# Proposal Report
# on

# "Flood Hazard Mapping Project in Huong River Basin of Thua Thien Hue Province"

Prepared by

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FLOOD HAZARD MAPPING TRAINING COURSE
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CONTENT



## 1. Background of the proposal

Vietnam is located in the Southeast Asia with the population of 82 million. The weather is influenced by the tropical monsoon climate. This results in very high rainfall; the mean annual precipitation is approximately at 2,000 mm. There are outward aspects of weather to cause heavy rainfall such as typhoons, tropical depressions and cool air, especially the combinations of typhoons-cool air or tropical depressions-cool air in Vietnam. Flood has been one of the main disasters in Vietnam for a long time. We have a long history fighting against floods, now it seems to be a huge problem of the country. Floods have caused big loss of life and properties, negative impacts on socio-economic development and environment in particular and sustainable development of the country..

The Vietnamese government have been paying serious attentions to flood prevention and mitigation. 16 November 2007, prime minister approved: The national strategy for disaster prevention and mitigation to 2020 in declare 172/2007/QD-TTG. Some of it's Missions relative non-construction solutions for disasters prevention and mitigation below as:

- Policies to promote technological and scientific activities, attract investments, promote foreign co-operations and resources mobility, etc for the disaster prevention and preparedness.
- Promote propaganda, and increase community's awareness. Develop abilities for disaster self-prevention. Strengthen relationships within the community and the neighborhood to further facilitate disaster preparedness and response. Establish voluntary forces for emergency response, search and rescue. Utilize the capabilities of social organizations in emergency response and recovery. Develop voluntary forces for propaganda, post-disaster recovery and production. Encourage individuals or organizations both in/out side of the country to support effectively community in various forms.
- Governmental budget is allocated to projects of disaster preparedness and mitigation; and used as back-up for post-disaster recovery. National reserves are used for disaster preparedness and mitigation if needed. Mobilize ODA funds to the disaster preparedness and mitigation projects. Prioritize non-repay ODA funds to capabilities enhancement, technology transfer and management knowledge.
- The state authorizes the Committee of People at provincial and district levels to actively attract and mobilize lawful capitals for disaster preparedness and mitigation.

- Enhance the approaches in propaganda, education, community awareness raising to disaster preparedness and mitigation. Embed the basic knowledge of disaster preparedness into education programs at school so that we can educate young students of various situation responses during disaster and also support their family and community.
- Develop training programs for people who involve directly in disaster preparedness and mitigation activities, focusing on management staff, plan development staff, specialized staff and core staff.
- Improve activities in fundamental investigations, invest in research and application of new technologies for disaster preparedness and mitigation.

## 2. Outline of the target river basin.

The Huong river has the basin area of 2,830 km$^2$ that representing 56% of total area of Thua Thien-Hue province and is located from 16$^o$00' to 16$^o$45' of the north latitude and from 107$^o$00' to 108$^o$15' of the east longitude. In the Huong river basin, there are about 800,000 people mostly populated in Hue City and 7 district of plain area generating 90% of income of Thua Thien - Hue province. It plays an important role in water resource management as well as the inundation status of the province. More than 80% of this basin area is hills and mountains. Hue city (ancient capital) is one of the world cultural heritages with a lot of historial architectures. It is located in downstream near Huong River therefore it is one of cities which are affected heavily by flood hazard in coastal central Vietnam.


Figure 1. The Huong river basin map

This basin has steep with shortly river and highly-concentrated rainfall and have high flood frequency. Hue City is affected heavily by inundation.

According to water level date observed at Kim Long station (Hue city) duration 27 years 1977-2003, there were 33 flood events, which top water level was higher than 3.0 m (grade III flood warning, Le Loi street along right bank of Huong river is 3.2 m); 10 flood events, which top water level was higher than 4.0 m. 5 flood events, which top water level was higher than 4.5 m. These monthly distributed in table 1.

Figure 2. Inundation status in Hue imperial city in the history flood event November 1999

Table 1. Monthly distributed flood events in Huong river (1977 - 2003)

| Month / Events | Jan | Feb | Mar | Apr | May | Jun | Jul | augu | Sept | Oct | Nov. | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H>3.0 m | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | **5** | **14** | **10** | 1 |
| H>4.0 m | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | **1** | **6** | **2** | 0 |
| H>4.5 m | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | **4** | **1** | 0 |

There were 4 history flood events in past 50 years

| Year history flood event | 1953 | 1975 | 1983 | 1999 |
|---|---|---|---|---|
| Maximum water level in Hue city (m) | 5.50 | 5.32 | 4.90 | 5.81 |
| The time of flood event occurred | Sept | Oct | Oct | Nov |

The big flood events usually occur during middle of September to middle of November annually.

## 3. Schedule of implementation

3.1 To convince the government of Thua Thien Hue province from to pay for a project: Flood hazard mapping.
3.2 The objective of the project: to establish Flood hazard mapping for Huong river basin of Thua thien Hue province.
3.3 Agency project implementation and other agencies collaborated: The National Hydro-meteorological Service, Hydro-meteorological Center Thua Thien Hue province and the districts People Committee belong to Huong river basin in Thua Thien Hue province.
3.4 Time project implementation: 3 years (2009-2011)
3.5 Project implementation
- Reviewing the exiting inundation map in Thua Thien Hue province.
- Preparation the data: Satellite Image; GIS data, topography, administration, use land, forestry map of Huong river basin. Hydro-meteorological data: rainfall, run-off etc.
- Investigate the status flooding by history flood events in Huong river basin.
- To establish Flood hazard mapping for Huong river basin of Thua thien Hue province.
- Strengthening the capacity of flood forecasting for Thua thien Hue province Hydro-meteorological Center.
- Provide training for local government and residents belong to Huong river basin on the use of flood hazard map

## 4. Estimated budged

| Year | Implementation content | Cost (US$) |
|---|---|---|
| • Software: Arc GIS | | 3,000 |
| • Hard ware (PC, Notebook, Scanner, plotter, printer, camera, GPS, ect.) | | 20,000 |
| 2009 | - Reviewing the exiting inundation map.<br>- Preparation the data.<br>- Investigate the status flooding by history flood events | 60,000 |
| 2010 | - To establish Flood hazard mapping for Huong river basin of Thua thien Hue province.<br>- Strengthening the capacity of flood forecasting for Thua thien Hue province Hydro-meteorological Center. | 100,000 |
| 2011 | - Provide training for local government and residents belong to Huong river basin on the use of flood hazard map<br>- Summarized project | 50,000 |
| **Total** | | **233,000** |

## 5. Expected effectiveness

- Flood Hazard map is an effective tools in minimizing the flood disaster in the Huong river basin, it is very useful to minimize loss of human lives and properties and the smooth, safe and fastest way to move to evacuation area can be attain by using flood hazard map. It is also effective in using this to decide for local leaders in flood emergencies.
- If the project has high efficient, we can apply for other similar area in my country.