

Progress Report

Flood Hazard Mapping in Thailand

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Item A: FHM-related situation in Thailand

A-(1) Current/target situation of FHM in Thailand

(1)-1 Current stage of FHM in Thailand

Several types of FHM were created in Thailand depend on the area and the objective of maps. Map types which are available in Thailand are as follows;

- A: Location map not including elevation data
- B: Location map including elevation data
- C: Past inundation area of a single past flood
- E: Past inundation area based on simulation
- F: Inundation area of the design flood
- G: Indication forecast by real time analysis.

(1)-2 The outline of current situation of FHM in Thailand

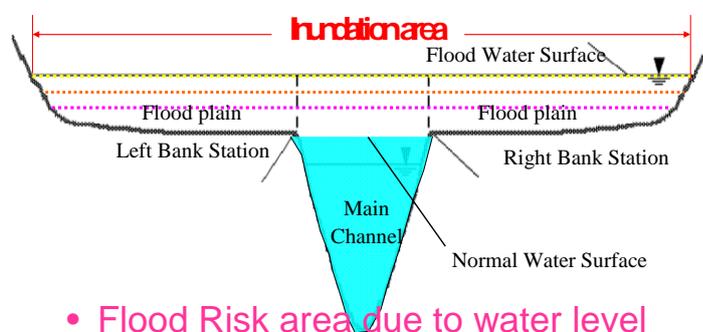
Many FHM-related projects were developed in Thailand. However, the FHM issue in Thailand is in the starting stage compare to Japan. The exact number of FHM-related project has not been collected.

(1)-3 Examples of good FHM-related projects

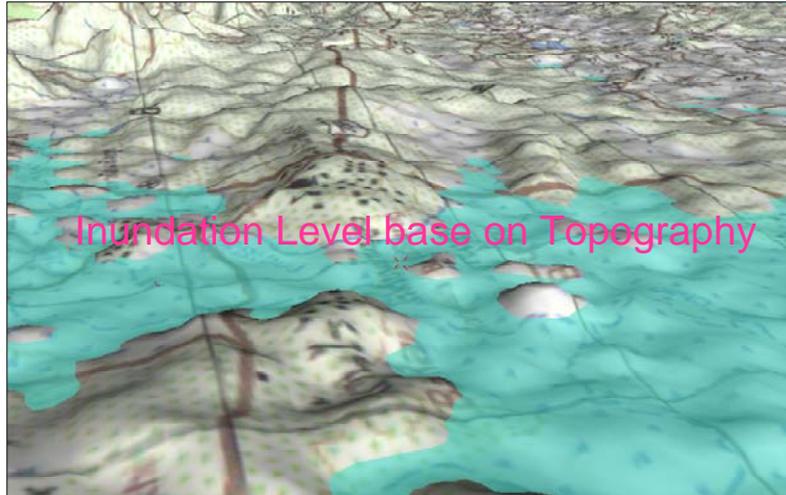
The examples of good FHM-related projects are;

1.The Project on Capacity Development in Disaster Management in Thailand (2007-2008) : This is Japan(JICA) – Thailand(DDPM) cooperation project on **Capacity Development in Disaster Management in Thailand**. The GIS spatial analysis of Flood potential risk area is the one of the project proposal. The process and product of FHM as following figures.

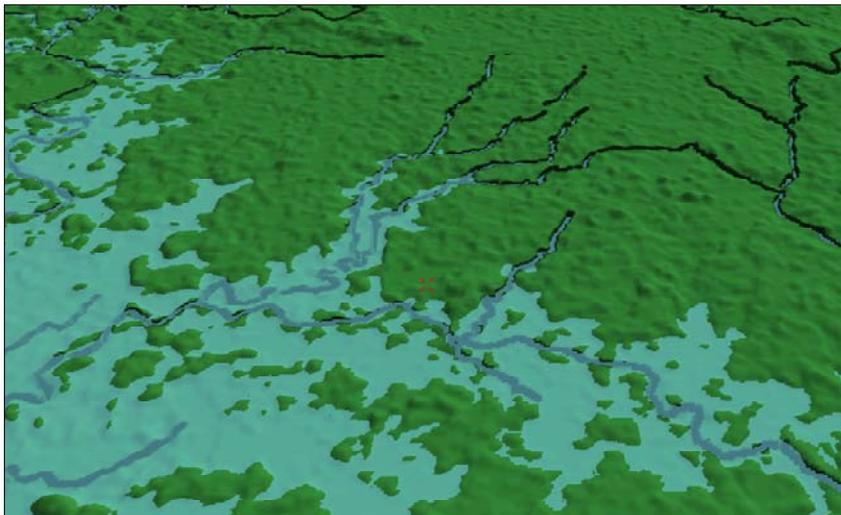
Flood Potential Conceptual Idea



Flood Potential Risk area Conceptual Idea

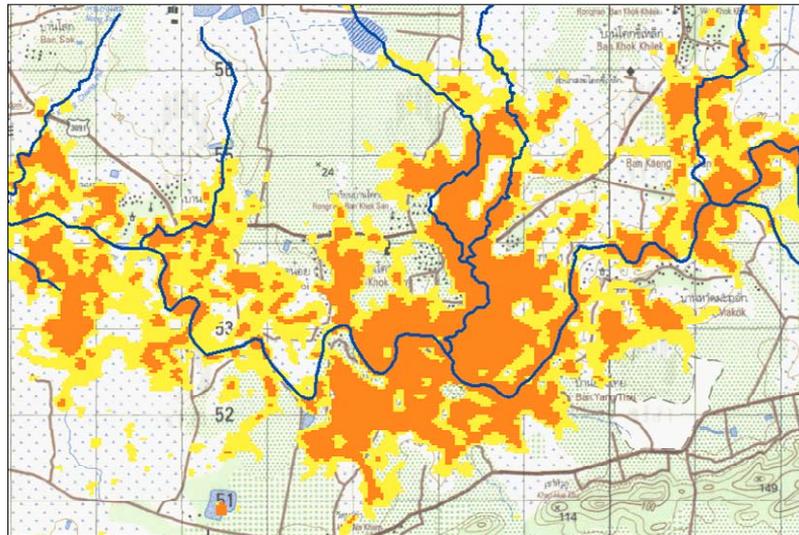


FHM Procedure



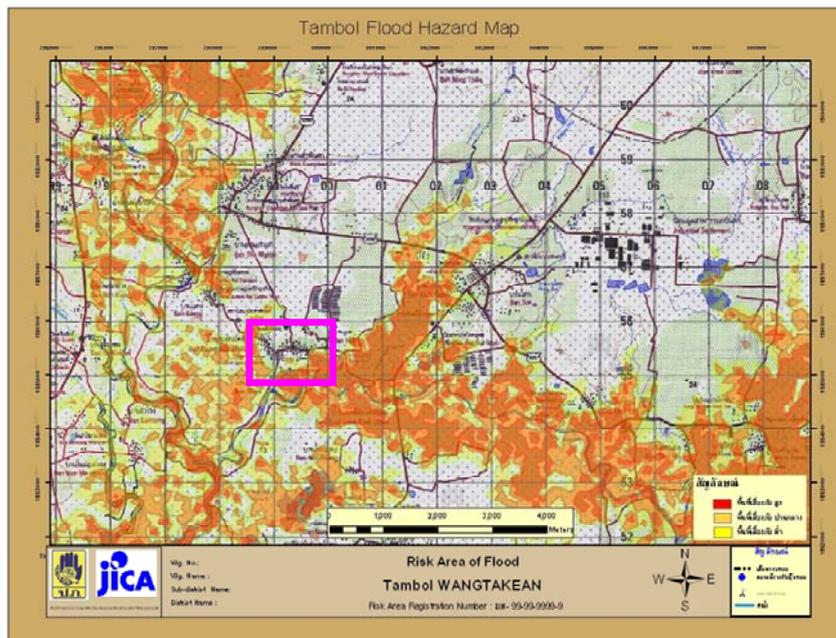
- The potential of Flood prone area & water level

FHM Procedure

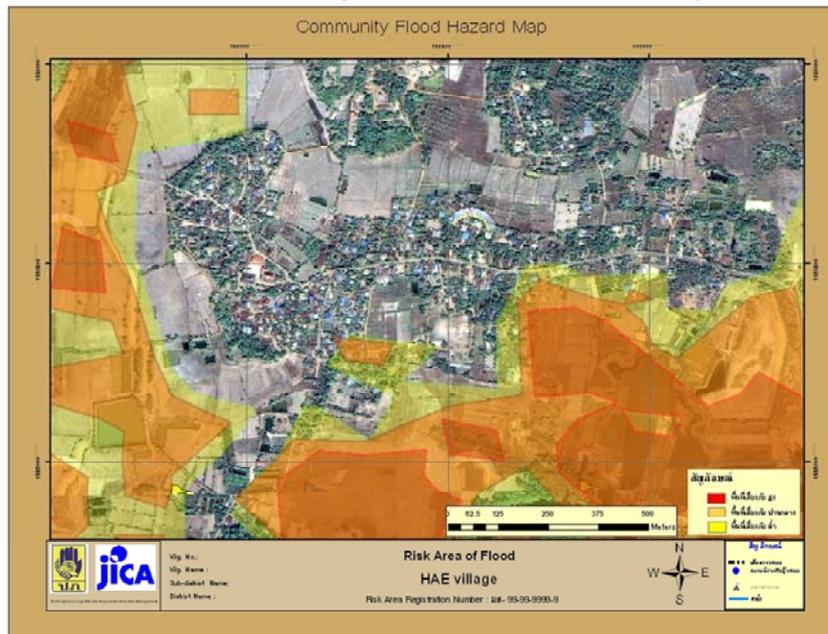


- 2D Inundation area extraction of each water level

TAMBOL Flood hazard Map



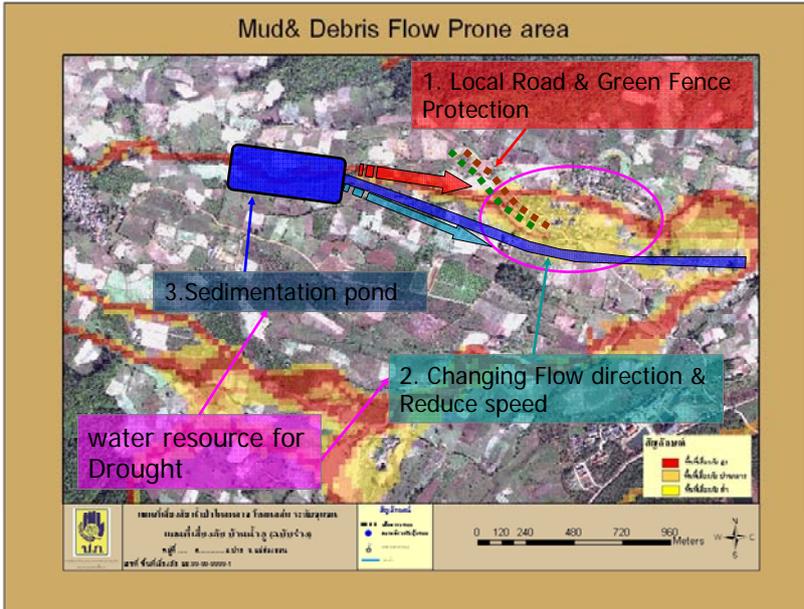
Community Flood hazard Map



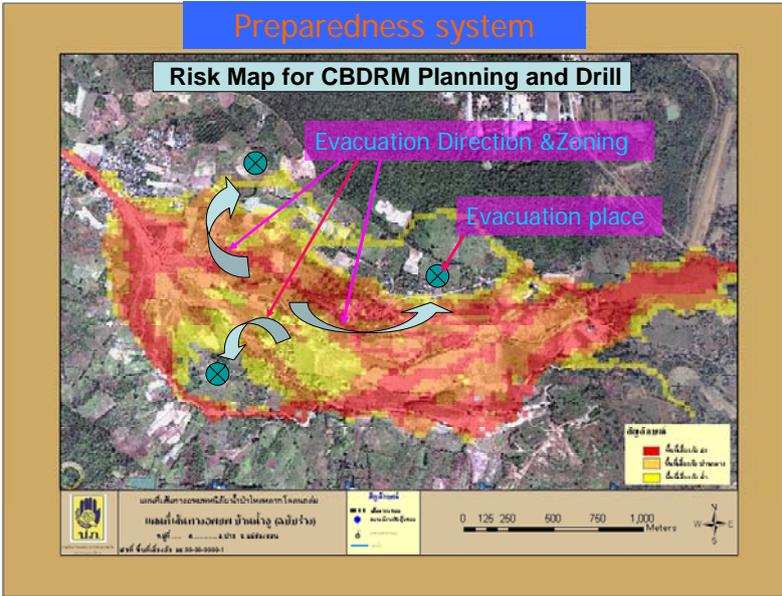
This Potential Flood Hazard Map show the area of each 1 meter depth of water from the nearest stream shore level. To collect the priority of effected level will be made by participating of all stake holder from community and concerning line agencies. The type of FHM analysis data had saved in GIS database that means more easy not only edition with GIS program but also for transfer the data among line agency within digital file. For Utilization and Organization of FHM has shown as following.

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Structural Measures Implemented

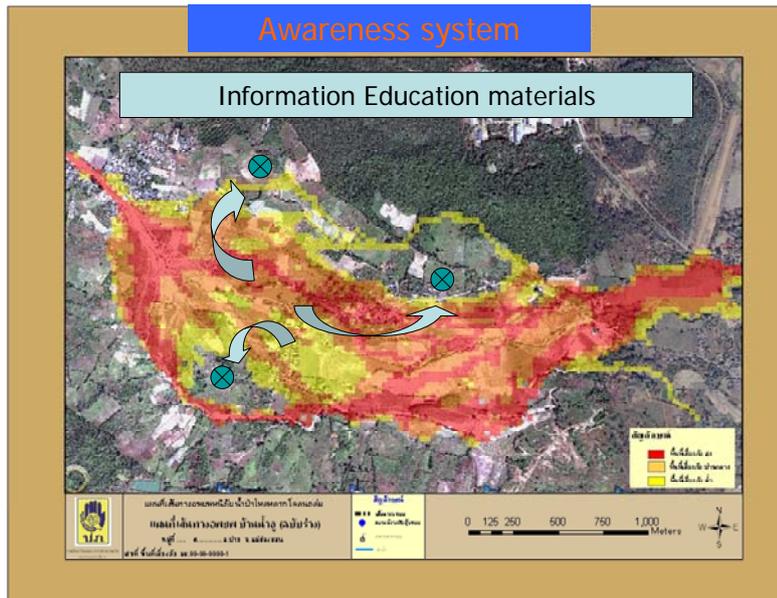


Non-Structural Measure Implemented



Non-Structural Measure Implemented

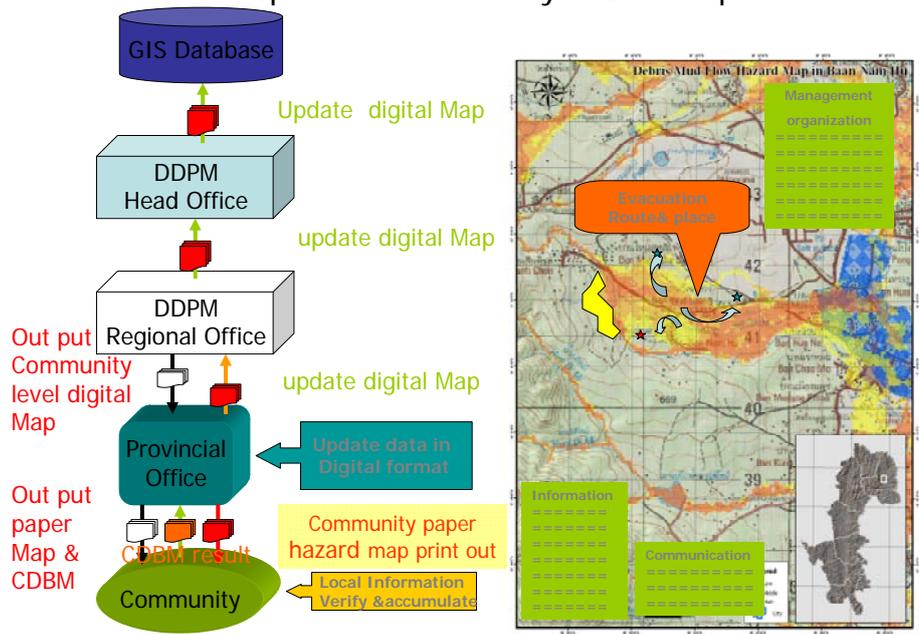
Awareness system



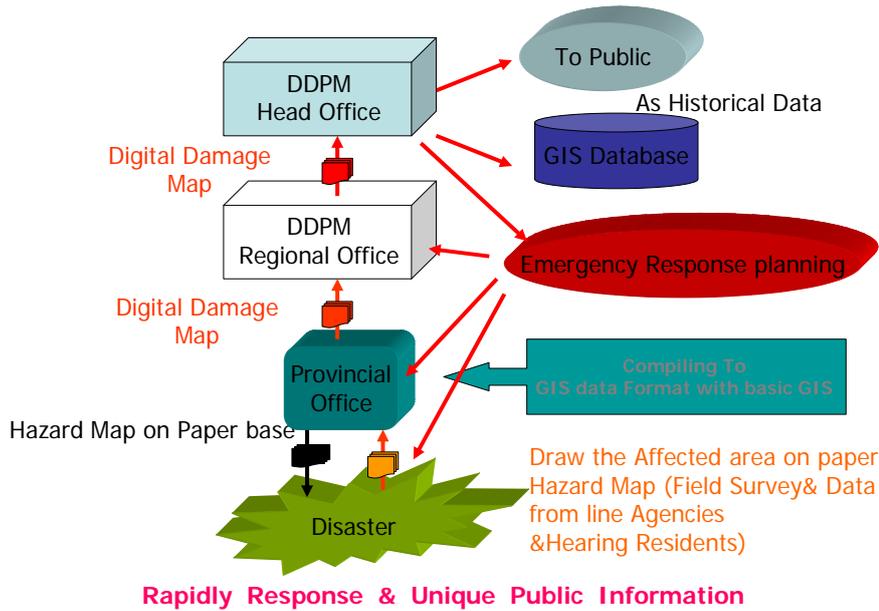
GIS Database

- Registration Number of risk area
- Community Risk map
- Historical Damage map
- Early warning system information
- Damage Assessment
- Prevention & Mitigation Measure
- etc.

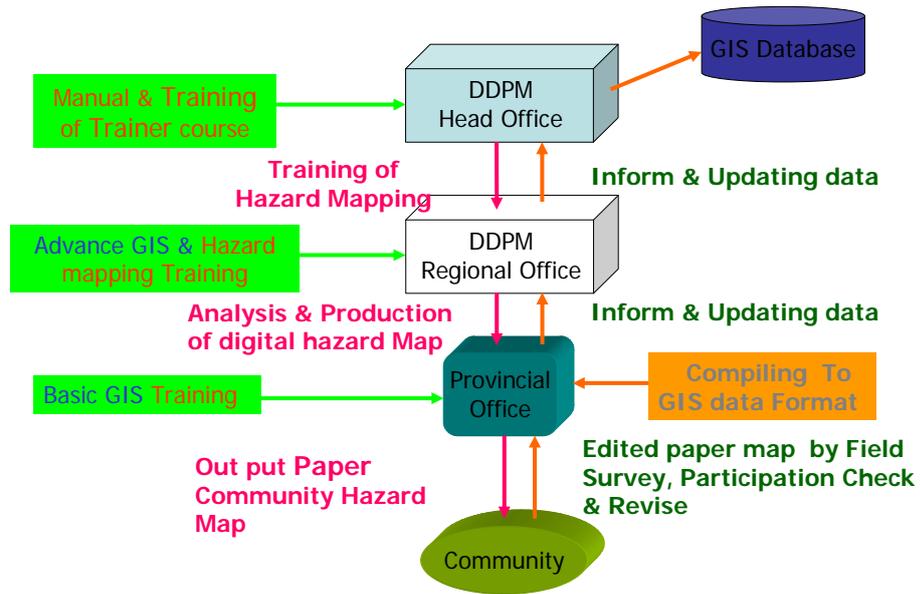
Update of Community Hazard Map



Utilization of Hazard map for Post-Disaster



Organization of Hazard Map



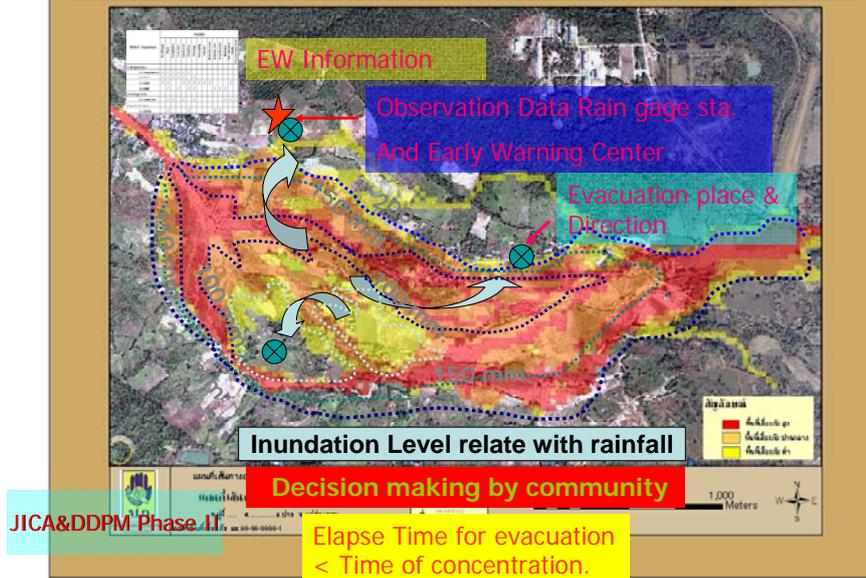
(1)-4 Target/necessary stage of FHM in Thailand

The necessary stage of FHM depends on the type and the important of inundation area, e.g. the rural area and urban area. However, at least the F-type FHM is necessary for the effective flood warning, and the G-type FHM is the target for the important and complicated area such as Bangkok. The conceptual idea of Near Real Time Early Warning System from Mud&Debris flow will be simulating with more accuracy data such as DEM 5 m. resolution only on risk area. The simulation of flood level from such a rainstorm will be collected with the effected water level from FHM that mention above. The conceptual idea and implementation had shown below.

(End of Part II file sending)

GIS Analysis of Mud & Debris Flow Early Warning System Mapping

Concept Idea of Near real time early warning & Evacuation Mapping



Observation Data Temporary Rain gage Tools



Observation Data Rain gage instrument



Bamboo Rain gage
Installation

A-(2) For making of FHM

(2)-1 Institutional situation for making FHM

There are no laws in Thailand which indicate about FHM. Moreover, no organization is assigned to take responsibility in making FHM.

(2)-2 Hydrological/topographical data situation for making FHM

Hydrological and topographical data in Thailand is available and accurate enough for making FHM. Many organizations, e.g. the Royal Irrigation Department, the Water Resources Department, and the Electricity Generating Authority of Thailand have recorded the hydrological data in every river basins of Thailand. The Land Development Department already developed the digital elevation model (DEM) throughout Thailand. This DEM can be used for inundation analysis. However, the land leveling may be performed for the better accuracy of FHM.

(2)-3 Problems for making FHM in my country

The know ledges and technologies in Thailand are enough for making FHM. As mentioned above that there is not any law in Thailand indicating about FHM, and no organizations are assigned to take responsibility on making FHM. Hence, the only one problem of making FHM in Thailand is the policy. Now the policy have been planning to consider in National Disaster Prevention and Mitigation Council meeting content.

A-(3) For disseminating/use of FHM

(3)-1 Institutional situation for disseminating/use FHM

The situation of disseminating/use FHM in Thailand is the same as the making of FHM, i.e. no organizations and no laws related to dissemination of FHM.

(3)-2 Problems for disseminating/use of FHM in Thailand

The problem is the same as (2)-3.

(3)-3 Other how to use FHM in Thailand

The use of FHM in Thailand may differ from other countries due to the characteristic of flood and the attitude of the people. For instance, severe floods usually occur in Japan resulting in high awareness of the people to flood damage. Hence, use of FHM by disseminating to the people and let them use the FHM as a guideline for evacuation is very suitable for Japan. In Thailand, the severe flood rarely occurs in the same location, i.e. the frequency of occurrence is very low. This results in low awareness of the people to flood problem. Dissemination of FHM to the people may not suitable such that they may throw it away after 2-3 years of dissemination. At this stage, the use of FHM as a tool for the officials who issue flood warning and evacuation is the most suitable way of using FHM in Thailand. In conclusion, the FHM is used for the officials to provide clear flood information such as flood extent and flood depth to the people so that they are able to evacuate on time.

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Item B: For Improvement of FHM research by ICHARM

B-(1) For efficient/effective disaster preventions

(1)-1 Saturation level of TV, Radio, Internet and Newspaper in Thailand

In the normal situation the Meteorological Department provide the weather information every day in the website “www.tmd.go.th”. This weather information is also reported on TV, radio, and newspaper every day. The information of water level in the river can be found in a website of the Royal Irrigation Department “www.rid.go.th”. If the heavy rainfall is expected to occur, the weather and water level information is reported every hour in the above mentioned websites and also reported on TV and radio regularly.

(1)-2 The flow of information related to evacuation in flood

The outline of flood warning system in Thailand is shown in figure 4. In this system, the Thai Meteorological Department is responsible for rainfall forecasting. The TMD reports the rainfall information in several channels such as television, radio, and internet. The head office and local office of the organization can get this information from above channels. The local offices of the organizations responsible for water level and discharge collection such as the Regional Irrigation Office and Provincial Irrigation Office collect the data and perform flood forecasting from all data, then report to their head offices and other local organizations. The local offices responsible for flood warning, i.e. the municipality office, the provincial office, the provincial Disaster Prevention and Mitigation office, and the Sub-district Administration Office will issue flood warning and evacuation recommendation to the people in the area of their responsibility if the flood is expected to occur. The head offices of each organization may report the situation to the central government directly for special command.

(1)-3 The awareness level for disaster prevention by residents in Thailand.

As mentioned above that the severe floods in Thailand rarely occur in the same location. Some area may face to floods almost every year but they are usually small floods that the people seem to be familiar with them. This makes the people in Thailand have low awareness on flood. The Department Disaster Prevention and Mitigation (DDPM) had organized disaster prevention voluntary at sub-districts level in Thailand which participation of the local communities. The “One Tumbol One Rescues Team(OTORT)” project to form the team for flood rescues, “Mister Warning” project to form the team for flood warning purpose. In this

project the local residents were trained are able observe the rainfall and water level and give the flood and landslide warning to the people in their communities, and up to now more than 1 million volunteers had been trained in the preparedness measure implementation of DDPM.

B-(2) "Flood Hazard Map Manual" made by ICHARM

The manual is very useful for making and dissemination of FHM in developing countries. However, each country may adapt the process so that it is suitable for flood characteristics and the attitude of people in the country.

Back Cover

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