

# 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. Development of River Basin Flood Management System by Optimal Reservoir Operation and Real Time Flood Forecasting and Warning: A Case Study of Pasak River Basin. This project is the joint study of the National Research Council of Thailand, the Asian Institute of Technology, and the Irrigation Development Institute. The project developed the real time flood forecasting and warning system including the **real time FHM** for the area in Pasak River Basin. The system can forecast and provide flood warning 3-4 days prior the flood event.

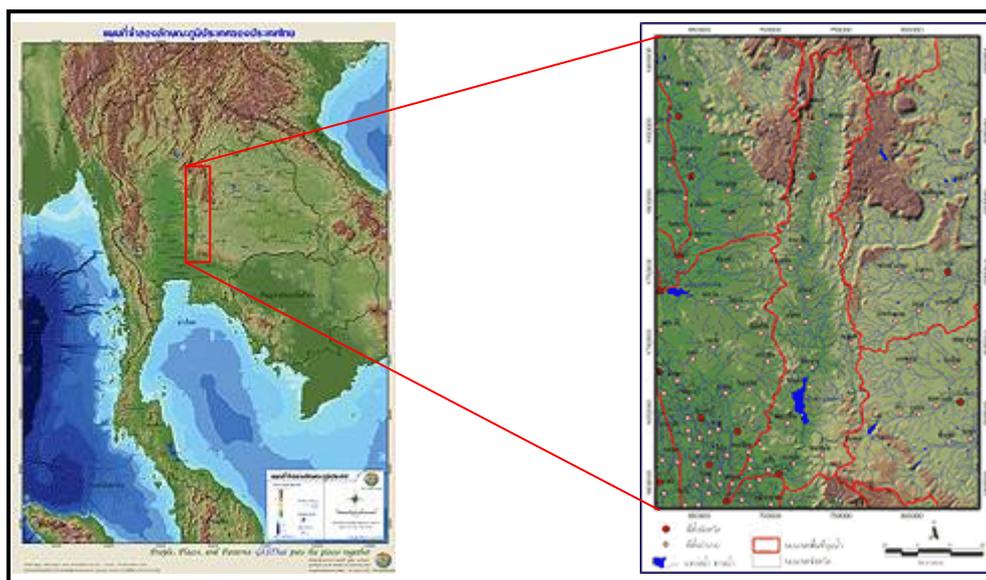


Figure1 Pasak River Basin

2. Flood hazard mapping of Lampang municipality. This project was conducted by the Regional Irrigation Office 2, Royal Irrigation Department under the approval of the National Research Council of Thailand. The objective of the project is to prepare the FHM of Lampang municipality to be used as the tool for flood warning in this municipality. The inundation analysis of this project was successfully completed and ready to be used for flood warning.

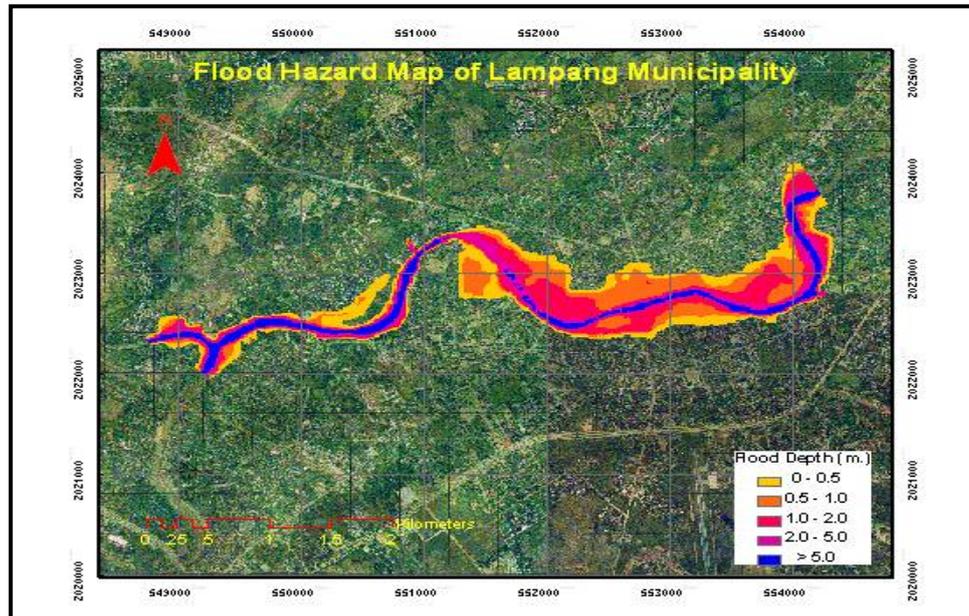


Figure 2 Flood Hazard Map of Lampang Municipality

3. Flood hazard mapping in Nan province of Thailand under the Nan river basin. This project was conducted by the Regional Irrigation Office 2, Royal Irrigation Department and the Asian Institute of Technology under the sponsor of the Japan Aerospace Exploration Agency (JAXA), Japan. The objective of this project is to prepare the FHM of Nan province for 10-year, 20-year, and 50-year flood event. The study area covers the area of Nan municipality and Phupiang municipality in Nan province. The project will finish on February 13, 2009. This FHM will be used for improving flood warning system in Nan province.

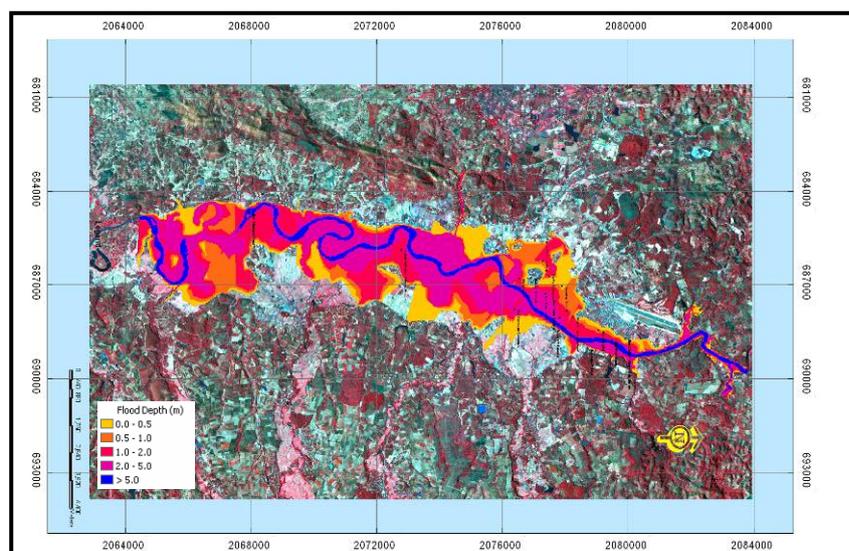


Figure 3 Flood Hazard Map of Nan Municipality

#### **(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.

#### **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 your 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.

#### **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.

**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 to flood. No voluntary disaster prevention organization in Thailand which is settled by the local communities as in Japan. However, the Disaster Prevention and Mitigation Department has set up the “Mister Warning” project to form the team for flood warning purpose. In this project the local residents were trained so that they are able observe the rainfall and water level and give the flood and landslide warning to the people in their communities. From the database of Disaster Prevention and Mitigation Department, there are now 7,757 local residents throughout Thailand were trained to be Mister Warning.

**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.

# Figure 4 Outline of Flood Warning System in Thailand

