

LAO PEOPLE'S DEMOCRATIC REPUBLIC  
PEACE INDEPENDENCE DEMOCRACY UNITY PROSPERITY

## **“Concluding Report”**

On

JICA Region-Focused Training Course on  
Flood Hazard Mapping  
JFY 2006

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## Introduction

The Lao People's Democratic Republic is located in the South-East Asia and from 13° to 23° latitudes, from 101° to 108° longitudes. The area of Lao PDR covers 236,800 square km<sup>2</sup>, two thirds of which is mountainous. Geographic conditions restrict both the quantity and quality of



agricultural land and pose Difficulties in development of trade, social infrastructure, & transport and communication links. Nevertheless, Lao PDR is located in centre of a dynamic and prospering region and as such has the potential to provide strategic resource base the land links. Lao PDR is also lying along middle part of the Mekong, which is the 12<sup>th</sup> longest river in the world. It flows through Lao territory almost 1,860 km, contains 28 tributaries and 35% of water flow contributes of the whole lower Mekong Basin runoff.

Lao PDR lies almost entirely within the Lower Mekong Basin. Its climate, Landuse and Landscape are the major factors shaping the hydrology of the river. The climate is dominated by the Southwest Monsoon, which generates wet and dry seasons; the Monsoon season usually lasts from May until late September or early

October. The highest rainfalls are as expected-in the Central Highlands and within the mainstream valley at middle part of Lao PDR. But the country suffers from flood nearly every year. Floods occur as a result of the combination of high rainfall from typhoons and from the southwest monsoon. Flooding occurs in four main areas: (i) The Vientiane Plain, (ii) in Khammouane Province (Thakhek Town), (iii) in Savannakhet Province, and (iv) in Champasak Province (Pakse Town).

A feature of floods in Lao PDR is that they very much influenced by tributary flows. Eighty percent of rural flooding and twenty percent of urban flooding is directly caused the flooding of the Mekong River main stream tributaries. Most of the major main flood-prone areas in Laos are situated near large river tributaries. The combined effects large flows from tributaries and backwater effects from the Mekong River cause the most serious flood damage.

### **A. The role of flood hazard maps to mitigate flood damages in Lao People's Democratic Republic**

Disaster management in general and flood management in particular is the responsibility of the National Disaster Management Organization (NDMO), which coordinates the technical departments and institutions in charge of facing these issues. At provincial and district levels, similar structures (Committees) have been set up as well. The Committee's members coordinate to work in the affected areas in order to assess the damages and primary needs and proceed to emergency measures, each institution according to its field of responsibility. So far Flood Hazard Map in Lao People's Dem Rep. doesn't have yet but inundation boundary map which lied along the Mekong River through my country from up to down stream was created several years ago.

### A1. The flood status in my country:

As a result of an effect of strong Southeast Monsoon and from Wongfong-14 storm, it was very heavy rained and affected, water level at Mekong River and its tributaries dramatically increases and flood occurred at all regions in whole territory of the country.

The serous flood occurred in 1966, 1968, 1971, and 2005. The flood of those years occupied many places, particularly along the Mekong River and its tributaries, the detail information is shown below in the table (1) and (2).

No.	Type of Damages	Estimation Damages
	People affected	16
01	Number of Province affected	84
02	Number of District affected	2.510
03	Number of Villages affected	8.553
04	People died from flood	4
05	People evacuated to safe places	356
06	Number of people affected	408.913
	Agricultural production	
07	Rice planed (Ha)	687.555
08	Paddy field loss (Ha)	55.955
09	Loss of livestock (Units) (1)	2.124
10	Loss of fishpond (Ha)	296
	Total estimate of damages in MUS\$	28,56

Table01. Estimate of damages of the flood 2005 at Mekong River Basin Level.

(Source: Annual Flood Report 2005, Flood Mitigation Management Program, MRC)

Dates: Start date End date	Location:	Disaster: Type Sub Type Name	Numbers:	Country
Aug/2002	Bolikhamsay, Savannakhet, Vientane, Khaman, Udomsay, Luang Prabang provinces	Flood	2 killed 150,000 affected	Lao P Dem Rep
Aug/2001	Khammouane, Savannakhet, Champassak, Attapeu provinces	Flood	453,000 affected	Lao P Dem Rep
Sept/2000	Louang Namtha, Bolikhamsay, Kham Muane, Savannakhet, Champassak, Saravan, Vientiane	Flood	15 killed 450,000 affected	Lao P Dem Rep
15/Aug/1996	Huaphanh, Phongsaly, Luanprabang, Luangnamtha, Borikhamsay, Savahnakheat, Vientiane, Khammuoane provinces, Vientiane municapilty	Flood	30 killed 420,000 affected	Lao P Dem Rep

Jul/1995		Flood	200,000 affected	Lao P Dem Rep
Sept/1995	Bolikhambay, Savannakhet, Champassak, Sekong, Attapeu provinces	Flood	391,400 affected	Lao P Dem Rep
Aug/1994	Central	Flood	190,000 affected	Lao P Dem Rep
Aug/1992	Whole country	Flood	10 killed 150 injured	Lao P Dem Rep
Sept/1991	Khammouane, Savannakhet, Champassak	Flood	332,000 affected	Lao P Dem Rep
Sept/1984		Flood	14 killed 2000 affected	Lao P Dem Rep
Aug/1978	Southern, Central	Flood	31 killed 459,000 affected	Lao P Dem Rep
17/Aug/1971	Vientiane	Flood	14 killed 15,000 homeless 100,000 affected 200,000US\$ Damage	Lao P Dem Rep
5/Sept/1968	South, along Mekong river	Flood	2 killed 600 homeless 9000 affected 1,280,000 US\$ Damage	Lao P Dem Rep
25/Aug/1966		Flood	300 killed 2000 homeless 70,000 affected 15,300,000 US\$ Damage	Lao P Dem Rep

Table02 shows the list of Disasters, Sources: "M-DAT: The OFDA/CRED International Disaster Database

## **A2. The outline of the present countermeasures for mitigating flood damages:**

- Based on the *policy of Government 2005 to 2020* is clear that how the ministries and line Agencies are concerned to establish they own plan as follow:
  - Ministry of Communication Transport Post and Construction (MCTPC) will responsible for structure and non structure measure in the City, Urban, and Town
  - Ministry of Agriculture and Forestry will responsible for reducing the 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 Industry and Handicraft is responsible for flood control down stream of dams.
  - National Disaster Management Office (NDMO) under Ministry of Labor, Social and Welfare, considers, prepare and ask donor for relief and flood respond. In some case they will responsible for non structure measure such as flood preparedness in the province, district and communities in inundation areas, produced guide book for elementary school and others.
  - Prime Ministry's Office responsible for the hold system of flood responsibility.

### **A3. Do you think that the Flood Hazard Map will be useful in your country?**

As I've mentioned above, flood hazard map has not produced yet in my country therefore, I've learned lectures, exercises and field survey including Town-Watching in this course, however it is impressive to me all useful topics of the designed curriculum. In order to be guidance for the countermeasure for mitigating flood damages as shown in the tables (1) and (2), at the present flood hazard map is very useful and needed for residents in urban areas especially.

### **B. The allocation of roles in making flood hazard map in Lao PDR**

#### **B1. Which organization should hold the main responsibility for making a fundamental map such as anticipated inundation area map?**

- In my point of view, I've been talk with ex-participants in previous course in order to be responsibility for making a fundamental map and flood hazard map,
- National Geographic Department is responsible for creating topographic base map
  - 
  - The Lao National Mekong Committee should be responsible making flood hazard map because at the present one division which is under the committee is responsible and provided technical support including GIS and Hydro Modeling to the implementation of LNMC work programs and also coordinating with line Agencies concerned.

#### **B2. Which organization should hold the main responsibility for making and disseminating flood hazard maps?**

The idea is concerning to outline of the present countermeasures for mitigating flood damages, Therefore the National Disaster Management Office (NDMO) under Ministry of Labor, Social and Welfare should hold main responsibility for disseminating flood hazard maps in Lao PDR.

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

#### **C1. Which area do you choose for the target river basin area? Why?**

The catchments area that I will choose for target river basin area is sub-catchments Sebangfai area which is locate in middle part of the Lao PDR (see map 01), because the reason why is following:

- The flood occurred almost yearly for instant in 1991, 1992, 1996, 2000, 2001, 2002 and 2005, those information of damages is shown in tables (1) and (2).

#### **C2. What do you think is necessary to make flood hazard map in this chosen area? Do you have data, maps, or budgets necessary for making flood hazard maps?**

I would say yes, it is necessary, some data and information that we have as following:

- We have some meteorological data like: Rainfall, Discharge ...
- We have some spatial data like base maps at scale 1/100 000 and 1.50 000 but 1/5000 is not sure.
- In the long run, making Flood Hazard Map in this area accordingly to Table (1) is very important issue, but until now, it lack of financial support.

Figure 1 shows map of catchments area in territory of Lao PDR.

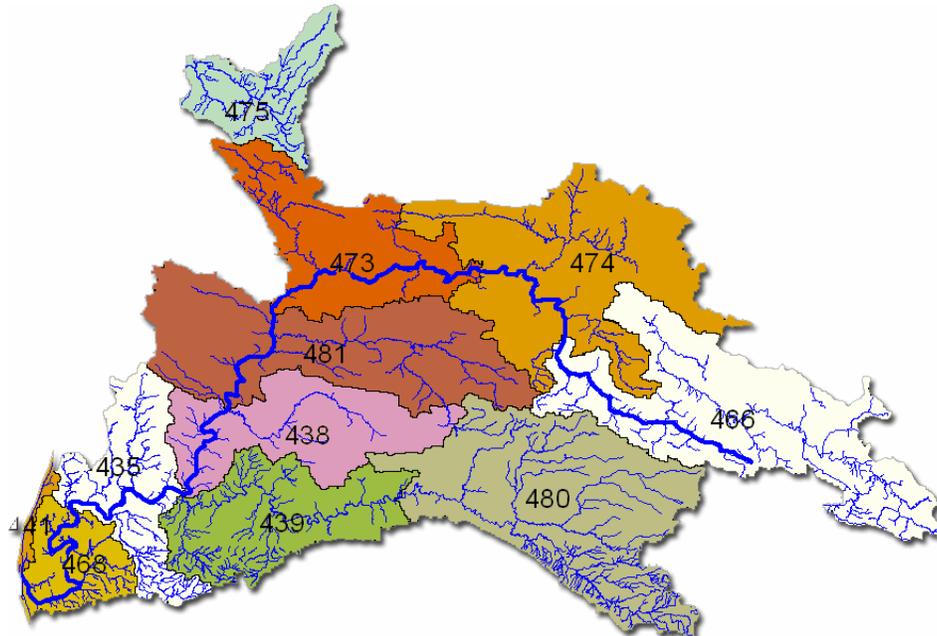
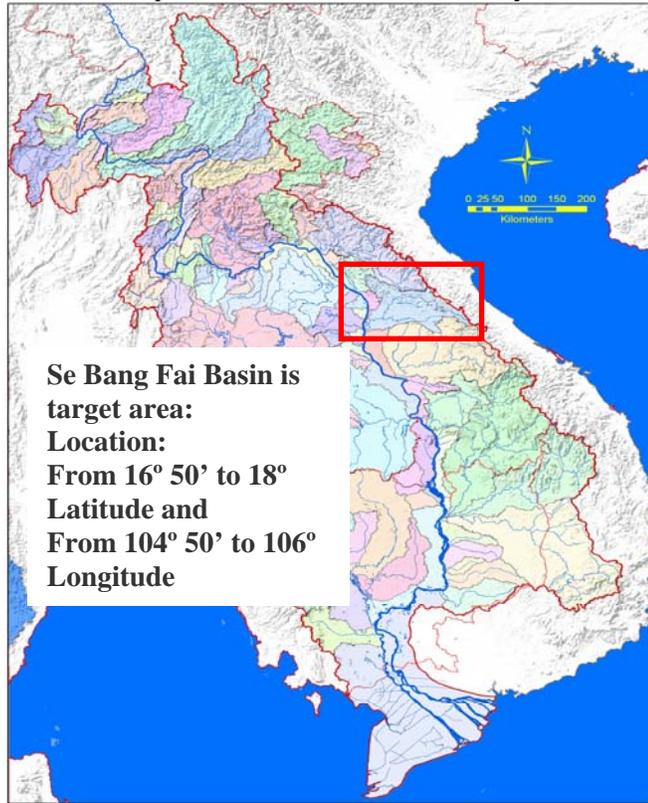


Figure 2 shows the Official Se Bang Fai watershed division

A first division of the SBF watershed is a division into eight sub watersheds (Figure 2). This division comes from the official watershed classification of the Lao PDR provided by the Mekong River Commission.

The explanation of Figure 2 is the bold blue line represents the Se Bang Fai river flowing from sub basin 466 to 468 into the Mekong which is represented by number 441. A few tributaries (subbasin 481 and 438) flow into the Se Bang Fai where the Se Noy river flows from sub basin 480 into sub basin 435, which is the largest tributary of the Se Bang Fai. Sub basin 480 and 439 are considered as one sub basin, since there are no hydrological stations available. Other tributaries of the Se Bang Fai are the Nam Piat (basin number 438) and the Nam Oula river (481) both situated on the left bank.

**C3. Propose your own “Action Plan” within the next five years.**

No	Description	2007	2008	2009	2010	2011
<b>(i) Initial Phase</b>						
1	Institutional arrangements		—			
2	Data assessment and collating		—			
3	Data Collecting		—			
<b>(ii) Training/on the job training</b>						
1	Methods of Flood Hazard Mapping		—	—		
2	GIS for creating based maps		—	—		
3	Simulate Hydro Modeling, run-off, discharge		—	—		
4	Town-Watching/Field Survey			—		
<b>(iii) FHM production</b>						
5	Producing maps and related texts					
6	Producing FHM					
<b>(iv) Dissemination/ Distribution</b>						
7	Workshops			—		
8	Report				—	—
9	Dissemination and				—	—

	Distribution Launching of internet,					
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**C4. What seems a problem in making flood hazard maps in your country?**

- \* The stakeholders and decision maker should understand the meaning of the Flood Hazard Map and purpose of use it,
- \* Lack of financial support for implementing the Action Plan as shown on above
- \* Lack of sufficient data such as large scale of topographic map especially in urban areas.

**D. “My own Flood Hazard Map on Ise city”**

**D1. What is the improvement from the FHM on Ise city currently available?**

Flood Hazard Map on Ise city proposes to be improved as follow:



1. The inundation dept
2. Try put more evacuation centers
3. Put more evacuation routes
4. Put some more signage's

## **E. Conclusion of the report**

- ✚ During five weeks of the training course on flood hazard mapping, I've learned a lot about flood hazard map creation, to make a concluding report is allowed me to be improved myself and also my division.
- ✚ The concluding report has about seven pages, consist very important contents especially the Action Plan between the next five years described about the activities of flood hazard map making.
- ✚ This training program has meaningful and powerful in point of view because before I came to Japan to attend this course, I've had some background about map making using GIS program, but after I've learned some how that I gain more knowledge concerned flood hazard mapping.
- ✚ When I return to my country, I will report to my Boss, if I have just power enough I will try to seek a supported fund for implementing my Action Plan.

