacuation plan at communities
  - c. Execution of evacuation plan (evacuation drill)
  - d. Execution of DIG Workshops

**c) Execution of CBDRM Workshop**

The participants to the CBDRM workshop were guided by the DDPM staff and the Project Expert to prepare the following:

1. Community map: this shows everything that can be observed in the pilot area
2. Hazard map based on their most recent experience
3. Risk map using the information found on the community map and the hazard map
4. Description of warning system that exists in the community
5. Village Disaster Prevention and Mitigation Structure

In this activity, the DDPM staff played a major role in facilitating the CBDRM as part of the capacity enhancement on disaster prevention. The workshops achieved the objectives of the community understanding the risks that they live in. Moreover, the community was able to identify the necessary interventions in order to save lives and property. These interventions, at the community level, are the establishment of an early warning system and early evacuation in response to warnings.



Photos: Participants making the hazard map in the workshop

#### d) Development of Early Warning System and Evacuation Procedures

This is the penultimate step in disaster prevention planning. Community members develop a warning system that is practical, easy to understand, simple to implement and require low maintenance. The system uses existing resources and existing communication system that the people are already familiar with.

**Table 2-4-6 Workshop for Community in the Pilot Project**

Pilot Area	Schedule of activity	Objectives
Baan Nong Rieng, <b>Chumporn</b>	August 6-9, 2007	<ol style="list-style-type: none"> <li>1. To guide the VDPM in understanding the early warning system and using the system to warn the people of impending hazards</li> <li>2. To facilitate the preparation of an evacuation plan</li> <li>3. To execute the evacuation drill as a test of the evacuation procedures and the early warning system</li> </ol>
Baan Nam Hu, <b>Mae Hong Sorn</b>	July 10-13, 2007	

The exception is Phuket as the National Disaster Warning Center (NDWC) has developed a tsunami warning system that works in all provinces affected by the 2004 tsunami. Along with the warning system, the NDWC has also developed evacuation procedures and identified the roles of different response organizations within Phuket. The procedures also identified the role of the Tambon officials and the safe places where the people will go in the event of a tsunami.

The warning system is the trigger to disaster prevention actions of the community. For the

community in Baan Nam Hu and Baan Nong Rieng, the following concept of the early warning system was introduced.

The details of a developed early warning system are described in the next chapter (Establishment community based early warning system).

**e) Execution of DIG Workshop**

**<Activity planning of DIG based on the 1st annual workshop activity situation>**

Based on the activity of CBDRM, the DIG (Disaster Management Game: hereafter referred to as DIG) activity in the community and school is planned as follows.

**Table 2-4-7 The DIG activity plan in community disaster prevention**

Target	Period	Practice of DIG	Object	Aim for Next Phase
Sub- Task Force	June to August, 2007	Introduction of the concept and manual of DIG	To catch up the object and the method of DIG	Spread to other prefecture
Teachers of the model school		Demonstration of DIG	To practice DIG	To facilitate the DIG for children
Community		Table top exercise for Evacuation Drill	To discuss t evacuation procedures	Advanced DIG for VDPM

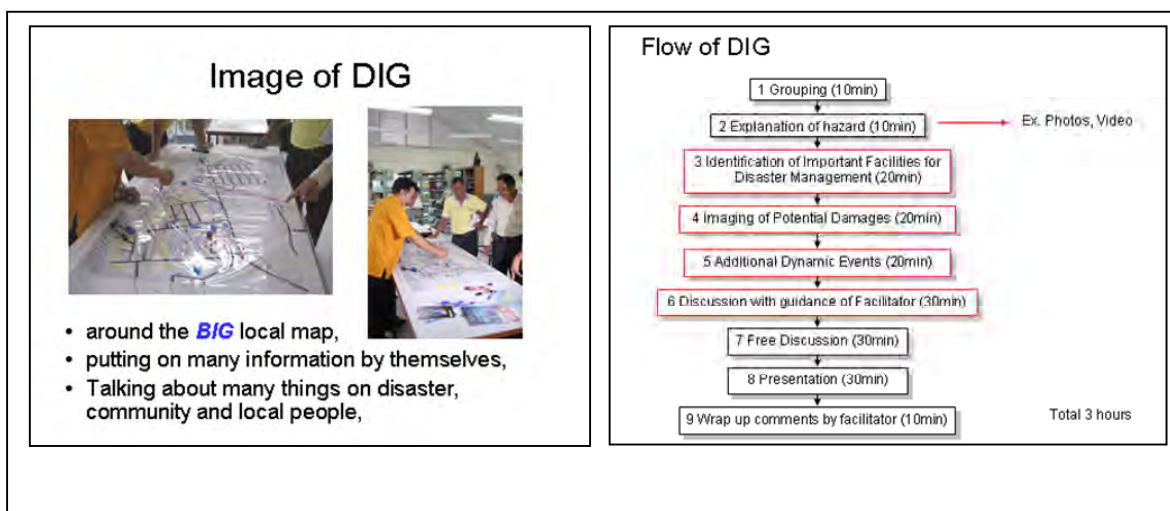
**<The Description of the concept and manual for DIG practice>**

The concept and manual of DIG was introduced in the sub-task force meeting below.

- (a) Sub-Task Force meeting in Mae Hong Son (Debris flow), July 10, 2007
- (b) Sub-Task Force meeting in Chumporn (Flood), August 6, 2007

DIG is a tool of "Awareness Raising" and promotes self-help and solidarity. It was explained that DIG was not a newly developed card game or a board game but a participatory workshop held in CBDRM. One of the examples of presentation material for the explanation of DIG is shown in Figure 2-4-1.





**Figure 2-4-1 Example of the Materials for Introducing DIG**

**<The Demonstration of DIG in model schools>**

Following DIG workshops were held targeting teachers at following model schools.

- (a) Ban ThaChat Chai Primary School, Phuket Prefecture, June 28, 2007
- (b) Ban Nam Hu Primary School, Mae Hong Son Prefecture, July 11, 2007
- (c) Ban Hat Hong Primary School, Chumporn Prefecture, July 26, 2007

In all three areas, the teachers were able to play actively around the big map and were able to discuss disaster prevention through the demonstration. The contents of DIG mapping are shown in Table 2-4-7.

**Table 2-4-8 Contents of DIG Mapping for School**

Model School	Map	Plotted Local Information	Lapped Hazard Area
Phuket ThaChat Chai Primary School	1/1000 GIS Map made by air photo	Beach Line, Sea, Pond, School, Roads, Public Facilities, 2 Stories House, Dangerous Area, Evacuation Sign, etc.	Experience of the participants
Mae Hong Son Nam Hu Primary School	1/1000 GIS Map made by air photo	School, River, Bridges, Temples, Public Facilities, Roads, etc.	Experience of the participants Hazard Map made by expert
Chumporn Hat Hong Primary School	1/2500 GIS Map made by air photo	School, Roads, River, Canals, Temples, Public Facilities, Cliffs, Boats, Vulnerable People, etc.	Experience of the participants

In the next step, a possible disaster was assumed and the actual response was questioned. The fictitious disaster and questions in the workshop are shown in Table 2-4-9.

**Table 2-4-9 Supposed Disaster and Question**

Phuket Tsunami	Mae Hong Son Debris Flow	Chumporn Flood
<p><b>【Additional Dynamic Event】</b> The village headman received an emergency evacuation warning call from NDWC. The notice says that a Big Tsunami will come within 30 minutes. The height of the Tsunami is unclear.</p>	<p><b>【Additional Dynamic Event】</b> The village headman received an emergency evacuation warning call. The notice says that a Natural Dam was formed. Now it will be broken within 1 hour.</p>	<p><b>【Additional Dynamic Event】</b> TMD announced that the heavy rain would continue 2-3 days. The possibility remains of water rising to the roof.</p>
<p><b>【Question】</b></p> <ol style="list-style-type: none"> <li>1 Where will be a safe place and evacuation route from the school?</li> <li>2 Who or what will get effects when aTsunami hazard occurs?</li> <li>3 Do we have safe place in the village?</li> <li>4 What should we consider when we will evacuate?</li> <li>5 What are buildings which help us from Tsunami?</li> </ol>	<p><b>【Question】</b></p> <ol style="list-style-type: none"> <li>1 Where will be a safe place and evacuation route from the school?</li> <li>2 Why did you choose the place for evacuate?</li> <li>3 Which places are not safe for evacuation?</li> <li>4 Do you have some good ideas to prepare before the rainy season?</li> </ol>	<p><b>【Question】</b></p> <ol style="list-style-type: none"> <li>1 How many people need assistance?</li> <li>2 Which area did you choose for emergency evacuation?</li> <li>3 Why do you think so?</li> </ol>



Photos: Discussion with Additional Dynamic Event

### <Demonstration of the DIG for Communities>

The demonstration of the DIG for communities was held in the CBDRM workshop as a tabletop exercise. In this tabletop exercise, evacuation procedure was examined and established by using DIG technique. The contents of the DIG workshop are composed of 1) Examination of evacuation places on the small community map and 2) Examination of evacuation procedures on the big map and organization chart.



**f) Evacuation Drill**

**<Evacuation Procedures>**

The members of the VDPM, guided and facilitated by the DDPM staff prepared the evacuation procedures for the pilot village. The evacuation procedures involved the (a) location of safe places within the pilot village, (b) assignment of safe places for groups of people from the unsafe areas, (c) procedures for the disadvantaged and sick people, and (d) transportation and other resource needs for a timely evacuation. The procedures also defined the different stages of preparation in response to the warning level.

Members of the VDPM belonging to the evacuation team practiced their roles, the procedures, and determined the length of time between warning and mobilization of people to go to safe places.

The model schools also participated in the preparation of evacuation procedures. The school, as a small community within the larger community of the pilot area, has developed its own warning signals and communication flow within the school system for timely evacuation.

### <Execution of Evacuation Drill>

The evacuation drill is a test of both the warning communication flow and the evacuation procedures. Hazard scenarios were developed for the two pilot areas. These were discussed and used during a tabletop exercise prior to the actual evacuation drill. During the tabletop exercise, the members of the VDPM practiced the dissemination of the warning and assessed potential problems that might arise and provide solutions to these problems, if any. Part of the preparation for the evacuation drill is placing signs in pre-identified location. These signs also serve as directional signs for people to follow during evacuation.

The evacuation drill involved large representation from the pilot village. The model schools also participated. Photo representation of evacuation drills is shown in *Annex D*.

### 3) Establish community based early warning system

#### a) Pilot communities and target events

There are many activities for tsunami early warning systems in Thailand. Therefore, in this project, development of early warning systems for communities is concentrated on flash flood / debris flow in Mae Hong Son and flood for Chumpong. The character of the event and target villages is tabulated below.

**Table 2-4-10 Target Villages and Character of Events**

Village name	Ban Nam Hoo	Ban Nong Rieng
River name	Huai Mae Kon	Tha Sae river Rub Ro river
Basin area (sq km)	14	1,016+802=1,818
Event	Flash flood, Debris flow	Flood
Invasion time-scale	A few minutes to 30 minutes	24 hours to 36 hours
Duration time-scale	A few minutes to 1 hour	Half day to a few days
Role of rain gage	Main equipment	Just as trigger to action

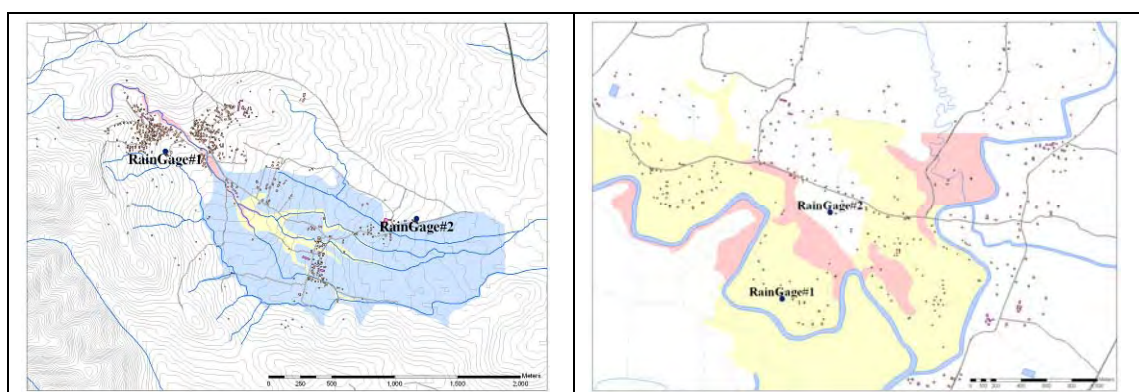
#### b) Installation of rain gauge and radio communication system

A rain gauge and radio communication system was installed in this project. The outline of the installed equipment is Table 2-4-10. The location of the installed rain gauge is shown in Figure 2-4-2. The method of operation for both items was transferred to community people by using the prepared manual. The prepared manual (English version) is attached in this report as Attachment 4-2 Rain Gauge Measurement Unit Manual, 4-3 Rain Gauge Indicator manual and

4-4 Rain Gauge Program manual.

**Table 2-4-11 Outline of Installed Equipment**

Equipment	Outline
Rain Gauge	<p><u>No. of Equipment Installed</u></p> <ul style="list-style-type: none"> <li>- 2 equipment in Ban Nam Hoo, Mae Hong Son</li> <li>- 2 equipment in Ban Nong Rieng, Chumpong</li> </ul> <p><u>Outline of Equipment</u></p> <ul style="list-style-type: none"> <li>- Display : remote display type</li> <li>- Rain fall shown on display: one hour, one day and continuous rainfall</li> <li>- Interval of measurement : 10 minutes</li> <li>- Maximum data : 57,600</li> <li>- Power source : AAA batery</li> </ul>
Radio	<p><u>No. of Equipment Installed</u></p> <ul style="list-style-type: none"> <li>- 8 equipment in Ban Nam Hoo, Mae Hong Son</li> <li>- 7 equipment in Ban Nong Rieng, Chumpong</li> </ul> <p><u>Outline of Equipment</u></p> <ul style="list-style-type: none"> <li>- Output : 5.0 watt</li> <li>- Frequency : 245.000 – 245.9875 MHz</li> <li>- Maximum communication distance : 5km</li> <li>- Power source : chargeable battery</li> </ul>



**Fig 2-4-2 Location of Installed Rain Gauge**





**Figure 2-4-3 Installation of Rain Gauge in Ban Nam Hoo and Ban Nong Rieng**

### **b) Modification of Early Warning Systems in the Community**

There was an existing early warning organization in the target villages. However, through CBDRM activities from the previous phase and newly installed equipment training, the early warning system was modified. The existing early warning system and modified early warning system are tabulated in Table 2-4-11, 2-4-12. For the modification of the early warning system, the following matters were considered.

#### <Direct Access to real-time rainfall data>

Flash floods and debris flows are generally rapid and invade the village from within a few minutes to 30 minutes. Since villagers who live in a dangerous zone evacuate before the invasion, they have to decide as soon as possible. However the rainfall data and warning information comes through administrative channels upper to lower in sequence in the existing EWS. In contrast, the renovated EWS can provide real-time hourly rainfall data directly, that will contribute to the decisions of the village headman, the incident director.

#### <Interactive communication>

At the same time, the village headman can contact upper administrative offices to get related information actively when rainfall exceeds the criteria. Existing one-way communication changed into interactive communication.

#### <Warning criterion>

Warning criterion should be based on statistical analysis of past rainfall data and event occurrences, however there is no reliable rainfall data and event records. So the warning criterion was based on *The Guide Book for Monitoring and Warning in Hazard Risk Area (Flood, Flash Flood and Landslide)* by DDPM as a starting value.

After rainfall data is accumulated, the criterion can change rationally by using such items as snake-curve analysis (Please refer Appendix 4-5 *The Rainfall Criterion for Early Warning System in Landslide Disaster in Japan*).

<Evacuation Judgment>

Evacuation judgment is very important because frequent evacuation without event occurrence makes villagers disbelieve the evacuation command. From this point of view, evacuation judgment should depend on not only rainfall data from the rain gauges but other information which can be used. The information to be used for making the judgment is as follows.

- report from the river observers
- real-time hourly rainfall exceeding 30mm
- information such as NECTEC's rainfall data from the administrative offices
- daily rainfall data for the current month
- weather information from TMD

In the system the river observers' skill and experience is very important because they have to catch or feel the difference between a normal increase of water flow and a flash flood or debris flow. Therefore the observers always pay attention to the river flow and check the water level, color and movement of sediment of the riverbed.

Recently NECTEC installed an automatic rain station in the basin. It is necessary to make sure how to evaluate the data because it is one of the important variables for reaching a judgment.



Table 2-4-12(a) Existing and Modified Early Warning System and Flow Chart for Bang Nong Rieng

Existing Early Warning System	Renovated Early Warning System
<p><b>Information for Judgment</b></p> <ul style="list-style-type: none"> <li>① Meteorological warning information from TMD</li> <li>② Warning information from the Pai District Office</li> <li>③ Warning information from Ban San Ti Chon through SAO</li> <li>④ Warning information from the dispatched river observer</li> </ul>	<p>Same as on the left (①~④)</p> <ul style="list-style-type: none"> <li>⑤ Real-time rainfall data from the two rain gauges</li> <li>⑥ Real-time report from the river observer through walkie-talkie</li> <li>⑦ Daily rainfall data of the past one month</li> <li>⑧ Other information from NECTEC and NDWC through the District Office</li> </ul>
<p><b>Means for communication</b></p> <ul style="list-style-type: none"> <li>① Telephone</li> <li>② Cell-phone</li> <li>③ Radio broadcast</li> </ul>	<p>Same as on the left (①~③)</p> <ul style="list-style-type: none"> <li>④ Walkie-talkie (Transceiver)</li> </ul>
<p><b>Problems of the Existing EWS</b></p> <ul style="list-style-type: none"> <li>● The existing EWS makes the village headman be passive because he doesn't have his own means of obtaining objective data.</li> <li>● The existing EWS has no means in an area out of cell-phone range.</li> </ul>	<p><b>Improvements of the renovated EWS</b></p> <ul style="list-style-type: none"> <li>● The renovated EWS lets the village headman be active because he has his own rain gages which provides real-time rainfall data. When a rainfall reaches warning level, he can dispatch the river observer, announce the warning to villagers, and confirm the District Office other information such as NECTEC rain station's data.</li> <li>● The renovated EWS provides communication means in storm conditions since the walkie-talkie ( transceiver) has enough available range and waterproof property.</li> </ul>

**Table 2-4-12 (b) Existing and Modified Early Warning System and Flow Chart for Bang Nong Rieng**

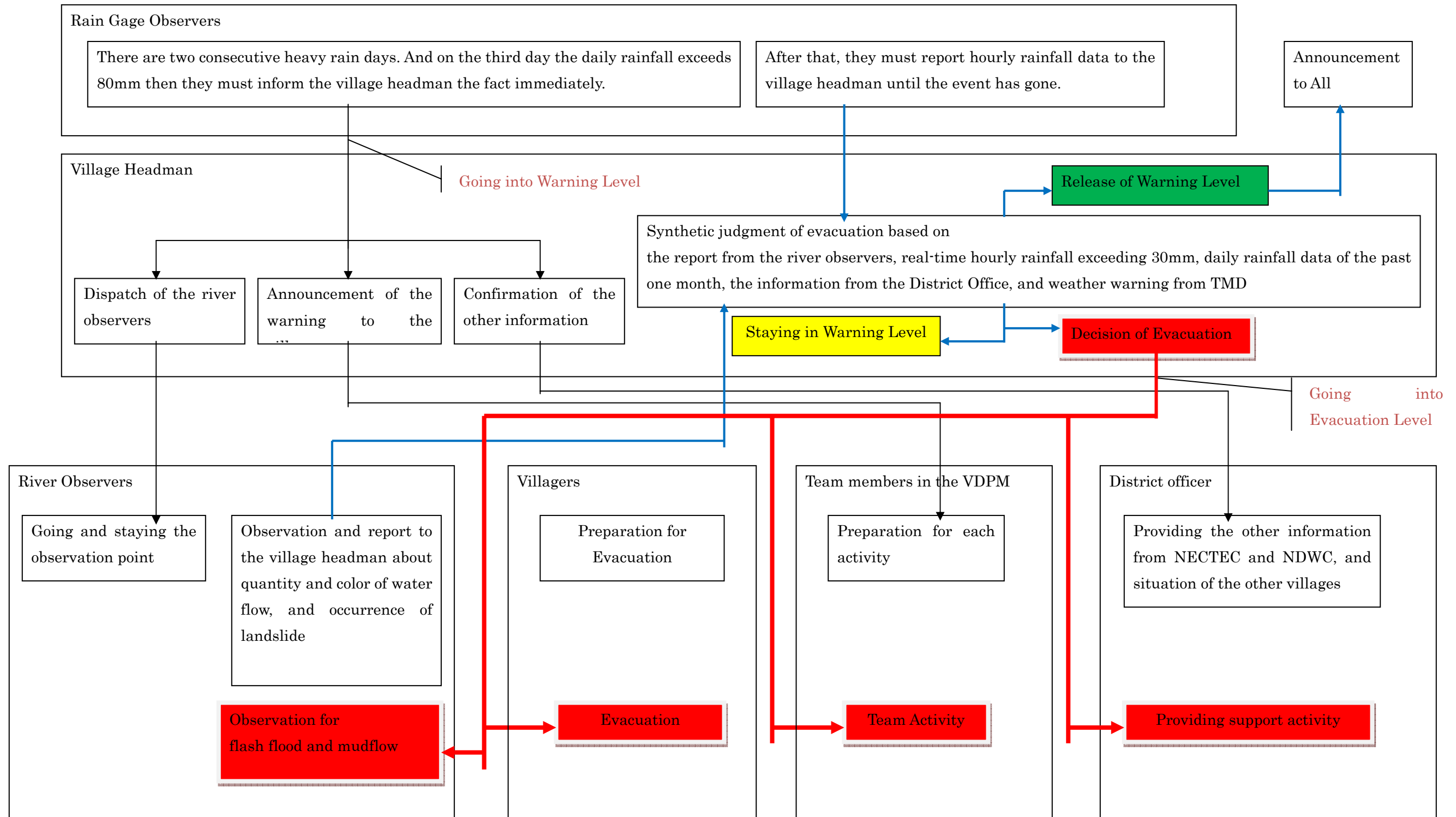
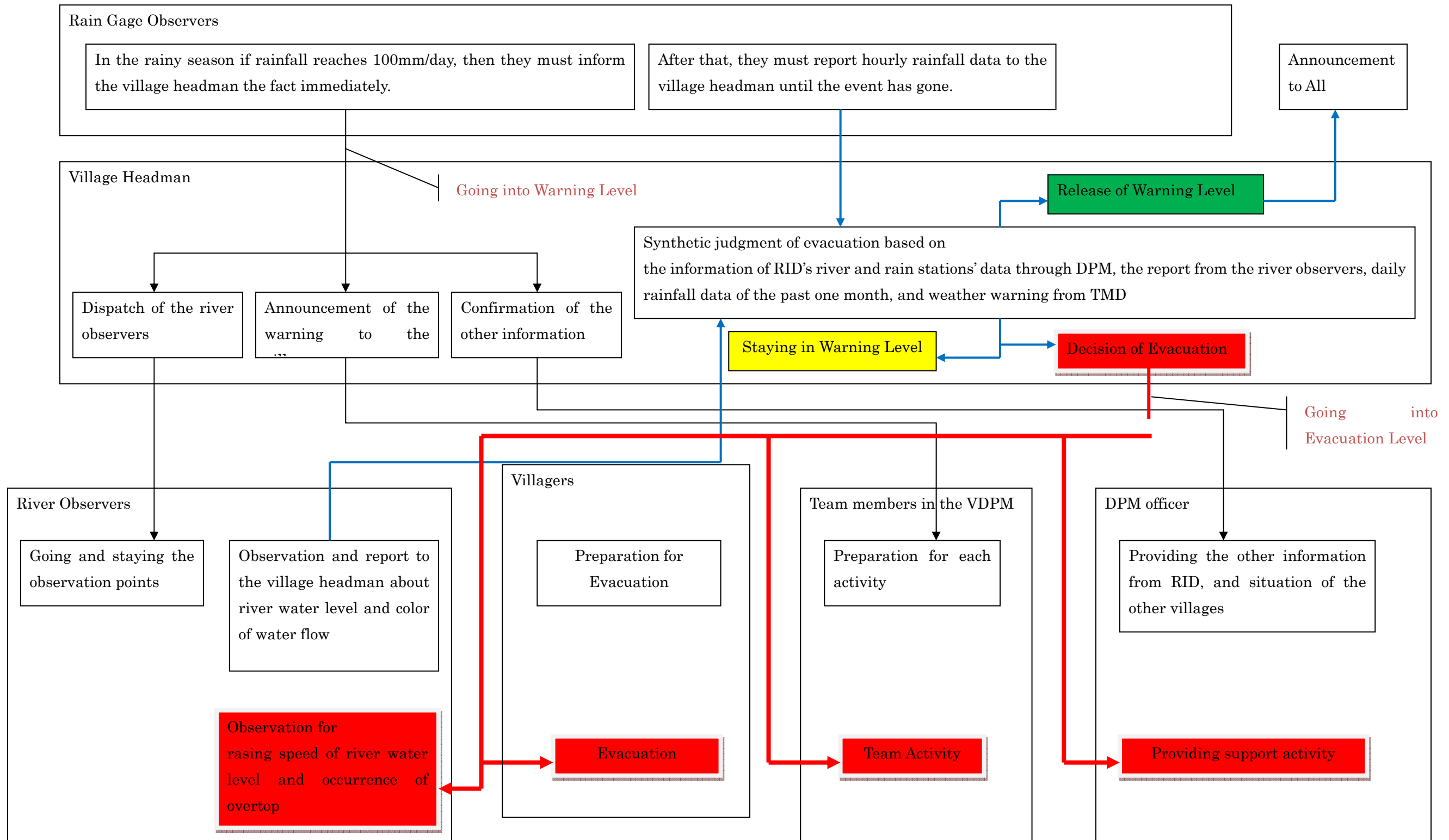


Table 2-4-13 (a) Existing and Modified Early Warning System and Flow Chart for Ban Nam Hoo

Existing Early Warning System	Renovated Early Warning System
<pre> graph TD     TMD --&gt; DPM     DPM --&gt; TSD[Tha Sae District office]     DPM --&gt; TKSAO[Tha Kam SAO]     TSD -- TV, Radio --&gt; VH[Village Headman]     TKSAO -- TV, Radio --&gt; VH     VH --&gt; A1[Assistant]     VH --&gt; A2[Assistant]     VH --&gt; A3[Assistant]     VH --&gt; A4[Assistant]     A1 --&gt; V[ Villagers in each zone ]     A2 --&gt; V     A3 --&gt; V     A4 --&gt; V         </pre>	<pre> graph TD     TMD --&gt; DPM     DPM --&gt; TSD[Tha Sae District office]     DPM --&gt; TKSAO[Tha Kam SAO]     TSD -- TV, Radio --&gt; VH[Village Headman]     TKSAO -- TV, Radio --&gt; VH     VH --&gt; A1[Assistant]     VH --&gt; A2[Assistant]     VH --&gt; A3[Assistant]     VH --&gt; A4[Assistant]     A1 --&gt; V[ Villagers in each zone ]     A2 --&gt; V     A3 --&gt; V     A4 --&gt; V          RID[RID Telemetering River and Rain Stations system] --&gt; DPM     RG1[Rain Gage #1] --&gt; VH     RG2[Rain Gage #2] --&gt; VH     RO[River Observers] --&gt; TKSAO          VH -.-&gt; Strengthened by Walkie-talkie  A1     VH -.-&gt; Strengthened by Walkie-talkie  A2     VH -.-&gt; Strengthened by Walkie-talkie  A3     VH -.-&gt; Strengthened by Walkie-talkie  A4         </pre>
<p><b>Information for Judgment</b></p> <ul style="list-style-type: none"> <li>⑨ Meteorological warning information from TMD</li> <li>⑩ Warning information from Tha Sae District Office</li> <li>⑪ Warning information from Tha Kam SAO</li> </ul>	<p>Same as on the left (①~③)</p> <ul style="list-style-type: none"> <li>⑫ Real-time rainfall data from the two rain gauges</li> <li>⑬ Real-time report from the river observers through walkie-talkie</li> <li>⑭ Daily rainfall data of the past one month</li> <li>⑮ Other information from RID through DPM</li> </ul>
<p><b>Means for communication</b></p> <ul style="list-style-type: none"> <li>⑤ Telephone and facsimile</li> <li>⑥ Cell-phone</li> <li>⑦ Transceiver between Village Headman and Tha Sae District office</li> </ul>	<p>Same as on the left (①~③)</p> <ul style="list-style-type: none"> <li>⑧ Walkie-talkie (Transceiver)</li> </ul>
<p><b>Problems of the Existing EWS</b></p> <ul style="list-style-type: none"> <li>● The existing EWS makes the village headman be passive because she doesn't have her own means to know objective situation.</li> <li>● The existing EWS doesn't have strong equipment for communication under severe weather conditions. .</li> </ul>	<p><b>Improvements of the renovated EWS</b></p> <ul style="list-style-type: none"> <li>● The renovated EWS lets the village headman be active because she has her own rain gauges which provides real-time rainfall data. When rainfall reaches warning level, she can dispatch the river observers, announce the warning to villagers, and confirm DPM other information such as RID's river and rain station's data.</li> <li>● The renovated EWS provides strong equipment for communication since the walkie-talkie ( transceiver) has enough available range and waterproof property.</li> </ul>

Table 2-4-13 (b) Existing and Modified Early Warning System and Flow Chart for Ban Nam Hoo



**c) Rainfall Criteria**

There are no definite criteria for warning and evacuation in Thailand. The JICA expert team introduced Japanese criteria (see Attachment 4-5) for warning and evacuation and discussed with DDPM C/P and community people about suitable criteria for each community. As a result, the following warning and evacuation criteria was proposed.

**Table 2-4-14 Proposed Warning and Evacuation Criteria**

	Ban Nam Hoo (Mae Hong Son)	Ban Nong Rieng (Chumpong)
Function of the Rain gauge	One of the important items for judgment	Just a trigger for going into action
Warning Level	There are two consecutive heavy rain days. And on the third day the daily rainfall exceeds 80mm, and then the stage goes into the warning level.	In the rainy season there is 100mm daily rainfall, and then the stage goes into the warning level.
	DDPM's criterion is used as reference for the discussion.	The rain gauge can't represent the rainfall in the basin area.
Evacuation Level	Synthetic judgment based on; 1) report from the river observers 2) real-time hourly rainfall exceeding 30mm 3) information from upper administrative offices 4) daily rainfall data of past one month 5) weather warning from TMD	Synthetic judgment based on 1) report from the river observers 2) RID's information about upper stream through DPM 3) daily rainfall data of past one month 4) weather warning from TMD
	Hourly rainfall data from the rain gauges are used as one of items for the evacuation judgment.	Rainfall data from the rain gauges is not used directly for the evacuation judgment.

#### **4) Develop a CBDRM manual for community and facilitator's guide for DDPM staff**

Based on the activity until March 2008, CBDRM Facilitator guide and CBDRM manual for community was prepared under the cooperation of the JICA expert team and DDPM counterparts. These guides and manuals were completed in July 2008 in English and Thai. Fifty copies of the Thai version of the manual and guide were printed and distributed from the JICA project budget. These manuals shall be examined through further DDPM CBDRM activities and revised. The final version of the CBDRM facilitator guide and CBDRM manual for community shall be printed and distributed from the DDPM budget.

**Table 2-4-15 Contents of the Manual of CBDRM at community**

- |  |
|--|
| <ol style="list-style-type: none"><li>1 Describe hazard<br/>(Illustrate hazards in Thailand)</li><li>2 Describe disaster<br/>(Illustrate disaster and use pictures of disasters in Thailand)</li><li>3 Describe things that contribute to disaster occurrence<ul style="list-style-type: none"><li>Vulnerabilities</li><li>Capacities</li><li>Disaster Risk</li></ul></li><li>4 Identify activities and things that the community can do in order to reduce possibility of disaster occurrence<br/>(Illustrate)</li><li>5. Introduce CBDRM Approach and activities towards disaster planning using<ul style="list-style-type: none"><li>CBDRM Approach<br/>(Guides, illustration, pictures)</li></ul></li><li>6. Evacuation Drill</li><li>7. Guide on how to conduct evacuation drill</li><li>8. Annex:</li><li>9. Plan template</li></ol> |
|--|

**Table 2-4-16 The contents of Facilitator's Guide**

- |  |
|--|
| <ol style="list-style-type: none"><li>I. Basic knowledge<ol style="list-style-type: none"><li>1. Disaster history of Thailand<ol style="list-style-type: none"><li>1-1 Hazards</li><li>1-2 Disaster statistics</li></ol></li><li>2. Disaster Prevention and Mitigation in Thailand</li></ol></li><li>II Community-Based Disaster Risk Management (CBDRM) Concept<ol style="list-style-type: none"><li>1 What is CBDRM?</li><li>2. Why CBDRM?</li><li>3. What are the Essential Features of CBDRM?<ol style="list-style-type: none"><li>3-1 The CBDRM Procedure</li></ol></li></ol></li></ol> |
|--|

- 3-2 Step One: Step One: Selecting the community – This step is needed when the community has not been pre-identified for the CBDRM.
- 3-3 Step Two: Understanding the community and preparing the community to participate in the CBDRM process
- 3-4 Step Three: Risk Assessment
- 3-5 Step Four: Participatory Disaster Risk Management Planning
- 3-6 Step Five: Plan Implementation
- 4. Incident Command System
- 5. Managing Evacuation Drill
- 6. Glossary of Terms
- 7. Annexes

**5) Formulate village level disaster preparedness plan at two pilot sites (flood, landslide)**

Preparation for the last CBDRM activities was undertaken in November and December of 2007. The final workshops for these activities took place in February 2008 (Feb 19-20 for Ban Nam Hu in Mae Hong Sorn; Feb 26-27 for Ban Nong Rieng in Chumporn). These workshops focused on integrating and completing the Village Disaster Prevention Plan. Both workshops were preceded by a Sub-task Force meeting in each pilot province. The Sub-task Force meetings endorsed the disaster planning activities in the pilot villages.

**Table 2-4-17 Community Disaster Management Plan Workshop**

Date	Place	Attendants	Contents
Feb. 19 - 20, 2008	Ban Nam Hu in Mae Hong Sorn	<ul style="list-style-type: none"> <li>- Sub Task Force</li> <li>- DDPM staff</li> <li>- Mae Hon Song DPM</li> <li>- Local residents</li> </ul>	<ul style="list-style-type: none"> <li>- Review of CBDRM activities</li> <li>- Review of Existing plan</li> <li>- Discussion of current situation</li> <li>- Planning by using template</li> <li>- Approval of the Plan</li> <li>- Discussion of Regional Plan Template</li> </ul>
Feb. 26 - 27, 2008	Ban Nong Rieng in Chumporn	<ul style="list-style-type: none"> <li>- Sub Task Force</li> <li>- DDPM staff</li> <li>- Cumpong DPM</li> <li>- Local residents</li> </ul>	<ul style="list-style-type: none"> <li>- Review of CBDRM activities</li> <li>- Review of Existing plan</li> <li>- Discussion of current situation</li> <li>- Planning by using template</li> <li>- Approval of the Plan</li> <li>- Discussion of Regional Plan Template</li> </ul>



DDPM Staff facilitating the planning



Regional DPM Staff facilitating group work during the planning workshop

Eleven members of Project Task Forces from DDPM Bangkok and four from the Provincial DPM, as well as members of the Sub-task force, participated and assisted in facilitating the workshop as part of their CBDRM enhancement program at the Ban Nam Hu workshop. While in Ban Nong Rieng in Chumporn, 11 from DDPM Bangkok participated, one member from MOE regional office, two from Regional DPM in Surat Thani, four from the provincial DPM office and a representative each from the Tambon and District administration came to be part of the two day workshop.

Members of the Village Disaster Prevention and Mitigation Organization, the community-based organization created to implement the Village Disaster Prevention Plan, participated actively in the two-day workshop in both pilot villages.

At the end of each workshop, disaster prevention plans were presented by the village head men to the officials representing the Tambon, District Administration and the Provincial DPM. Each plan also contains an Action Plan that the Village proposed to undertake in 2008 in order to enhance the village capacity to prevent future disasters.



**Table 2-4-18 Community Disaster Management Plan**

**Village Disaster Prevention Plan Template (Minimum content of the Plan)**

**1. Law that authorizes the formulation of Disaster Preparedness Plan**

**2. Purpose of Disaster Preparedness Plan**

**3. Community Profile (include a village map showing the main features of the village)**

The population distribution

Age Range	Male (Number)	Female (Number)	Category
1 day to 2 years			Infant
More than 2 years to 12 years old			Child
More than 12 years old			Adult
60 years old and above			Elderly

The economic activity:

Economic Activity	Number of Families Involved
Farming	
Employment	
Small Business	
Village shop	
Others	

The Village structure and active organizations

Village Official	Responsibilities/Activities
Elected	
Appointed	
Community organizations	

**3. Disaster History (include hazard map)**

Year Disaster Occurred	Cause of Disaster	Area affected	Impact of Disaster

**4. Risk Profile**

*Population at risk (Insert numbering each column)*

Zone /Area	Able-bodied Men and Women	Children and old people	Disabled	sick	Pregnant women

*Other Elements at risk*

Zone/Area	Animals	Crops	Business	Appliances	Assets like cars

**5. Risk Reduction Measures**

Early Warning System (Insert here a warning and communication flow)

Early Evacuation

- a. map showing location of evacuation places
- b. Evacuation Route Map
- c. detailed evacuation procedures)

Community Organization for Disaster Prevention

**6. Operational Scope**

- a. Things to do before an emergency situation both by the organization and the community members
- b. during an emergency situation both by the organization and the community members
- c. after an emergency situation both by the organization and the community members

**7. Annexes**

- a. Roles and Responsibilities of the Organization for disaster prevention
- b. list of contact persons
- c. list of at-risk people and designated evacuation center

## 6) Develop Template for Regional Disaster Prevention Plan

The preparation of the template of the regional disaster prevention plan was mainly conducted by the DDPM working group and JICA expert team provided material and suggestions and the manuscript of some parts. The template (draft) was completed on July 2008. The contents of the template are shown in Table 2-4-19.

Table 2-4-19 Contents of the Template for Regional Disaster Management Plan

<p><b>Preface</b>  <b>Provincial Map</b>  <b>Introduction</b></p>	<p><b>Chapter 1 Environment Analysis, Vision, Obligation and Goal Of DDPM</b>  1.1 Environment  1.2 Vision  1.3 Obligation  1.4 Goal</p>
<p><b>Chapter 2 Background of province</b>  2.1 Social Background  2.2 Disaster Statistic of Province  2.3 Hazard Assessment of Province</p>	<p><b>Chapter 3 Principle of Provincial Disaster Prevention and Mitigation Operation</b>  3.1 Scope of Plan  3.2 Accordance of operation with other plan  3.3 Operation principle  3.4 Disaster Violence Level  3.5 Principle of Disaster Prevention and Mitigation  3-6 Operation with Military</p>
<p><b>Chapter 4 Disaster Prevention and Mitigation Directing Center Establishment</b>  4.1 Performance Organizations  4.2 Structure and Responsibilities  4.3 Strength Increment</p>	<p><b>Chapter 5 Disaster Prevention and Mitigation Plan</b>  5.1 Pre-Disaster  5.2 Emergency Period  5.3 Post-Disaster</p>
<p><b>Chapter 6 Operation Way in Emergency Situation</b>  6.1 Warning  6.2 Particular Directing Center Establishment  6.3 Disaster Area Declaration  6.4 Cooperation with Local Administration Organizations  6.5 Cooperation with Public Charity Organizations  6.6 Operation in case Big Disaster  6.7 Personal Identify Confirmation  6.8 Communication  6.9 Public Relations</p>	<p><b>Chapter 7 Evacuation</b>  7.1 Objective  7.2 Operation</p>

**Annex**

1. Details of Activities / Projects for the Plan
2. Plan / Project for providing materials, equipment, vehicles, machines, signs, etc. for public warning of Local Administration Organizations
3. Disaster Prevention and Mitigation Chart
4. Abbreviation
5. List of Equipment and Materials
6. List of Vehicles and Machines
7. Risk Area Information
8. Integrated Organizations for the plan
9. Directory of Communication Organization and Persons Network
10. List of Public Charity Organizations (Province)
11. List of Experts
12. Agreement between Province and Military
13. Emergency Situation Declaration
14. Map of Risk Area
15. Reference

The Completed template was introduced and explained in the workshop held on July 24, 2008. For this workshop, the delegates from all prefectural offices of DDPM attended. The JICA expert team made a presentation on introducing the template, the significance of a regional disaster management plan and an example of a Japanese disaster management plan.

Based on this template, a regional disaster management plan shall be prepared by each prefecture within one year

**2-4-3 Evaluation of Achievements**

In this project, as described in the previous chapter, following DIG, CBDRM activities and an evacuation drill was executed.

- DIG workshops for Communities (Chumpong, Mae Hong Son)
- CBDRM workshops for Communities (Chumpong, Mae Hong Son)
- Evacuation Drill for Communities (Chumpong, Mae Hong Son)
- DIG workshops for Schools (Chumpong, Mae Hong Son, Phuket)

Many community people, related agencies staff and teachers actively participated in the above activities. These activities became the focus of public attention and were introduced and reported by local television and radio. To execute the above activities, preparation (material, program and training for the trainers) has been done under the cooperation of the JICA expert. Further, the actual activities were conducted by the leadership of DDPM staff except for school activities. In other words some DDPM staff were able to execute such activities by themselves.

As a result, the activities of DIG, CBDRM and the evacuation drill were completed successfully as scheduled in the program. Further, the capacity of DDPM staff was enhanced drastically to execute DIG, CBDRM and evacuation drills. Further, based on these activities, two manuals—the CBDRM manual for the community and the Facilitator guide for DDPM staff --were prepared. These manuals shall be examined in the further CBDRM activities by DDPM and revised into a final version.

In two pilot project areas, rain gauges and radio communication systems were installed and early warning organizations were revised and activated to cope with disasters efficiently. Further, warning criteria was studied and proposed to utilize these early warning systems. Established early warning systems were confirmed to work efficiently during the evacuation drill.

Through these activities, the capacity of DDPM staff was enhanced. As a result, the activities of the establishment of a community-based early warning system was completed successfully as scheduled in the program. Further, the capacity of DDPM staff to establish a community based early warning system was greatly enhanced.

A community disaster management plan and template was formulated for two pilot project areas. These plans shall be utilized as the model for the formulation of a community level disaster management plan in Thailand. Further, a template for regional disaster management was prepared. The template was introduced and explained in the workshop attended by all delegates from the prefectural DDPM office. Based on this template, a regional disaster management plan shall be formulated in all prefectures in Thailand within one year.

From the above, it can be evaluated that the purpose of regional disaster management in this project was successfully completed.

#### **2-4-4 Recommendations**

In this project, many results such as CBDRM activities, disaster management plan in the pilot project areas and the CBDRM manual were achieved. By this project, the capacity for regional disaster management was enhanced in DDPM staff, local residences and the staffs of related organizations in the region.

However it must be noted that the result of this project is only the first milestone of regional disaster management. The manual, disaster management plan and method of CBDRM shall be

revised to one that is suitable for Thailand based on the further activities of DDPM. Further, it is essential to develop human resources to continue regional disaster management activities. It is recommended to develop a core person who can manage regional disasters in Thailand.

Based on the above, the following matters can be recommended for regional disaster management.

- 1) continue CBDRM activities and revise manuals based on the activities
- 2) formulate a regional disaster management plan based on the template produced
- 3) develop human resources through training
- 4) continue and promote cooperation between school and community
- 5) encourage hazard map preparation and utilization in other areas
- 6) improve and utilize an early warning system from national to community level

## **2-5 School Disaster Education**

Capacity of MOE staff and teachers at model schools is enhanced to promote education for disaster preparedness at schools

### **2-5-1 Understanding of the current situation in Thailand**

#### **1) Current Situation of Disaster Preparedness Education**

In the beginning of the project, existing materials and information was collected and analyzed. In Thailand, supplementary reading about tsunamis for primary school and the teacher's guide has been published by ADRC, Japan. Further, many pamphlets and booklets for Tsunamis have been published by domestic organizations such as DMR, MOE and DDPM, and international organizations such as UNICEF, UNESCO and the University of PNG, and Japanese organizations such as Port and Airport Research Institute, Shanti Volunteer Association, etc.

However, it was confirmed that DMR has prepared some booklet for geo-hazards, but no substantial school teaching material for floods and landslides exists in Thailand. Based on this situation, it was agreed to employ the following policy for the preparation of teaching material.

- i) Utilize and revise existing supplementary reading, and a teacher's guide prepared by ADRC for tsunami disasters
- ii) Prepare "Flood" and "Landslide" supplementary reading and a teacher's guide conforming to the format of ADRC tsunami readings.

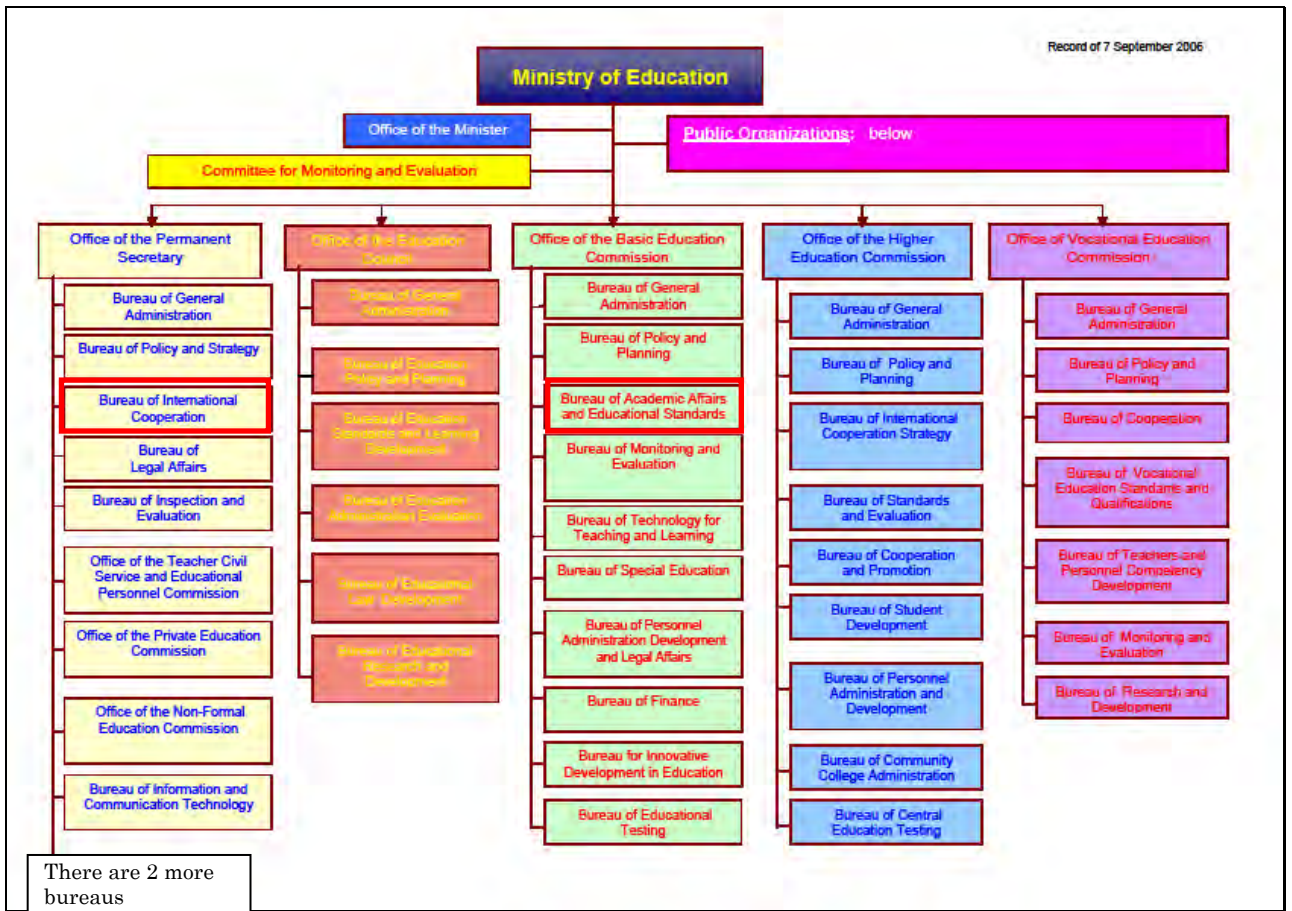
On the other hand, "The National Education Plan of MOE (2007-2011)" issued in the midst of this project implementation period indicated that the education for disaster preparedness should be promoted, especially in disaster prone areas. It is expected that the policy will secure the promotion of disaster preparedness education in the future.

#### **2) Current situation of MOE Concerning the Cooperation Field and Related Fields**

The following two bureaus in MOE (refer to the organization chart below) have implemented Activity 5 (Education for Disaster Prevention) of the project as core organizations through obtaining the participation of related offices/ bureaus in MOE:

- (a) Bureau of International Cooperation, Office of the Permanent Secretary: The core of the overall management of the project as the representative liaison body to coordinate with JICA, DDPM, relating offices/ bureaus in MOE and related agencies
- (b) Bureau of Academic Affairs and Educational Standards, Office of the Basic Education Commission (OBEC): The implementing body of the substantial project activities from the preparation of teaching materials to the implementation of workshops in pilot project areas





In the process of implementing the project, the cooperation and coordination between mega-size offices/ bureaus in MOE have sometimes faced difficulties. This can be said to be the common issue which huge ministries like MOE inevitably face regardless of country.

Therefore, in the beginning of the 2nd year, MOE has improved and reformed the management relating to the project activity under the initiative of the Office of the Permanent Secretary reflecting the lessons learned in the 1st year activity (Sep. 2006 - Mar. 2007). For this purpose, the Office of the Permanent Secretary officially established Task Force 6 instead of existing Steering Committee on June 15, 2007 under the name of the Permanent Secretary (MOE command, No. Bureau of International Cooperation 642/2007). As a result, cooperation between the related Offices/ Bureaus in MOE as well as with DDPM has remarkably been strengthened by the overall management and coordination under the revised framework.



## **2-5-2 Activity and Output**

### 1) Contents of Activities

#### **a) Study the current situation of education for disaster preparedness in Thailand and introduce the experience as well as the best practices of Japan**

i) The situation that virtually no education other than Tsunami is confirmed.

The item has been completed in the 1st year (Sep. 2006 - Mar. 2007). The result is described in 2-5-1.

ii) Expert and JICA advisory committee members introduce the Japanese examples through workshop activities.

Ms. Hiroko Kondo, vice principle of Onizaki-kita primary school, Aichi, Japan as well as a member of JICA advisory committee introduced the example of education for disaster preparedness in the primary school of Japan as “Showcase of Japan” at:

- The workshop in Bangkok held on December 28, 2006.
- MOE, Bangkok for 10 MOE participants of 3-week (August 26 - September 15, 2007) counterpart training course in Japan “Disaster Prevention in School” on June 23, 2007,
- Ban Had Hong primary school in Ta Sae, Chumporn during the 2nd workshop for the workshop participants and parents on June 25, 2007,
- MOE Bangkok for the presentation of the result of counterpart training in Japan “Disaster Prevention in Schools” by 10 MOE participants on December 25, 2007,
- Thachat Chai primary school in Thalang, Phuket during the 3rd workshop on December 26 - 28, 2007,
- The workshop in Bangkok held on July 22, 2008, and
- Ban Nam Hu primary school in Pai, Mae Horn Song during the 4th workshop on July 23-25, 2008.

iii) Counterpart training in Japan “Disaster Prevention in School” is implemented.

As a component of the Project, JICA conducted counterpart training in Japan “Disaster Prevention in School” for three weeks from August 26 to September 15, 2007. MOE staff from various offices and bureaus including the counterparts (the C/P) and several model school teachers (10 persons in total) participated in the course to learn the example and the experience of Japan with other nine participants from Indonesia, India and Sri Lanka.

#### **b) Review the current structure of organizations for the community empowerment focusing on education for disaster preparedness**

The activity has been completed in the 1st year as follows.

- Straight three-layered structure from OBEC, ESAO (Educational Service Area Office) to

schools was confirmed.

- It was confirmed that there is an elementary school in a community most of the time, and the school is one of the core components of the community.

**c) Develop supplementary reading and teacher’s guide for primary and secondary schools**

The OBEC C/P and JICA Expert prepared supplementary readings for disaster preparedness and the teacher’s guides and published them in March 2008 as shown below. These teaching materials have been prepared by drafting in Bangkok, testing through the series of workshop discussions and activities, and revising in consideration of the result and lessons learned from the workshops.

<b>Publishing New Teaching Material</b>					
<ul style="list-style-type: none"> <li>■ New teaching material (Thai &amp; English) developed by MOE/JICA were published in March 2008 (printing cost by JICA) as follows:               <ul style="list-style-type: none"> <li>■ Supplementary reading: 33,000 copies</li> <li>■ Teachers’ guide: 8,000 copies</li> </ul> </li> <li>■ OBEC, MOE will soon distribute the published material (Thai version) to all the primary &amp; secondary schools in Thailand (32,256) via 178 ESAO.</li> </ul>					
	Hazard Type	Supplementary Reading	Teachers' Guide	Target grade	Present Availability
1	Tsunami	Revision of Existing ADRC teaching material		Primary & Secondary	Many existing materials are also available
2	Landslide	Newly preparation			No material except some on landslide by DMR
3	Flood				

The basic curriculum for disaster preparedness education is summarized as shown in the table below. The point is that not only disaster knowledge (mainly scientific aspect) but spontaneous participatory activity for preparedness by students in connection with their community (social aspect) is crucial in the lecture.

**Curriculum of Education for Disaster Preparedness  
(Component of Teaching Material  
& Lecture Implementation)**

- 1) Lecture: 3 hours
  - to understand the disaster
  - lecture to be integrated/ conducted in each subject such as science, social studies and health education
  - more voluntary supplemental study in Teacher's Guide is up to each school initiative
- 2) DIG (approach to community): 3 hours
  - to raise awareness for disaster through mapping by students
  - lecture & activity be conducted in "student development hours"
- 3) Evacuation Drill: 1.5 hours
  - to prepare for disaster through repeated exercise
  - lecture & activity be conducted in "student development hours"

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**d) Develop training program for teachers on disaster preparedness**

The draft workshop program for teacher's training has been prepared as follows through designing, testing and revising by actual trial of four workshops:

Workshop Program for Teacher's Training (DRAFT)

No.	days	Program	Lecturer	Target
1	2	Lecture and discussion on supplementary reading and Teacher's Guide	MOE (with model school teachers)	Teachers
		Model lecture by draft supplementary reading	MOE (with model school teachers)	Teachers
		DIG Practice	MOE (with model school teachers)	Teachers
		Evacuation drill (with DDPM)	MOE (with model school teachers)/ district DPM	Teachers & Pupils
2	2	Model lecture by draft supplementary reading	Trained teachers	Pupils
		DIG Practice	Trained teachers	Pupils
		Evacuation drill	Trained teachers/ district DPM	Teachers & Pupils
		Preparation of each school's action plan / wrap-up free discussion	All the participants	Teachers

The total number of public schools as of year 2007 is summarized as follows for reference:

Category	Number of public school (2007)
Primary school (Grade 1 – 6)	22,635
Secondary school (Grade 7 -12)	2,588
Primary & secondary school (Grade 1 – 9)	7,033
Total	32,256

**e) Select 3 model schools and 6 associate model schools for education on disaster preparedness**

In order to conduct workshops for disaster preparedness education in three pilot project areas, nine model schools (3 model schools and 6 associate model schools) were officially selected as follows by a Task Force 6 meeting held on November 14, 2006 after the joint filed reconnaissance by MOE and DDPM.

**Selected Model Schools for the Pilot Project**

<b>List of Selected Model Schools for the Pilot Project</b>
<p><u>Phuket (Tsunami)</u>  Pilot Project Area: Ban Thachat Chai, Moo 5, Tambon Mai Khao, Thalang District</p> <p>&lt;Model Schools in the Pilot Project Area&gt;</p> <ol style="list-style-type: none"> <li>1. Ban Thachat Chai Primary School</li> </ol> <p>&lt;Associate Model School outside the Pilot Project Area&gt;</p> <ol style="list-style-type: none"> <li>2. Hongyok Bamrung Secondary School (Tambon Mai Khao, Thalang District)</li> <li>3. Satee Phuket Secondary School (Muang District)</li> </ol>
<p><u>Mae Hong Sorn (Geo-Hazard)</u>  Pilot Project Area: Ban Nam Hu, Tambon Waing Tai, Pai District</p> <p>&lt;Model School in the Pilot Project Area&gt;</p> <ol style="list-style-type: none"> <li>1. Ban Nam Hu Primary School</li> </ol> <p>&lt;Associate Model Schools outside the Pilot Project Area&gt;</p> <ol style="list-style-type: none"> <li>2. Wittayakhan Secondary School (Pai Town)</li> <li>3. Navamindra Poly-technique College (Mae Hong Sorn Town)</li> </ol>
<p><u>Chumporn (Flood)</u>  Pilot Project Area: Ban Nong Rieng, Moo 1, Tambon Ta Kham, Ta Sae District</p> <p>&lt;Model School in the Pilot Project Area&gt;</p> <ol style="list-style-type: none"> <li>1. Ban Hat Hong Primary School</li> </ol> <p>&lt;Associate Model Schools outside the Pilot Project Area&gt;</p> <ol style="list-style-type: none"> <li>2. Pathiu Wittaya Secondary School (Pathiu District)</li> <li>3. Ta Sae Poly-technique College (Ta Sae District)</li> </ol>

**f) Conduct workshops and lectures for raising the awareness (including DIG) in each model school**

The workshops for disaster preparedness education were held four times (36 days in total) as shown in the table below at each model school in three pilot project areas with the participation of the teachers and pupils of model schools and associate model schools.

<b>Model School Workshops for Disaster Prevention</b>				
No.	Month/year	Program	Lecturer	Target
1	Feb. 2007	Model lecture by draft supplementary reading	JICA Expert	Teachers
		Hazard mapping (with DDPM)	JICA Expert / DDPM	
2	Jun. - Jul. 2007 (3 days)	Discussion on supplementary reading	MOE/ JICA Expert	Teachers
		Model lecture by draft supplementary reading	Trained teachers	Pupils
		DIG	JICA Expert	Teachers
		Evacuation drill (with DDPM)	JICA Expert/ DDPM	Teachers & Pupils
3	Nov. - Dec. 2007 (3 days)	Discussion on teacher's guide	MOE/ JICA Expert	Teachers
		DIG	Trained teachers	Pupils
		Evacuation drill	Trained teachers	Teachers & Pupils
4	Jun. - Jul. 2008 (3 days)	<b>Discussion on each school's action plan</b>	<b>MOE/JICA Expert</b>	<b>Teachers</b>
		<b>Model lecture by supplementary reading</b>	<b>Trained teachers</b>	<b>Pupils</b>
		<b>DIG</b>	<b>Trained teachers</b>	
		Evacuation drill	Trained teachers	Teachers & Pupils

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The objectives and outputs of the workshops are as shown below.

### **Workshops at Model Schools**

- Objectives
  - To train model school teachers
    - by MOE/JICA Expert (with DDPM)
      - Lecture by supplementary reading (with teacher's guide)
      - DIG
      - Evacuation drill
    - Trained teachers conduct model lectures for students
  - To develop material & curriculum through lessons learned from workshops
- Outputs
  - Published supplementary reading & teachers' guide (March 2008)
    - Tsunami
    - Landslide
    - Flood
  - Model schools as the showcase/base to promote to all the schools in Thailand

7

#### i) The 1st workshops

The 1st workshops were conducted on the following dates:

- i. February 5 - 7, 2007: Workshop at Ban Nam Hu primary school in Pai, Mae Horn Song province (Landslide)
- ii. February 12 -14, 2007: Workshop at Ban Hat Hong primary school in Ta Sae, Chumporn province (Flood)  
<DDPM conducted the workshop for the community simultaneously.>
- iii. February 19 -21, 2007: Workshop at Thachat Chai primary school in Thalang, Phuket province (Tsunami)  
<DDPM conducted the workshop for the community simultaneously.>

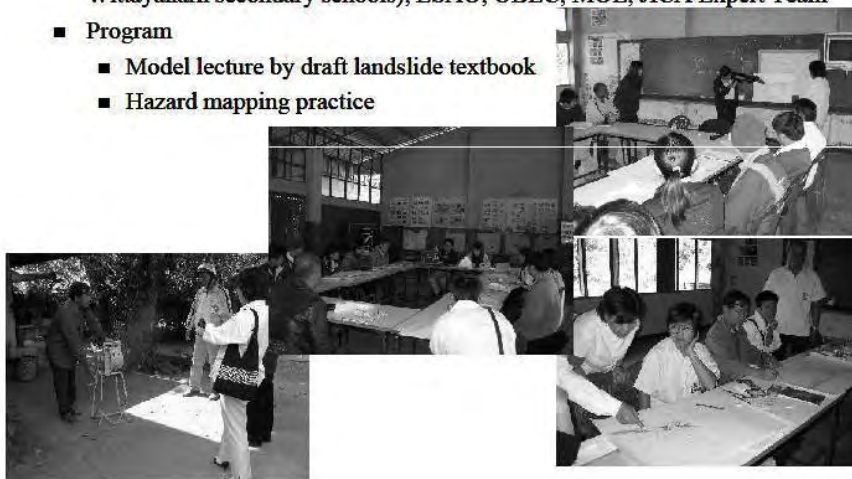
The program of the 1st workshop was as follows:

- i. Model lecture by JICA expert for teachers by using draft concept of supplementary reading
- ii. Hazard Mapping by teachers (with DDPM and community people)

The hazard mapping has been conducted with the cooperation of related JICA Experts. In Chumporn and Phuket, MOE workshop for the school and DDPM workshop for the community were held simultaneously and the joint hazard mapping practice was implemented successfully. The outline of the 1st workshop at each area is summarized as follows:

### 1st Workshop at Model School in Pai, Mae Hong Sorn (Landslide)

- Date: February 5-7, 2007
- Venue: Ban Nam Hu Primary School (model school)
- Participants: 2 model school teachers (Ban Nam Hoo primary & Pai Wittayakam secondary schools), ESAO, OBEC, MOE, JICA Expert Team
- Program
  - Model lecture by draft landslide textbook
  - Hazard mapping practice



### 1st Workshop at Model School in Ta Sae, Chumporn (Flood)

- Date: February 12-14, 2007
- Venue: Ban Hat Hong Primary School & Tambon Ta Kham Office
- Participants: 3 model schools teachers (Ban Hat Hong primary, Patiw Wittaya secondary schools & Thasae Poly-Technic collage), ESAO, OBEC, MOE, JICA Expert Team
- Program
  - Model lecture by draft flood textbook
  - Hazard mapping practice  
(with the community people in collaboration with DDPM)



### **1st Workshop at Model School in Thalang, Phuket (Tsunami)**

- Date: February 19-21, 2007
- Venue: Ban Thachat Chai Primary School (model school)
- Participants: 3 model school teachers (Ban Thachat Chai primary, Hong-yok Bamroong secondary & Satree Phuket secondary schools), ESAO, OBEC, MOE, JICA Expert Team
- Program
  - Model lecture by ADRC textbook
  - Hazard mapping practice  
(with the community people in collaboration with DDPM)



2

#### ii) The 2nd workshops

The 2nd workshops were conducted on the following dates::

- i. June 27, 28 & 30, 2007: Workshop at Thachat Chai primary school in Thalang, Phuket province (Tsunami).
- ii. July 11 - 13, 2007: Workshop at Ban Nam Hu primary school in Pai, Mae Horn Song province (Landslide)  
<DDPM conducted the workshop for the community simultaneously. JICA advisory committee joined the workshop as observer.>
- iii. July 25 - 27, 2007: Workshop at Ban Hat Hong primary school in Ta Sae, Chumporn province (Flood)  
<Ms. Hiroko Kondo, a member of JICA advisory committee joined the workshop>

The program of the 2nd workshop is as follows:


- i. Discussion on the draft supplementary reading (by all participants)
- ii. Model lecture for 4-6 grades students by using draft supplementary reading (by trained teachers)
- iii. DIG practice for teachers (by all participants)
- iv. Evacuation drill (by all participants and all model school students)




The outline of the 2nd workshop at each area is summarized as follows:

**2nd Workshop at Model School in Phuket (Tsunami)**


- Date: June 27, 28 & 30, 2007
- Venue: Ban Thachat Chai Primary School (model school)
- Participants: 3 model school teachers, ESAO, OBEC, MOE, JICA Expert Team, Pupils of Thachat Chai school
- Program
  - Discussion & model lecture by textbook
  - DIG (Disaster Imagination Game)
  - Evacuation Drill



**Model  
Lecture**



**DIG**




**Evacuation  
Drill**


5

**2nd Workshop at Model School in Mae Horn Song (Landslide)**


- Date: July 11-13, 2007
- Venue: Ban Nam Hu Primary School (model school)
- Participants: 3 model school teachers, ESAO, OBEC, MOE, JICA Expert Team, Pupils of Ban Nam Hu school
- Program
  - Discussion & model lecture by textbook
  - DIG
  - Evacuation Drill



**Model  
Lecture**



**DIG**



**Evacuation  
Drill**

### **2nd Workshop at Model School in Chumporn (Flood)**

- Date: July 25-27, 2007
- Venue: Ban Hat Hong Primary School (model school)
- Participants: 3 model school teachers, ESAO, OBEC, MOE, JICA Expert Team, Pupils & parents of Ban Hat Hong school
- Program
  - Special Lecture by Ms. Kondo
  - Discussion & model lecture by textbook
  - DIG
  - Evacuation Drill (preparation)



iii) The 3rd workshops

The 3rd workshops were conducted as follows:

- i. November 19 - 21, 2007: Workshop at Ban Nam Hu primary school in Pai, Mae Horn Song province (Landslide)  
<District DPM, JICA advisory committee and Japanese TV station (NHK) participated.>
- ii. December 11 - 13, 2007: Workshop at Ban Hat Hong primary school in Ta Sae, Chumporn province (Flood)
- iii. December 26 - 28, 2007: Workshop at Thachat Chai primary school in Thalang, Phuket province (Tsunami)  
<Ms. Hiroko Kondo, a member of JICA advisory committee and NHK participated.>

The program of the 3rd workshops is as follows:

- i. Discussion on the draft teacher's guide for supplementary reading (by all participants)
- ii. DIG practice (4-6 grades of model school pupils and 1 grade of associate model school students conducted DIG according to the guidance of trained model school teachers)
- iii. Evacuation drill (All the model school pupils with some associate model school students participated in the drill through the guidance of trained model school teachers)

The outline of the 3rd workshops at each area is summarized as follows:

### 3rd Workshop at Model School in Pai, Mae Horn Song (Landslide)

- Date: Nov 19-21, 2007
- Venue: Ban Nam Hu Primary School (model school)
- Participants: 2 model school (Ban Nam Hu & Pai Wittayakhan schools) teachers, ESAO, OBEC, MOE, 2 model school pupils, District DPM, NHK Japan, JICA
- Program
  - Discussion on teacher's guide
  - DIG (by pupils)
  - Evacuation drill (with district DPM)



**Discussion on teacher's guide of supplementary reading**



**DIG by pupils**



**Evacuation drill with DDPM**



### 3rd Workshop at Model School in Thasae, Chumporn (Flood)

- Date: December 11-13, 2007
- Venue: Ban Hat Hong Primary School (model school)
- Participants: 2 model school (Ban Hat Hong & Thasae Poly-technique college) teachers, ESAO, NFEC, OBEC, MOE, Pupils of Ban Hat Hong school, JICA Expert
- Program
  - Discussion on teacher's guide
  - DIG (by pupils)
  - Evacuation drill



**Discussion on Teacher's guide**



**Evacuation drill**



**DIG by pupils**



### **3rd Workshop at Model School in Thalang, Phuket (Tsunami)**

- Date: Dec 26-28, 2007
- Venue: Thachat Chai Primary School (model school)
- Participants: 3 model school (Thachat Chai, Hongyok Bamrung & Satree Phuket schools) teachers, ESAO, OBEC, MOE, 2 model school pupils, Ms. Kondo, NHK, JICA Expert

- Program

- Discussion on Teacher's guide
- DIG (by pupils)



**Discussion on teacher's guide of supplementary reading**



**DIG by pupils**



**Evacuation drill**



**Evacuation drill**

#### iv) The 4th workshops

The 4th workshops were conducted on the following dates:

- i. July 2 - 4, 2008: Workshop at Thachat Chai primary school in Thalang, Phuket province (Tsunami)  
<Teachers from six surrounding schools other than model schools joined the workshop as observer.>
- ii. July 9 - 11, 2008: Workshop at Ban Hat Hong primary school in Ta Sae, Chumporn province (Flood)  
< Teachers from three schools other than model schools also joined the workshop as observer. Office of Private Education Commission (OPEC), Office of the Permanent Secretary, MOE conducted the Flood disaster education workshop for 50 private school teacher in and around Chumporn area simultaneously. Accordingly, the Project and OPEC conducted several programs of both workshops together.>
- iii. July 23 - 25, 2008: Workshop at Ban Nam Hu primary school in Pai, Mae Horn Song province (Landslide)  
<DDPM Bangkok, district DPM and village DPM participated and supported DIG and evacuation drill activities. Teachers from three surrounding schools and Chiang Mai ESAO joined the workshop as observer. Ms. Kondo, member of JICA advisory committee joined the workshop. Pai Cable TV & Radio visited the workshop and



they created and broadcast TV & radio programs.>





The program of the 4th workshops is as follows:

- i. Discussion on the draft action plan of each model school (by all the participants)
- ii. Model lecture by using supplementary reading (by trained teachers to 4-6 grades of model school pupils and 2 grade of associate model school students)
- iii. DIG practice (4-6 grades of model school pupils and 2 grade of associate model school students conducted DIG according to the guidance of trained model school teachers)
- iv. Evacuation drill (All the model school pupils with some associate model students participated in the drill through the guidance of trained model school teachers)

The outline of the 4th workshops at each area is summarized as follows:

**4th Workshop at Model School in Thalang, Phuket (Tsunami)**

- Date: July 2-4, 2008
- Venue: Thachat Chai Primary School (model school)
- Participants: 3 model school (Thachat Chai, Hongyok Bamrung & Satree Phuket schools) teachers, 6 surrounding schools, ESAO, OBEC, MOE, 2 model school pupils, JICA Expert
- Program
  - Wrap up discussion
  - Lecture
  - DIG & Evacuation drill



**Lecture by supplementary reading**

**DIG**

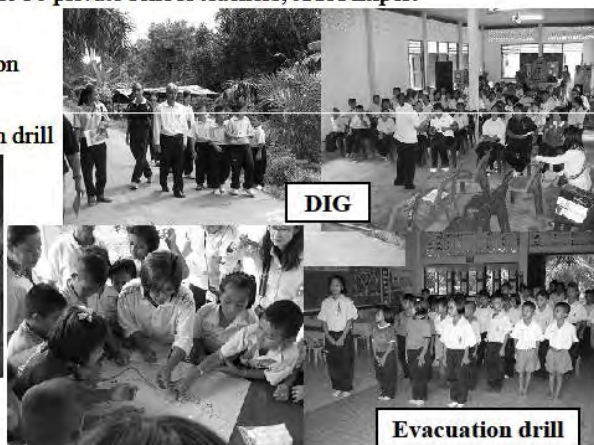
**Evacuation drill**

#### 4th Workshop at Model School in Thasae, Chumporn (Flood)

- Date: July 9-11, 2008
- Venue: Ban Hat Hong Primary School (model school)
- Participants: 2 model school (Ban Hat Hong & Thasae Poly-technique college) teachers, 5 surrounding schools, ESAO, OBEC, MOE, model school pupils, OPEC & 50 private school teachers, JICA Expert
- Program
  - Wrap up discussion
  - Lecture
  - DIG & evacuation drill



Lecture by supplementary reading



DIG

Evacuation drill

#### 4th Workshop at Model School in Pai, Mae Horn Song (Landslide)

- Date: July 23-25, 2008
- Venue: Ban Nam Hu Primary School (model school)
- Participants: 2 model school (Ban Nam Hu & Pai Wittayakhan schools) teachers, 3 surrounding schools, ESAO, OBEC, MOE, 2 model school pupils, DDPM, district & village DPM, Pai Cable TV & radio, JICA (Expert & Ms. Kondo)
- Program
  - Wrap up discussion
  - Lecture
  - DIG & evacuation drill



Lecture by supplementary reading



DIG

Evacuation drill

**g) Formulate action plan to promote disaster preparedness at school**

The action plan for conducting lectures at each model school has been drafted as follows as a result of the discussion at the 4th workshops:

**Action Plan of Disaster Preparedness Lecture at Each School**

Name of study	Disaster Preparedness Education	
Objectives of study	To enable students to understand the risk of natural disaster and to prepare for disaster in ordinary times.	
Objective students	Primary school (1 - 6 grades) and secondary schools (1 - 6 grades) *In practice, the most appropriate and effective target is 4 - 6 grades of elementary school pupils.	
Objective disaster	Each school will choose one potential disaster at the school and the community. 1) Tsunami (coastal area) 2) Landslide (mountainous area) 3) Flood (plain area) *If teacher cannot choose, teacher should consult with district DPM.	
Teaching material	1) Supplementary Reading (for pupils) 2) Teacher's Guide (for teachers)	
Study contents and its introduction to school curriculum	1) Lecture (science, social studies and health education) 2) DIG practice (4 grade -) (student development hour) 3) All school evacuation drill (student development hour)	
Lecturer	Trained school teachers	
Location of study	Classroom and the community around the school	
Grading of students	Not necessary	
Study period	1 year in June (minimum)	
<b>Study Schedule (DRAFT)</b>		
Date	Study contents	Study hour
1st week in June	1st lecture by supplementary reading	1 hour
2nd week in June	2nd lecture by supplementary reading	1 hour
3rd week in June	DIG (Disaster Imagination Game) practice	3 hour
3rd week in June	All school evacuation drill	1 ~ 1.5 hour
4th week in June	3rd (wrap-up) lecture by supplementary reading	1 hour
	Total	7 hours/ year
Remarks	*Evacuation drill is recommended to implement once-yearly. *Voluntary supplemental study and activity in Teacher's Guide is recommended to conducted according to each school initiative.	

## 2) List of Output

The supplementary reading and teacher's guide printed as the output is listed as follows:

No.	Name of Output	Language	Nos. Printing	PDF File
1	Tsunami Teacher's Guide	Thai	8,000	Available
2	Flood Teacher's Guide			
3	Landslide Teacher's Guide			
4	Tsunami Supplementary Reading		33,000	
5	Flood Supplementary Reading			
6	Landslide Supplementary Reading			
7	Tsunami Teacher's Guide	English	None	Available
8	Flood Teacher's Guide			
9	Landslide Teacher's Guide			
10	Tsunami Supplementary Reading		None	
11	Flood Supplementary Reading			
12	Landslide Supplementary Reading			

## 3) List of Workshops and Taskforce Meetings

### a) Workshop list

The workshop list held at the model schools in each pilot project area are summarized as follows:

No.	Date/venue	Program	Participant	
			Lecturer	Target
1	Feb. 5 - 7 , 2007 (Pai)	1. Model lecture by draft supplementary	JICA Expert	Teachers
	Feb. 12 - 14, 2007 (Chumporn)	2. Hazard mapping (with DDPM)	JICA Expert / DDPM	
	Feb. 19 - 21, 2007 (Phuket)			
2	Jun. 27, 28 & 30, 2007 (Phuket)	1. Discussion on supplementary reading	MOE/ JICA Expert	Teachers
	Jul. 11-13, 2007 (Pai)	2. Model lecture by draft supplementary	Trained teachers	Pupils
	Jul. 25-27, 2007 (Chumporn)	3. DIG practice	JICA Expert	Teachers
		4. Evacuation drill (with DDPM)	JICA Expert/ DDPM	Teachers & Pupils
3	Nov. 19 - 21, 2007 (Pai)	1. Discussion on teacher's guide	MOE/ JICA Expert	Teachers
	Dec. 11 -13, 2007 (Chumporn)	2. DIG practice	Trained teachers	Pupils
	Dec. 26 -28, 2007 (Phuket)	3. Evacuation drill	Trained teachers	Teachers & Pupils
4	Jul. 2 - 4, 2008 (Phuket)	1. Discussion on each school's action plan	MOE/JICA Expert	Teachers
	Jul. 9 - 11, 2008 (Chumporn)	2. Model lecture by supplementary reading	Trained teachers	Pupils
	Jul. 23 - 25, 2008 (Pai)	3. DIG practice	Trained teachers	
		4. Evacuation drill	Trained teachers	Teachers & Pupils



b) List of Task Force meeting

Task Force 6 meetings (Education) were held as follows:

Date	Venue	Participants
Nov. 14, 2006	MOE	MOE, DDPM, JICA Experts
Dec. 20, 2006	OBEC, MOE	OBEC (Task Force working group), JICA Experts
Jun. 12, 2007	MOE	MOE, JICA Experts

**2-5-3 Evaluation of the Achievement**

All the project activities can generally be included in the following two major activities:

- i) Preparation and publishing of supplementary reading for disaster preparedness and teacher's guides (activity mainly in Bangkok)
- ii) Workshops at model schools (activity in local community)

The achievements of the above-mentioned two activities are compiled as follows in terms of the capacity development of MOE, ESAO and school teachers concerns on disaster preparedness:

**(a) Preparation of supplementary readings and teacher's guides**

- i. Products: 12 kinds of teaching materials for disaster preparedness (tsunami, landslide & flood supplementary reading & teacher's guides -Thai and English versions-) were prepared and published in March 2008. The printed Thai materials have been distributed to all the public primary and secondary schools in Thailand (32,256 schools) via 178 ESAO.
- ii. Capacity development of C/P: OBEC, MOE counterparts(the C/P) and JICA Experts in charge have developed teaching materials together by discussing how the description could be easier for students to understand and could be more suitable in view of Thailand context, and how to translate it into Thai. Through this process, the C/P has acquired the ability on essential disaster preparedness and the principle of teaching methods
- iii. Introduction of practical and effective developing methods: Disaster preparedness has really taken root in the community and the teaching material only by armchair theory developed in the office has little meaning. Therefore, a unique methodology, "hybrid" of top down (draft preparation in Bangkok) and bottom up (review and revision of the draft through the discussion at model school workshops) has been introduced in the project. As a result, practical and effective materials have successfully been developed.

**(b) Workshops at model schools**

- i. Implementation of 4 workshops (in total 36 days) for disaster preparedness education:  
Four workshops at the model schools in three pilot project areas to train teachers and to develop teaching materials have successfully been completed (in total 36 days). The workshops have been implemented with the attendance of model schools and associate model school teachers & students, local educational service area offices (ESAO), OBEC, relating offices of MOE and relating agencies such as DDPM.
- ii. Management by MOE initiative: The OBEC C/P could manage the workshops by their own initiative using their own budget of the Bureau of Academic Affairs and Educational Standards, OBEC. The Office of the Permanent Secretary, MOE has coordinated related offices as the representative liaison body of the project.
- iii. Close cooperation of MOE and DDPM: In the 3rd and 4th workshops at Pai, Mae Horn Song, district DPM (Bangkok DDPM also joined the 4th workshop) had kindly assisted DIG and evacuation drills conducted by model school pupils and some associate model school students and made useful comments to them as experts on disaster prevention.
- iv. Capacity development of model school teachers: Through the practical training in the workshops, the model school teachers could be able to teach 1) lecture, 2) DIG and 3) evacuation drills for their pupils and students entirely by themselves by using the supplementary reading and the teacher's guide.
- v. DIG and evacuation drills conducted by model school pupils and students: Model school pupils and associate model school students could conduct DIG and evacuation drills successfully based on the guidance of trained model school teachers.
- vi. Raising the motivation of model school teachers: Since the model school and associate model school teachers and ESAO had actual disaster experience of a tsunami, landslide and flood in recent years, their sense of participation in the workshop has become greater each time. Therefore, the C/P and JICA Expert could obtain many valuable suggestions from those co-national teachers in developing the supplementary reading and teacher's guide.
- vii. Establishment of training and exhibition rooms in model schools: As a result of the above (vi), the model school in Chumporn (Ban Hat Hong primary school) has established a training room in 2008 for disaster preparedness (for around 100-people) with many instruction panels. The associate model school in Pai, Mae Horn Song (Pai Wittayakhan secondary school) has also established an exhibition room for disaster

preparedness with many panels and materials on exhibit.

- viii. First step to dissemination to other disaster prone areas: As the first step of future dissemination of disaster preparedness education to other disaster prone areas, MOE invited several school teachers (private schools in Chumporn) and ESAO from surrounding areas and other provinces to the last (4th) workshop. All the invited teachers showed much interest in the workshop activities and wanted activities to be implemented in the future in other areas and provinces.

#### **2-5-4 Recommendations**

- i. Establishment of model schools as the center of future dissemination activity: In order to spread disaster preparedness education widely at regional level from now on, firstly, it is necessary to establish model schools in three pilot project areas as sustainable disaster preparedness educational centers. Although the motivation of the model school teachers has increased through the workshop activities as described in the foregoing paragraph, it seems that it is difficult for them to continue disaster preparedness education only by themselves in the state with no support in the future. After the end of the project, it will be indispensable for MOE and ESAO to implement suitable budgetary and administrative support for disaster preparedness educational activities in the model schools and to monitor the implementation of the educational activities.
- ii. Dissemination of disaster preparedness education at regional level: The model schools as the disaster prevention educational centers to be established in the future are still only three small dots in Thailand. Therefore, as a follow-up phase, it is essential to spread disaster preparedness education through regional level widely using each model school as a base. For that purpose, it is necessary to select fairly similar disaster prone regions and to promote dissemination activities strategically. Since this dissemination process requires human resources, a considerable budget and time, in order to target effective and efficient dissemination, it is desirable for MOE to prepare a dissemination strategy road map, and to promote activities based on it.

## 2-6 Gender and Disaster

### 2-6-1. Outline

A Gender Expert was additionally assigned to promote gender consideration in this project. Throughout the assignment periods, major activities and the objective of the activities carried out were as follows:

- 1) Identification of gender issues in Thailand (the 2<sup>nd</sup> Year : the 1<sup>st</sup> assignment period)
- 2) Identification of gender Issues on natural disaster and disaster management (the 2<sup>nd</sup> Year : the 1<sup>st</sup> and the 2<sup>nd</sup> assignment periods)
- 3) Preparation and implementation of the 1 day gender seminar at DDPM (the 2<sup>nd</sup> Year : the 2<sup>nd</sup> assignment period, October 19, 2008)
- 4) Discussions with relevant resource persons and agencies in order to suggest measures and ways towards gender promotion at DDPM (the 2<sup>nd</sup> Year : the 2<sup>nd</sup> assignment period, October 19, 2008)
- 5) Observation of Gender Workshop held by DDPM in May 21-23, 2008 and to provide further suggestions about measures and ways toward gender promotion at DDPM (the 3<sup>rd</sup> Year)

### 2-6-2. Gender Policies and Measures at National Level in Thailand

#### 1) National Level

According to the Bureau of Gender Equality Promotion at the Ministry of Social Development and Human Security (MSDHS), which is a key national organization promoting women's development and gender issues, there are two (2) main legal backgrounds on gender promotion in Thailand: One is the resolution passed through the cabinet in 2001, and the other is women development plan 2007-2011, which is a supplemental document to the 10<sup>th</sup> National Socio-economic Development Plan 2007-2011, as described in the following two (2) figures.

#### **Resolution of Cabinet on July 31, 2001**

- 1) All Ministries and Departments must set up 1 Gender Equality Officer (= CGEO at a management level).
- 2) All Ministries and Departments must set up Gender Focal Point (officer(s) at an operation level)
- 3) Training and capacity development on gender are responsibility of the CGEO and the GFP

Source: Presentation PPT made for DDPM Gender seminar by Gender Bureau

**Figure 2-6-1 Resolution of Cabinet on July 31, 2001**

**Women Development Plan 2007-2011**

- 1) Gender Equality Attitude Establishment
- 2) Decision Participation Increasing on Politic and Administration
- 3) Happiness and fertile sanitation right promotion
- 4) Life and body security reinforce
- 5) Economic participation promotion of women

Source: Presentation PPT made for DDPM Gender seminar by Gender Bureau

**Figure 2-6-2 Women Development Plan 2007-2011**

Following this background, the Bureau of Gender Equality Promotion has been implementing training of CGEOs (Gender Equality Officers) and GFP (gender focal persons) in all 129 ministries and bureaus every year<sup>1</sup>, as well as preparing and provision of supplemental budget of the cost for gender training, lectures/resource persons, workshop materials (manuals, teaching materials, leaflets etc.), and technical support for institutional arrangement and workshops/seminar through provision of lectures and resource persons since 2001.

In 2007, the Bureau summarized achievement of gender equality at these administration offices (ministries and bureaus) as shown in the following Figure 3.

---

<sup>1</sup> According to the Bureau, there are 129 departments in Thailand in 2007.

### **Gender Equality Achievement in 2007**

- 1) Set up CGEO in 129 departments (100%)
- 2) Set up GFP in 129 departments (100%)
- 3) Produce Gender Equality Promotion Master Plan in 129 departments (100%)
- 4) Collect gender disaggregated statistical data in 101 departments (78.29%)
- 5) Establish awareness/sensitization on gender equality in 103 departments (79.84%)
- 6) Government officer's capacity development on gender roles through training in the department in 93 departments (72.09%)
- 7) Arrange environment, which considers gender roles in 64

Source: Presentation PPT made for DDPM Gender seminar by Gender Bureau

### **Figure 2-6-3 Gender Equality Achievement in 2007**

## **2) Department of Disaster Prevention and Mitigation (DDPM)**

### **i) General Situation**

In DDPM achievement on gender promotion from 1) to 2), as listed in Figure 3 above, have already been prepared while collection and analysis of gender disaggregated statistical data, and training of department staff have not been started (excepting for the 1<sup>st</sup> gender workshop in May 2008 explained later) in the Department yet. In that sense, gender integration in planning and activity implementation in disaster management and prevention has not been fully prepared and developed, and there are needs to integrate gender concerns in disaster prevention and management measures by DDPM in the near future to meet the mission of DDPM.

### **ii) CGEO, GFP and the Gender Equality Master Plan 2007-2011**

Currently, Deputy Director-General (Mr. Swit Khanikul) plays a role of CGEP, and an officer (Mr Sakudavut) who is in the personnel section has been assigned as GFP at DDPM. The Gender Equality Promotion Master Plan was mainly created by staff of the personnel section, and submitted to the Bureau of Gender Equality Promotion of MSDHS.

The DDPM's Gender Equality Master Plan 2007-2011 states about "women development" within DDPM as shown in 1) and 2) below (English translation is attached), and it appears that gender perspectives are not well applied, and it does not mention enough regarding service improvement as to what the DDPM is supposed to provide for the population. Considering this limitation of the exiting DDPM's Gender Master Plan, there are urgent needs of revising the

Master Plan with “gender perspectives” With DDPM.

### **2-6-3 Provincial DPM: the case of Chumpon Province**

There are three (3) pilot regions and villages, with which community mobilization for disaster prevention and management activities, such as implementation of evacuation drills and establishment of a community based early warning system, have taken place, through the JICA Supported Project. These three (3) pilot areas are:

- 1) Nong Raing village, Tha Kham Tambon (sub-district), Chumpon province
- 2) Nam Hu village, Wentai Tambon (sub-district), Mae Ho Song province
- 3) Thachat Chai village, Phuket province

Among these three (3) pilot sites, a JICA expert on Gender/ Community Disaster Management visited two (2) sites, namely Nong Raing village, Chumpon Province in July 2007 and Nam Hu village, Mae Ho Song province in October 2007. For the purpose of analysis on gender issues at the provincial level, the institution and activities of Chumpon Province’s DPM are illustrated here.

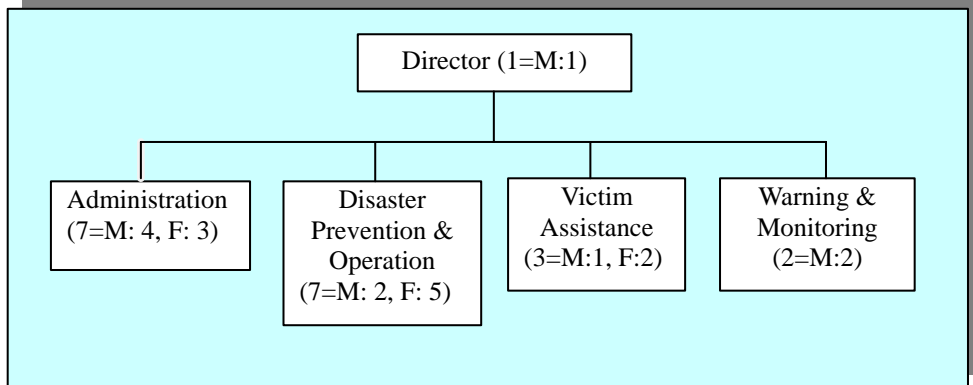
#### **1) Institution and personnel deployment of Chumpon Provincial PDM**

Figure 4 shows four (4) sections of the Provincial PDM and deployment of staff as of October 2007. There are twenty (20) staff in total, and numbers of male staff and female staff are the same--ten (10).<sup>2</sup> There has been not been any training implemented so far regarding women development and gender issues within PDM since gender planning and training has not been applied even at the ministry level.

As suggested later in this report, after creating awareness on understanding and importance of gender integration at the central level, it is necessary to extend training to the regional level within two (2) to three (3) years.

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<sup>2</sup> Besides these officers, there are two (2) male drivers at the PDM.



Source: Made by JICA Expert Team based on hearing from Chumpon PDM

**Figure 2-6-4 Chumpon Province DPM Structure**

Among the four (4) sections of Chumpon PDM, “Disaster Prevention and Operation” section plays a central role for prevention and management activities including issuing commands on District and Tambon based Community Disaster Management and Prevention Plans, monitoring them, training internal staff of Provincial PDM and members of both “One Tambon One Rescue (OTOS) Team” started in 2006 at Tambon level and “Civil Defense Team” at village level.

In terms of presentation and participation of women in these community based activities undertaken by the Provincial PDM, involvement of women is not sufficient, and remains as low as less than five (5) % of the total members (Refer to Table 1). Similarly a ratio of women representation in Civil Defense Team is less than ten (10) % as indicated in Table 2.

According to staff in charge of coordination of training for these teams in the Disaster Prevention Section in Chumpon PDM, the reasons limiting participation of women on these teams are:

- 1) Training of these teams is mainly for rescue activities; therefore it is very physically oriented.
- 2) One of qualifications of the members is above thirty (30) years old, and it is not easy for housewives to participate in training due to time availability.
- 3) Training takes place continuously for five (5) days, and there is a constraint for housewives to take part.
- 4) Recruitment of the members is voluntary based.<sup>3</sup>

In order to encourage participation of women to these community based activities on disaster

<sup>3</sup> While uniforms are provided, salary is not paid for the activities.



prevention and management, contents, timing and length of training need to be reexamined and considered from the viewpoints of differences of gender needs, because disaster prevention and management, in particular community based ones, are not only the male's responsibility.

**Table 2-6-1 Composition of One Tambon One Rescue (OTOS) Team in Chumphon Province**

Chumphon Province					
Class No.	Team	OTOS member			% of Female
		Male	Female	Total	
1	Tha Hin SAO	10		10	0%
	Na Sak SAO	10		10	0%
	Na Pho SAO	9	1	10	10%
	Ku Ring SAO	9	1	10	10%
	Hard Pan Krai SAO	9	1	10	10%
	Don Yang SAO	9	1	10	10%
	<b>Total</b>		<b>56</b>	<b>4</b>	<b>60</b>
2	Kron SAO	10		10	0%
	Na Pho SAO	8	2	10	20%
	Thung Tra Krai SAO	9	1	10	10%
	Ta Ko SAO	10		10	0%
	Baan Kwan SAO	10		10	0%
	Thung Ka Wat SAO	10		10	0%
	<b>Total</b>		<b>57</b>	<b>3</b>	<b>60</b>
3	Mab Aummarit District Municipality	10		10	0%
	Pha Tor District Municipality	9	1	10	10%
	Pak Nam - Lung Saun District Municipality	9	1	10	10%
	Sa Lui SAO	9	1	10	10%
	Chong Mai Keaw SAO	10		10	0%
	Hard Sai Ree SAO	9	1	10	10%
	<b>Total</b>		<b>56</b>	<b>4</b>	<b>60</b>
4	Pha Tor SAO	10		10	0%
	Pra Rak SAO	11		11	0%
	Baan Na SAO	10		10	0%
	Rub Ror SAO	10		10	0%
	Chum Ko SAO	12		12	0%
	Song Pee Nong SAO	7		7	0%
	<b>Total</b>		<b>60</b>	<b>0</b>	<b>60</b>
5	Wang Mai SAO	8	2	10	20%
	Wang Phai SAO	10		10	0%
	Tak Dad SAO	10		10	0%
	Chum Ko SAO	10		10	0%
	Sud Anan SAO	9		9	0%
	Na Kha SAO	11		11	0%
	<b>Total</b>		<b>58</b>	<b>2</b>	<b>60</b>
	<b>Grand Total</b>	<b>287</b>	<b>13</b>	<b>300</b>	<b>4%</b>

Source: Chumphon Provincial DPM, October 2007

**Table 2-6-2 Composition of Civil Defense Team in Chumpon Province**

Chumporn Province					
No.	Civil Defence Center District Center	Civil Defence Volunteers			% of Female
		Male	Female	Total	
1	Muang Chumporn District Center	1,945	171	2,116	8%
2	Tha Sae District Center	821	88	909	10%
3	Pa Til District Center	1,085	120	1,205	10%
4	Sa Hwee District Center	1,424	163	1,587	10%
5	Thung Ta Ko District Center	720	57	777	7%
6	Lung Suan District Center	1,281	125	1,406	9%
7	La Mae District Center	407	70	477	15%
8	Pha Tor District Center	742	74	816	9%
9	Muang Chumporn Municipality Center	131	16	147	11%
10	Lung Suan Municipality Center	162	5	167	3%
	<b>Total</b>	<b>8,718</b>	<b>889</b>	<b>9,607</b>	<b>9%</b>

Source: Chumpon Provincial DPM, October 2007

**2-6-4. Studies on Gender and Disaster Management and Mitigation and the Tsunami Consequence**

There are many researches and studies, which have been ongoing related to Natural Disasters and Gender Issues, in particular about Tsunami Consequences after 2004 and related gender issues in Thailand. According to an interview of a researcher of Children and Youth Studies, Social Research Institute, Chulalongkorn University, the following two (2) researches focused on the interrelations between the Tsunami consequences and gender issues. The following two (2) studies were completed by the end of May 2008 and the reports are available at the above research institute or at the Office of Women Affairs and Family Development at MSDHS.

1) Family Adaptation of Consequences of the Tsunami:

< Objective/contents >

- This study was contracted to the above institute by the Office of Women Affairs and Family Development at MSDHS.
- The aim of the Study was to understand the status of family environment and social relations in the communities affected by the Tsunami in the Southern regions in Thailand. The results of the Study are expected to be used for making suggestions on policy making.

2) Violence against Women in the Post Tsunami Context :

< Objective/contents >

- This study was contracted to the above institute by Action Aid Thailand (NGO).

- The assumption of the study was the Tsunami affected women’s social, economic, physical and psychological status in the communities, in other words, the Tsunami’s influences became “structural violence” against women and socially vulnerable groups. In the four (4) southern provinces, where The Tsunami left significant damage, the impact of the Tsunami on four (4) types of the following social groups were studied:
  - ① Buddhist Groups
  - ② Muslim Groups
  - ③ Thai Diaspora Group
  - ④ Chao-Lay, Sea People & Foreign Laborers

**2-6-5. Examples/steps of Other Ministries and Department on Gender Mainstreaming/promotion**

The Gender Equality Promotion Bureau at MSDHS has awarded an annual “Gender Prize” to a department of public service offices, which performs significant achievement on gender mainstreaming and promotion of their services since 2005. In 2005, the Royal Department of Irrigation, Ministry of Agriculture was awarded the first gender prize, followed by the Department of Skills Development, Ministry of Labor in 2006.

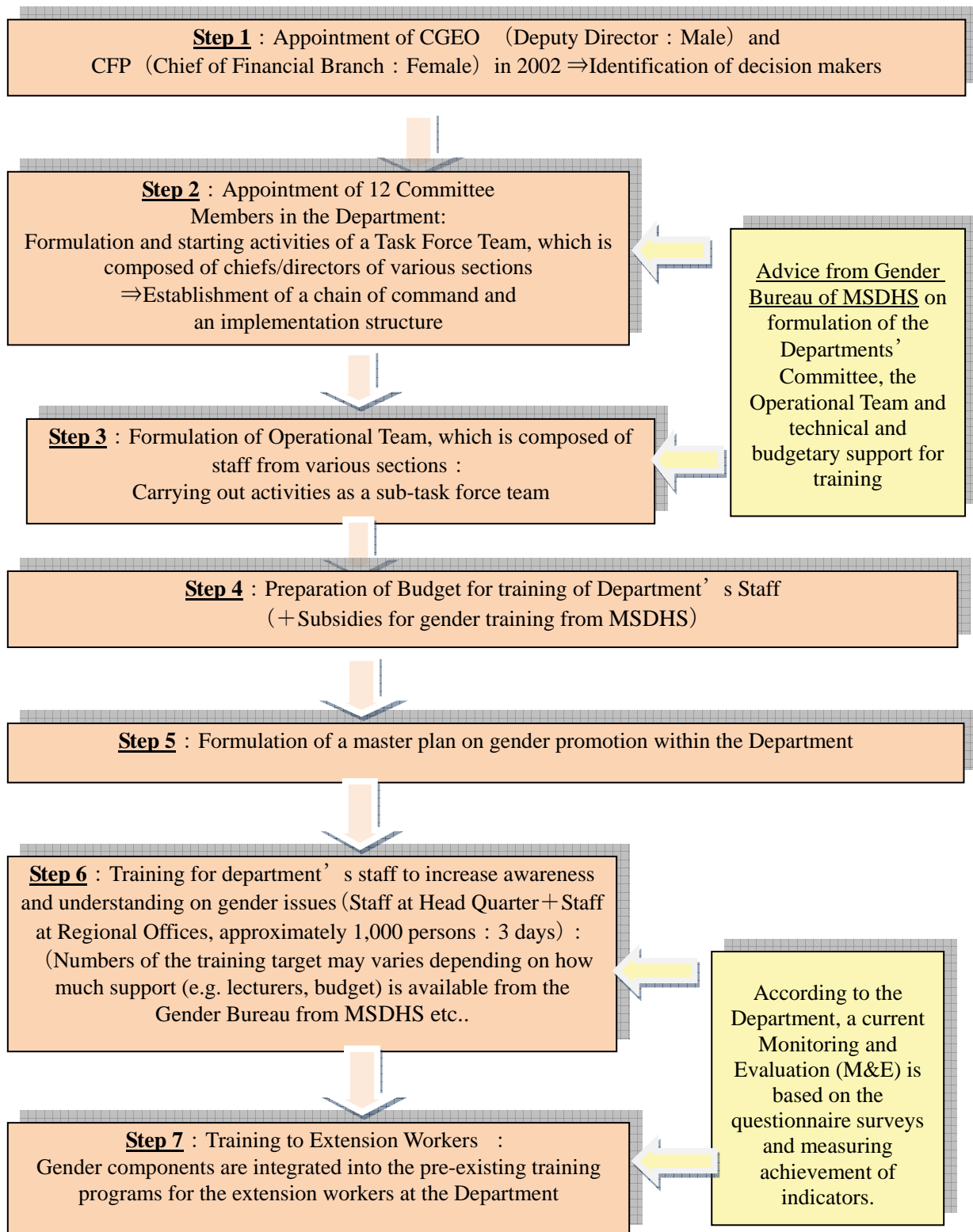
In the following, experiences and processes of developing gender mainstreaming and related training at these departments are explained based on interviews with responsible persons on gender promotion in the relevant departments. Both the Royal Department of Irrigation and the Department of Skills Development presented their experiences on gender promotion within the departments at the Gender seminar held at DPM in October 2007.

**1) Royal Irrigation Department, Ministry of Agriculture (Refer Attachments 8-9)**

The following Figure 5 indicates procedures and processes experienced for gender promotion at the Royal Irrigation Department. In the Department, planning and supervision of implementing gender mainstreaming has been mainly taken care by the finance section (administration) because CGEO, GFP were selected since 2001. Figure 5 was summarized by the JICA Project Team (the Japanese Short Term expert) based on interview results of relevant persons, such as CGEO and GFP in the Department.

According to the Department, integrating gender promotion and mainstreaming into the services of the Department are significantly important to fulfill the mission of the department serving the population. Technical support, such as provision of lecturers for seminars and educational

materials from the Bureau of Gender Equality Promotion at Ministry of Social Development and Human Security (MSDHS) have been very influential and critically useful, and in order to receive support from MSDHS. formulation of department plans from gender promotion and budget preparation within the Department were conditional.



**Figure 2-6-5 Steps/procedures of Promoting Gender Mainstreaming at the Royal Irrigation Department**

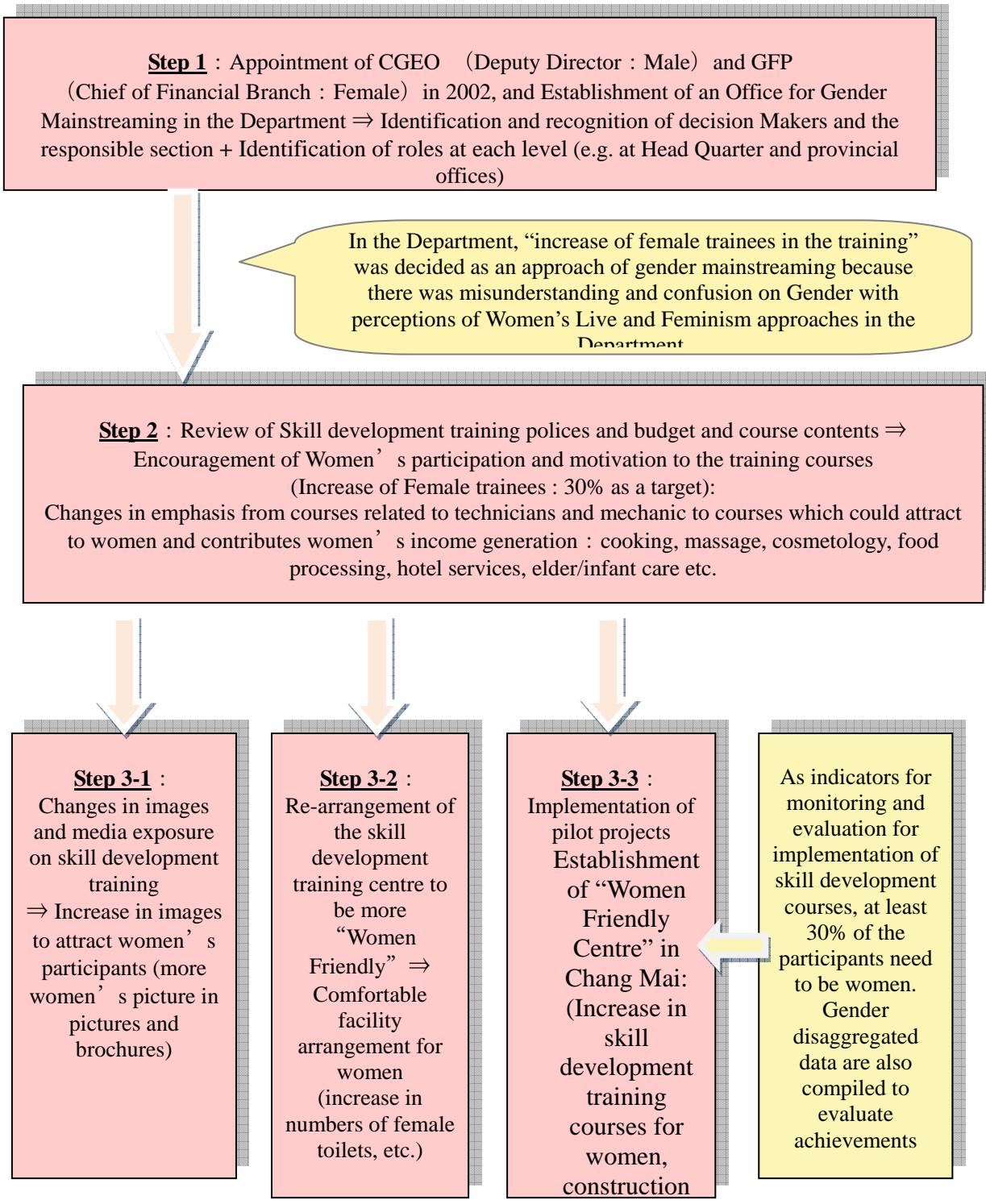
## **2) Department of Skill Development, Ministry of Labour**

Department of Skills Development, Ministry of Labor was awarded the 2<sup>nd</sup> “Gender Prize” in 2006 following the Royal Irrigation Department in 2005. In the following Figure 6, procedures and processes that the Department has experienced to promote on gender issues into the policies and activities of the Department are shown.

Currently, GFP <sup>4</sup> is assigned from the Division of Workforce and Entrepreneur Development Promotion, and the Division focuses on: 1) pre-service/employment training, 2) skill development and 3) skill upgrading for job promotion and small scale industries. The Division is regarded as a “Special Office” for gender promotion and mainstreaming in the Department. According to the Department, defining and creating a special office for the purpose of gender promotion is very important following the mission and demands of the Department regarding gender issues.

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<sup>4</sup> Currently, CGEO at the Skill Development Department is a male deputy director as DDPM and the Irrigation Department have.



**Figure 2-6-6 Steps/procedures of Promoting Gender Mainstreaming at Department of Skill Development**

#### **2-6-6. Suggestions for Provincial Disaster Management and Mitigation Plan**

The JICA Project Team has been supporting formulation of provincial-wise disaster management and mitigation plans through provision of the template as the 2<sup>nd</sup> year activities. In the region-wise plan it is suggested to include the following activities relating to gender integration into the disaster and mitigation management. In particular, it is important and encouraged that women participate in planning of formulating disaster management and prevention plans.

- Compilation of gender disaggregated data
- Promotion of women's participation into "planning" stages of disaster prevention and relief at a community level
- Promotion of women's participation in activities of disaster prevention and relief

#### **2-6-7. PPDM Gender Seminar on October 19, 2007 (Refer Attachments 3 to 11)**

A Gender Seminar in DDPM was held on October 19, 2007 at the DDPM's main meeting room. There were about fifty (50) participants including two (2) JICA Expert Team members (Refer to Attachment 3). Major purposes of the seminar were as follows:

- 1) To share and understand ideas, concepts and knowledge on gender integration in the context of Disaster Prevention and Management (services to be provided by DDPM to the population) with extended stakeholders within DDPM and relevant external agencies
- 2) To learn information on gender integration and mainstreaming into Plans and Activities through knowing models of Ministries of Irrigation and Skills & Labor in Thailand
- 3) To share and understand measures to promote gender integration in the context of Disaster Prevention and Management (services to be provided by DDPM to the population) in pragmatic ways within DDPM.

It appears that these major purposes of the seminar were satisfied, and the participants understood the "basic" concepts and needs for gender perspectives into disaster management and prevention through knowing pragmatic processes and steps that Departments of Irrigation and Skills Development experienced.

At the end of the seminar, it was requested that JICA's further technical support on gender integration and mainstreaming at DDPM continue in order to ensure the processes and the effects on disaster management and prevention activities at DDPM.



#### **2-6-8. PPDM Gender Workshop on May 21-23, 2008**

As a result of the Gender Seminar held at DDPM in October 2007, DDPM has built a network with the Gender Equality Promotion Bureau at MSDHS and some NGOs which have been involved in works on gender issues for Tsunami rehabilitation and disaster relief. Having this network, the first workshop on gender issues was held at Rayong City in May 21-23, 2008.

According to DDPM, the purposes of the Workshop were as follows:

- ① Planning staff and operation staff to lead knowledge on gender dimensions to apply to their job and life.
- ② Expand the operation plan of DDPM to people, both women and men.
- ③ Transfer concepts to concrete works in accordance with the mission of DDPM.

Participants of the Workshop were about 30 persons, and they were selected from DDPM's Academy and regional DDPM offices in the 6 Tsunami affected provinces, namely Ranong, Phang Nga, Krabi, Phuket, Trang and Satun. Due to the first attempt of gender training, personal and administrative staff of regional DDPM offices were made to understand the concept of gender. In the near future, the target of gender training should be expanded to the staff working with community issues and extension works to utilize the gender concepts and to integrated gender promotion in daily activities and training.

The schedule and contents of the Workshop are shown in the following table.

Date	Time	Agenda	Facilitator
21-May	8:30-9:30	Registration	Ministry of Social Dev. & Human Security
	9:30-10:30	Workshop Opening	
	10:30-12:00	Explanation of Workshop Objective . Expectation of Workshop Participants . Rules of Workshop	
	13:00-14:30	Gender Concept . Gender Relations and Gender Equality	Ministry of Social Dev. & Human Security Ms Maytinee Bhongsvej, Executive Director, Association for the Promotion of the Status of Women
	14:30-16:30	Gender Relations and Roles Analysis . Group Work	Ms Maytinee Bhongsvej, Executive Director, Association for the Promotion of the Status of Women
22-May	8:30-10:30	Gender Relations and Roles Analysis (continue) . Resources/Benefit Reaching & Controlling	Ms Maytinee Bhongsvej, Executive Director, Association for the Promotion of the Status of Women
	10:30-12:00	Gender Relations and Roles Analysis (continue) . Opportunity Needs and Obstruction	
	10:30-12:00	Explanation of Workshop Objective . Expectation of Workshop Participants . Rules of Workshop	
	13:00-14:30	CBDRM "Preparedness, Warning System Development and Disaster Mitigation"	Ministry of Social Dev. & Human Security Foundation for Women and Chula Research Association (Sustainable Development Foundation, Action Aid)
	14:30-16:30	Risk Group Study . Who is risk group? . Risk group and fragile group . Different effect	
	19:00-21:00	Continue	
23-May	8:30-12:00	Disaster Management and Gender Capacity Development on Disaster Prevention, Mitigation and Warning System Development	Ministry of Social Dev. & Human Security Foundation for Women and Chula Research Association (Sustainable Development Foundation, Action Aid)
	13:00-14:30	Gender Role Promotion Measures for Disaster Prevention and Warning System Development	
	10:30-12:00	Integrate Gender Dimension and PPDM Mission	DDPM

### **2-6-9. Suggestions/further steps to Promote Gender Issues**

#### **1) Institutional Set-up within DDPM**

As stated previously, gender planning and integration has not been attempted in DDPM so far. Considering this situation, it is suggested to develop an institutional set-up as follows.

These suggestions and ideas towards gender mainstreaming within DDPM were discussed with and agreed with key members of DDPM involved in making DDPM's Gender Equality Master Plans 2007-2011 (Mr Sakudavut) and some interested staff to gender mainstreaming (Ms Warachaporn, Ms Ruamporn, Ms Sukuntala) on October 26, 2007. Two (2) officers from the Gender Equality Promotion Bureau of MSDHS (Ms Supathanya Boranin and Ms Duangsuda Mueangwong) kindly presented and participated in the meeting in order to provide technical

support towards future development within DDPM.

At first, it is suggested to

- ① Clarify orders for gender mainstreaming and integration by CGEO
- ② Clarify and identify roles and delegation to Gender Focal Persons by an order of CGEO

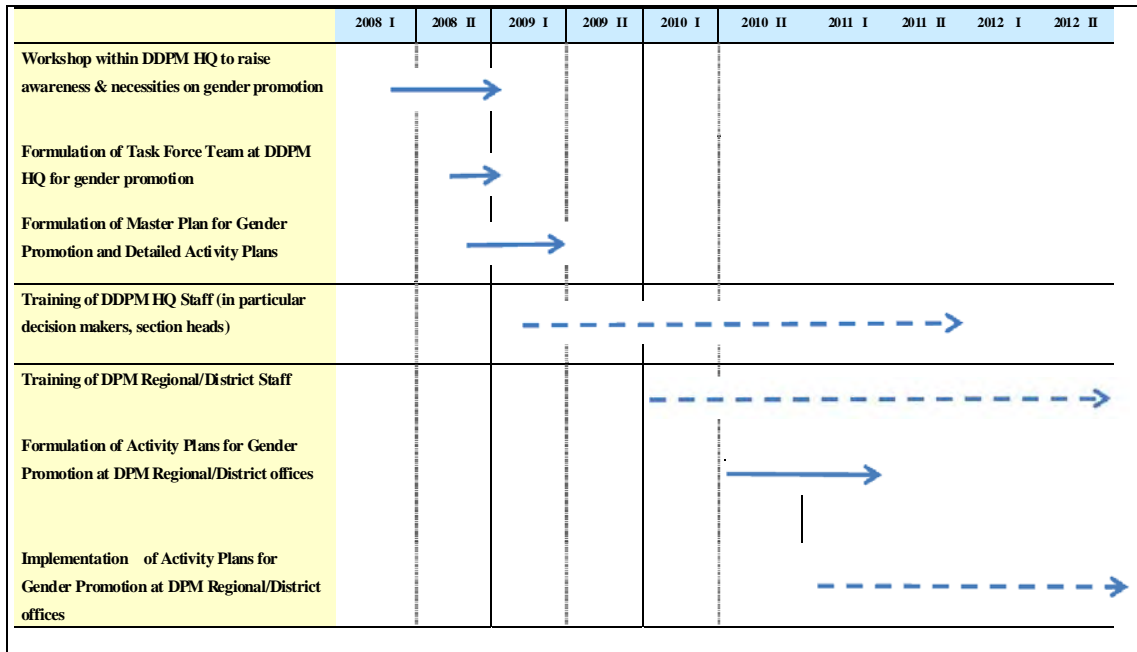
Then, either c) or d) steps shall be taken.

- ③ Institutionalize Working Groups (WGs), which are composed of representatives/managers of respective sections within DDPM, or
- ④ Institutionalize Working Group (WGs), which is/are composed by staff who have a personal interest in gender equality promotion within DDPM as a key operation team.

## **2) As a Follow-up of the 1<sup>st</sup> Gender Workshop held in May 2008**

After the above mentioned workshop in May 2008, some DDPM staff (Ms Warachaporn Petchsuwan, Mr Sakudavut Kanthawong), Staff of the Gender Equality Promotion Bureau at MSDHS (Ms Anusorn Inkampaeng, Ms Duansuda Mueangwong), , a NGO representative who worked as the facilitation of the workshop (Ms Ravedee Prasertcharoensuk, Sustainable Development Foundation) and a Japanese short term expert (Mr. Kawahara) discussed ways and procedure/steps to be taken in order to promote gender mainstreaming at DDPM in the near future. The following shows summaries of the discussion on ways to go for the purpose of gender promotion and this suggestion and ideas that should be realized through recognition of the leaders/decision makers of DDPM. The following Figure 7 shows the suggested schedule.

- ① Endorsement, approval and recognition of DDPM Director and Deputy Directors for gender promotion (including budget preparation for planning and training in the next fiscal year)
- ② Edition of manuals on disaster management and mitigation and gender issues (currently it is in a draft version)
- ③ Training of section leaders at DDPM headquarters
- ④ Training of regional staff of DDPM offices



**Figure 2-6-7 Suggested Schedule on Gender mainstreaming Training at DDPM**

### 3) Dispatch and technical support from JICA

Continuous technical support for institutionalization and capacity development for gender mainstreaming from JICA was strongly suggested by DDPM staff. At present, a basis and networks for gender promotion has been formulated by the efforts of DDPM itself and technical support through the JICA Project as explained previously. However, for further development of gender promotion at DDPM, stimulus and technical support from outside resources are crucial for success since human resources and the institutional framework within DDPM is still not strong enough to support itself. To make the effect of technical support done so far continuous and sustainable, it is requested to consider ongoing technical support from JICA to DDPM on this issue.

## 2-7 General Workshops

### 2-7-1 Joint Workshop on Dec.28, 2006

A Joint Workshop was held on December 28, 2006 to introduce the project, Japanese disaster management system and school disaster education. In this workshop, two presentations by Japanese advisory committee member Mr. Suzuki and Ms. Kondo.

The detailed program is shown below.

**Table 2-7-1 Program of “Joint Workshop on Dec. 28, 2006”**

08:30 - 09:00	Registration
09:00 - 09:25	Welcome Remarks by Representative of JICA Expert Team Welcome Remarks by Representative of DDPM Welcome Remarks by Representative of MOE
09:25 - 10:40	Presentation on Administrative System for Disaster Prevention in Japan (Mr.Koji Suzuki, Executive Director, Asia Disaster Reduction Center)
10:40 - 10:50	Question and answer
10:50 - 11:00	Coffee Break
11:00 - 12:15	Presentation on Disaster Education in Japan (Ms. Hiroko Kondo, Vice-Princepal, Onizaki-Kita Primary School)
12:15 - 12:25	Question and answer
12:25 - 12:30	Closing Remarks by JICA Expert Team

### 2-7-2 Japan – Thai 120 year Symposium

Symposium “Japan and Disaster Management of Thailand” was held on July 9, 2007 to commemorate the 120th Anniversary of Japan-Thai Diplomatic Relations. The arrangement of this workshop was done under the cooperation of DDPM and the JICA expert team.

The lecture One Proposal for Disaster Management in Thailand based on Japanese Experience of DIG (Disaster Imagination Game)” was presented by Prf. Komura Takashi as the main presentation of this seminar. Further various presentations were done by JICA experts and DDPM staff and exhibitions by JICA, JICA Expert Team, DDPM, MOE, DMR, JAXA, AIT were displayed at the venue. The detailed program is shown below.

**Table 2-7-2 Program of “Japan and Disaster Management of Thailand”**

12:50 - 13:30	Registration
13:30 - 13:40	Opening Remarks (Mr. Buree Kaewlek, Chief of Inspector-Generals, MOE)
13:40 - 14:00	Key Note Presentation “Japan Technical Cooperation in Disaster Management in Thailand” (Mr. Onoda Katsuji, Resident Representative, JICA Thailand Office)
14:00 - 14:20	Presentation “Current State of Disaster Management in Thailand” (Ms. Chatchadaporn, DDPM)
14:20 - 14:35	Presentation “Fire Service in Tokyo” (Mr. Miyashiro Takao, JICA Expert)
14:35 - 14:50	Presentation “Progress of the Project on Capacity Development in Disaster Management in Thailand” (Dr. Nakamura, Satoshi JICA Expert)
14:50 - 15:05	Coffee Break
15:05 - 16:35	Main Presentation “One Proposal for Disaster Management in Thailand based on Japanese Experience of DIG (Disaster Imagination Game)” (Pf. Komura Takashi, Fuji Tokoha University)
16:35 - 16:50	Discussion
16:50 - 17:00	Closing Remarks (Mr. Suwit Kaneekul, Deputy Director General, DDPM)

### **2-7-3 Final Workshop on July 2008**

The final workshop “Japan and Disaster Management of Thailand” was held on July 21, 2008. The arrangement of this workshop was done under the cooperation of DDPM and the JICA expert team. In this workshop, counterparts for each output from DDPM and MOE made presentations about the achievement of the project. The detailed program is shown below.

**Table 2-7-2 Program of “Japan and Disaster Management of Thailand”**

9:00 - 10:00	Registration
10:00 - 10:15	Welcome Remark (JICA Thailand Office)
10:15 - 10:30	Opening Remark (DDPM)
10:30 - 10:50	Coffee Break
10:50 - 11:20	Presentation Project Output 1 “Hazard Map & GIS Data Base” (DDPM)
11:20 - 12:00	Presentation Project Output 2 “Disaster Management Plan and White Paper” (DDPM)
12:00 - 13:15	Lunch
13:15 - 13:45	Presentation “Disaster Management in Japan” JICA Expert Team
13:45 - 14:15	Presentation Project Output 3 “e-Learning for Disaster Managemnt” (DDPM)
14:15 - 14:45	Presentation Project Output 4 “Regional Disaster Management” (DDPM)
14:45 - 15:00	Coffee Break
15:00 - 15:30	Presentation Project Output 5 “Disaster Management Education in School” (MOE)
15:30 - 16:30	Main Presentation “Disaster Management Education in Japan” Ms. Kondo (JICA Advisory Committee)
16:30 - 16:50	Discussion
16:50 - 17:00	Closing Remarks (MOE)

### **3. Conclusions and Recommendations**

This project has been conducted during a very short time period from September 2006 to August 2008. Further, vital substantial activities could not be started or achieved because of a perception gap between the Thai side and the Japanese side. Some started substantial activities after the second year.

Fortunately, after the start of substantial activities, both the Thais and the Japanese worked hard and achieved excellent output. As listed in Table 1-4, plentiful output was achieved. It can be said that this project succeeded and disaster management capacity in Thailand was enhanced. These outputs were mainly achieved by the effort of counterparts of DDPM / MOE, taskforce members of related agencies of Thailand, cooperation of JICA (Tokyo and Bangkok) and the efforts of the JICA expert team.

However, some consideration and recommendation have to be mentioned

The first item is the duration of the project. As described above, it took a long time to start the project aggressively. It must be said that the substantial project duration was limited to only one year. Many outputs were produced in this limited time. However it must be said that some of the output has to be more elaborate. For example, the white paper was completed and published but the collected information should be more detailed and analyzed more carefully. More advanced learning material has to be produced for professional people. More sophisticated and easily utilized techniques should be transferred for the hazard map and GIS database. The JICA expert team has far more technology, knowledge and experience than was transferred in this project. It is regrettable to finish this project without complete technical transfer due to the limitation of time.

The second item is the limitation of output. The benefit of the project is still limited within a narrow area. Counterparts and related persons / residents in the pilot project could achieve reasonable output of the project. However, it stopped within certain contained limits. The project output should be expanded throughout Thailand. The expansion of the project output has to be started soon. It is regrettable that the JICA expert team had not enough time for the activity to assist the utilization of the project output. DDPM and MOE have prepared a utilization plan for each output. However it is desirable to continue further assistance as the “Project Phase 2 “ for efficient and continuous utilization.



The third item is the cooperation between DDPM and related organizations in Thailand. Through this project, the relationship between DDPM and MOE was strongly enhanced. Further, the relationship between DDPM and other related organizations in Thailand was enhanced through preparation of the hazard map, white paper and pilot project. However, DDPM has to be the center of disaster management of Thailand. It must be said that the relationship and cooperation between DDPM and other organizations is not enough. Further systematic and intimate relationship / cooperation between DDPM and other related organizations have to be established. It is essential DDPM make further efforts as the principal agency for disaster management in Thailand.