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## **A/ The role of flood hazard maps to mitigate flood damages in Lao PDR**

### **1. the flood status in Lao PDR**

There are 13 majors floods have occurred in Lao PDR during the past 40 years, which was seriously flooded in 1966, 1995, 2001 and 2002. In general condition, floods are experienced from August to September in the central and southern province of the country. In the year 2002, flood was very heavy rained and affected to the territory in Laos. As a result of an effect of strong Southeast Monsoon and from Wongfong-14 storm, water level at Mekong River and its tributaries dramatically increases and flood occurs at all regions in the country. Last year (2005) had flooding in the northern and southern provinces of Laos, namely Loung Namtha, Phongsaly, Borikhanxay and was flooded in large the all territory of Lao, as Bokeo, Louangphabang, Vientiane Municipality, Khammoune, Savannaketh, saravanh, Champasack and Attapeu. As in last year, flood affected 12 provinces, 62 district, 1,142 village and 50,342 families (249,782 people); where 8,556 household damages and 3 persons died.

*In the year 2002, the flood occupied in many places, mostly along the Mekong River and it's the tributaries such as:*

- Vientiane Province, there are five districts affected: Hom district is located upstream of Nam Ngum reservoir, which 1 village and 12 families' equal 122 people were suffered. Mad district is flash flood, 2 villages, 16 families equal 94. Thoulakhom district is located downstream of Nam Ngum reservoir, which 43 families. Sanakham District is located along the Mekong River, 1 village, 44 families. Kasi District is located along Nam Niap, here 3 villages and 68 families equal 587 people were suffered.
- Luangnamtha Province, there was 1 District affected Viengphoukha, which 16 villages and 447 families or equal to 2,974 people were suffered from deluge.
- Khammouane Province, there were 4 districts affected: Ngommalath, there was 27 villages and 624 families' equal to 3,353 people suffered. Mahaxay was 42 villages and 859 families' equal to 4,507 people suffered. Hinboune was 60 villages and 6,207 families' equal 31,171 people suffered. Thakhek District here 51 villages, 860 families (4,558 people).

- Oudomxay Province, two Districts affected: Houne here was 18 villages and 646 families equal to 3,915 people were suffered. Bang here were 19 villages and 301 families equal to 1,622 people was suffered, in which 01 was died by land slide.
- Borikhamxay Province, in this Province was 5 Districts affected: Paksan, here were 15 villages, 706 families (3,175 people suffered). Thaphabath, here are 21 villages, 1,875 villages (8,438 people). Pakkading, 36 villages, 1,801 families (9,198 people). (4) Khamkeuth, 45 villages, 4,812 families (32,013 people), in which 02 persons were died by flash flood and Borikhan, 15 villages, 642 families (3,207 people).
- Savannakhet Province in this Province was affected more than others there are 7 Districts: Champhone here are 33 villages and 5,418 families equal to 17,184 people suffered, in which 3,437 families are lost. Song Khone: 24 villages and 1,588 families equal to 7,941 people suffered, in which 1,375 families are lost. Sonbouly: 18 villages and 2,167 families equal to 10,837 people suffered, in which 800 families are loss. Saybouly: 16 villages and 1,678 families equal to 4,742 people suffered, in which 948 families are lost. Vilabouly: 17 villages and 580 families equal to 2,900 people suffered, in which 518 families are lost. Sayphouthong: 4 villages and 177 families equal to 884 people suffered, in which 330 families are lost. Khanthabouly: 8 villages and 369 families equal to 1,845 people suffered, in which 98 families are lost.
- Vientiane Municipality in our capital City are affected 9 Districts such as Pakngum, Saysettha, Saythany, Nasaythong, Sisattanak, Sangthong, Chanthabouly, Hadsayfong, and Sikhottabong
- Xiangkhuang Province in this Province is affected 3 Districts: Phoukout 3 villages, Kham 6 villages and Pek 18 villages, 176 families (556 people suffered). See table

I hope that flood hazard mapping will be effected to help the farmers, local communities, local government and others agencies to reduce all loses of properties before and during flooding (human, animals, crops).

## **2. the outline of the present countermeasures for mitigating flood damages in Lao PDR.**

Based on the Degree of the Prime Minister of Lao PDR on Implementation of Water and Water Resource Law, is very clear how the ministry and line agency concerned to establish them plan as follow:

- Ministry of Communication Transport Post and Construction will responsible for structure and non structure measure in the city, urban and town
- Ministry of agriculture and Forestry will responsible for reducing slash and burn forestry, reforestation , watershed management, irrigation system and provide data of hydrology and meteorology to all ministries and line agencies concerned including flood forecast, rainfall forecast and water level forecast on the TV, radio and newspaper. Especially, prepare the second agriculture crop to the farmers and communities after flooding.
- Ministry of Energy and Mining is responsible for flood control down stream of dams
- National Disaster Office under Ministry of Labor, Social and welfare consider, prepare and ask donor for relief and flood response. In some cause they responsible for non structure measure such as flood preparedness in the province, district and communities in inundation areas.
- Prime Minister's Office responsible for the hold system of flood responsibility.

## **3. the useful of Flood Hazard Map and the reasons in Lao PDR**

In term of flood hazard mapping in Lao PDR is not well known for all government, private sector and local community. However, the government of Lao PDR has realized the significant and the usage of flood hazard mapping. The government has set up the Flood Management Unit, Irrigation Department, Ministry of Agriculture and Forestry, to work closely with MRC and LNMC, which is a good opportunity for initial usage to achieve the benefit from flood hazard mapping. As a result, there might be a positive outcome from flood hazard mapping for mitigating of losses of agriculture land and productivity.

In the long term (5/ 10) I could give you comment, because we are shortage of budges resources for various activities of flood reduction. The capacity to deal with flood reduction is still limited in term of using the flood reduction technology, knowledge and experience.

### **B/ The allocation of roles in making flood Hazard maps in Lao PDR**

1. which organization should hold the main responsibility for making a fundamental map such as an anticipated Inundation area map.

Based on the “Water and Water Resources Law” it is not so clear because it didn’t write any sentence about which organization should be hold the main responsibility for the making a fundamental map and flood hazard maps. In Lao PDR, the Department of Topography, which falls under Prime Minister’ Office is responsible for Topography Map, and there are some the organizations concerned showed the above.

The Mekong River Commission (MRC) has done the flood maps for hold the Mekong River Basin. In regarding to this issue, the Lao National Mekong Committee (LNMC) Organization will responsible for implementing in the future, because they have just established the GIS Unit in their organization and is on going to revise the organization mandate for the next five year strategy plan (2005-2010); however, the LNMC has worked together closely with the MRC and will share and collect available data from line ministries concerned.

### **2 Which organization should hold the main responsibility for making and disseminating flood hazard maps?**

As the above mentioned the Lao National Mekong Committee should hold the main responsibility for making and disseminating flood hazard mapping in Laos with regard to establishing a team making the flood hazard maps. The team should be consisted from line ministries and line agencies concerned because the LNMC has strong enough to lead making in this issue. The Mekong River Commission would seek fund resource to support and provide tool to LNMC in term of doing of flood mitigation program jointly with member riparian countries.

### **C. The Action Plan of making flood hazard maps in my country**

1. Which area do you choose for the target river basin area?  
Why?

Lao PDR constitutes a major part of the Lower Mekong Basin (LMB), which consists of Thailand, Viet Nam and Cambodia. The LMB had always been prone to yearly recurrent flooding in the period June to October. The flooding pattern is never sudden and mainly characterized by slow but steady rising of the water level and inundation of the alluvial plains.

Therefore, this paper focused on the entire land use and roads network map infrastructure development plan along the Mekong River and also nearby the sub river in the whole country. Considering the area is very difficult to give you idea which area that I will choose for target river basin area. However, in my view, I am going to continue to make Action Plan of the Ex-participant (my colleague) who is participated training course last year.

The target area is Borikhan district, Borikhamsai province, because in this area is located along the Mekong River and also there are many tributaries which is affected directly to agriculture production, rural infrastructure and human settlements. I choose this area because is not so far from central government, that district is affected by flood and flash flood every year.

As above mentioned, the data of the area is huge important. So, we have to work together between National Disaster Management Office and Mekong River Committee in term of Flood maps and LNMC to share available information.

## **2. What do you think is necessary to make flood hazard maps in the chosen area? Do you have data, maps, or budgets necessary for making flood hazard maps?**

Government could use FHM as one component for making priority project of flood control system, FHM could identify which area are the most urgent to make a improvement and to construct flood control system namely dike, water gate control, Irrigation, in the reason of mitigating damages, losses of land use, agriculture field and productivity.

Moreover, in term of resident action based on local community and villager participation, local resident and farmer would use FHM to analyze the flood level and it also save life of the local residents by themselves in case of flood disaster would be occurred. But it seems to us with lack of data and no budget for doing site survey.

3. Propose your own “Action Plan” within the next five years.

Item	Description	Year				
		2007	2008	2009	2010	2010
1	Prepare report on advantages of FHM	■				
2	Proposal to utilize FHM into Road network construction plans		■			
3	Data collection: - historical events of flood - hydrology - topography, and - structural measure system			■	■	
4	Identify inundation areas				■	
5	Fund seeking for: - FHM producing					■

#### 4. What seems to be a problem in making flood hazard map in Lao PDR?

Flood Hazard Mapping is quite new and difficult to make in the short time. However, the Lao Government will support idea, but it looks challenge to make the flood hazard mapping in Lao PDR. There is still variety of problem remain as follow:

- Shortage of budget for implementing and producing flood hazard maps.
- Insufficiency of resources such as regulation, tools, low technique, and inexperienced staff for working closely on these issues.
- Insufficient data for making flood hazard mapping, and
- The circumstance of flood between Japan and my home country is quite difference.

#### D. Own Flood hazard map on Ise city

1. What is the improvement from the FHM on Ise City?

All lecturer, materials, process, concept, theory and group field survey for practical making the flood hazard map of the Ise City were useful in this course. Next town watching should spend a lot of time for field survey because it is quite short time period for doing in this point. Interviewing the local resident is very useful. If we worked together with local people we can get much information directly in these target area. Moreover, refuge route signs should be installed suitable location to facilitate to local resident in case of flood occurrence as well as the FHM should make the both language as English and Japanese. However, this training course provided me a good chance to know more about Japan, Japanese people and learn a lot how to make flood hazard map and use it effectively.