



The 9th AWCI ICG Meeting

29 – 30 September 2012, Tokyo


Report of Lao PDR

on

Plans for and on-going activities of
Climate change adaptations and water nexus

by Singthong Pathoummady

OUTLINE

- Key issues Input to AWCI Phase II
- ✓ Steps of Three approaches :
 - Framework approach
 - Strategic approach
 - Technical approach
- On-going activities :
 - ✓ GFDRR – World Bank
 - ✓ MRC's IKMP & FMMP
- Plans :
 - ✓ Mekong – IWRMP  National-IWRMSP
 - ✓ ADB-GMS
 - ✓ GFDRR-World Bank
 - ✓ MRC's Programmes: CCAI ; DMP
 - ✓ Japan's ODA (Grant Assistance & TCP)

Plan input to AWCI 2

Implementation proposal

Steps and Strategy following the three approaches:

Framework development approach:

- National Disaster Management Committee (NDMC) currently NDPCC , National Env. Committee and National CC Committee are high level decision making bodies which are composing of ministerial members and chaired by Vice-Prime Minister.
- Existing developed framework and legislation tools are:
 - ✓ National Water Resources Policy and Strategy
 - ✓ National Strategy on Disaster Management
 - ✓ National Climate Change Adaptation Plan of Action (NAPA)

It is proposed to Develop :

- (1). National Policy or Decree on Meteorology and Hydrology (Hydro-Meteorological Services Act)
- (2). Strategy and SOP on National Early Warning Systems
- (3). Guidelines and Procedures on Applications of AWCI over Demonstration Basin and Replication to Nationwide.

Institutional Mechanism Strengthening

The Ministry of Natural Resources and Environment (MONRE) is newly established which unified and supervises Departments whose mandates are involved with issues of:

- ✓ Water Resources;
- ✓ Lao National Mekong Committee Secretariat (LNMCS);
- ✓ Disaster Management and Climate Change;
- ✓ Hydro-Meteorology & Early Warning Systems;
- ✓ Natural Resources & Environment Institute;
- ✓ Environment Quality Promotion;
- ✓ Land Use Management ;
- ✓ Forestry Resources Management ;
- ✓ River Basins' Committees; etc...



Strategic approach

- In Lao PDR, the implementation of the IWRM strategy involved the collaboration of various sectors, especially government Departments and River Basin Committees. According to government strategy and priority, AWCI activities implementation need to be conducted at selected river basins approach which benefits local people living over the basin, their agricultural production, national economic infrastructure, i.e. Hydropower Reservoir for management and operation of dams.
- The selected Demonstration site is Sebangfai River Basin. The Study and analysis of impacts of Climate Change for adaptation planning as well as the study and modeling of flood and drought monitoring, forecasting and early warning will respond to local and national urgent needs on disaster risk reduction and poverty alleviation. Outputs of AWCI implementation over this selected demonstration site is actually also contributed to the Mekong Regional Flood Management and Mitigation Programme, Drought Management Programme (FMMP, DMP and CCAI of MRC).
- Experiences and best practices learnt from this demonstration will firstly expanded to adjacent upper basin which is the reservoir of Nam Theun, biggest hydropower of the country. Furthermore the outcomes of this AWCI demonstration studies will be replicated to other prioritized river basins over the country, i.e. first five basins during the implementation phase of 7th National Social-Economic Development Plan (NSED 2011-2015).



Technical approach

It is requested that AWCI experts mission to visit Lao PDR for survey/inspection demonstration site, conducting detail design of activities and convene the meeting on awareness and consultation with collaborating agencies. Local Needs of Lao PDR included the followings:

1. Detail design AWCI activities to match and harmonize national and regional programs;
2. Consultation Workshop for awareness;
3. Establish automated & telemetry observation station network for rainfall, climate, water level, stream flow and weather;
4. Data collection, Web-based In-situ Data Loading, Quality Control, Meta data Registration and Distributed Hydrological Modeling (WEB-DHM);
5. Climate Change downscaling approaches and applications focusing on CC Impacts assessment in Floods and drought problems;
6. Flood and drought Modeling, testing and operational application, consistency with relevant MRC's key tools;
7. Mainstreaming in to National Early Warning Systems, Disaster Management and Climate change Adaptation Plans of Actions.

On-going activities :

- ✓ GFDRR – World Bank:
 - Title: Strengthening hydro-met network for enhanced Early Warning Systems over three southern provinces ;
 - Fund : USD \$ 341,000.0
 - Implementation period : 2011 – 2012 , and extended to end at June 2013
- ✓ MRC's IKMP & FMMP:
 - Operational Data Collection of 12 HYCOS stations and sharing climate data with Regional Flood Management and Mitigation Center (RFMMC)
 - Application of MRC's hydrological forecasting tools for testing at Sebangfai basin, especially water level .

Plans :

1. Mekong – IWRMP  National-IWRMSP :
 - Title : Support strengthening Hydro-met Network and Early warning System;
 - Fund : USD \$ 1, 930,000 (World bank)
 - Period of Implementation : 2012 – 2016
 - Areas / Sites :
 - ✓ National Early Warning Center : at DMH's Headquarters ;
 - ✓ Sebangfai River Basin : Khammouane province ;
 - ✓ Sebanghieng River Basin : Savannakhet province ;

Plans :

2. ADB – GMS :

- Title : Flood and Drought Management and Mitigation Project (strengthening forecasting, early warning and climate services)
- Fund : USD \$ 3, 000,000 (ADB – AFD Grant)
- Period of Implementation : 2013 – 2016
- Areas / Sites :
 - ✓ National Early Warning Center : at DMH's Headquarters ;
 - Data acquisition & Communications, forecasting and early warning Models, Decision Support Tools/systems;
 - Transfer of Technologies: practitioners, scientists;
 - ✓ Sebangfai River Basin : Enhanced Monitoring stations;
 - ✓ Sebanghieng River Basin : Enhanced Monitoring stations;

Plans :

3. GFDRR (UNISDR) – WB :

- Title : Enhanced Community-base EWS over Sekong and Sedon river basins with Strategic framework and SOP.
- Fund : USD \$ 350,000 (GFDRR - WB)
- Period of Implementation : 2013 – 2015
- Areas / Sites :
 - ✓ Sekong River Basin : Attapeu and Sekong provinces;

4.MRC's CCAI & DMP :

- Title : Climate Change Assessment for adaptation planning and implementation
- Fund : A part from CCAI Regional LMB Budget
- Period of Implementation : 2012 – 2015
- Areas/sites : Mekong tributaries' basins:
Sebangfai, Sebanghieng, Sedon, Sekong

Plans :

5. Japan's ODA (Grant Assistance & TCP) :

- Title : Capacity Building on Hydro-Met and Agro-Climate Information and Services in Lao PDR
- Requested Fund : JPY ¥ 520,000,000 (To be considered)
- Period of Implementation : 2013 – 2016
- Areas / Sites : (a). DMH's Headquarters:
 - ✓ Applications of Interactive Tool for Analysis of Climate System (**ITACS**), developed by Japan Meteorological Agency (JMA);
 - ✓ Technology transfer for the meteorological satellite data utilization , including MTSAT high resolution for SATAID applications and Tokyo GISCS;
 - ✓ Enhanced forecasting, Early warning and Agro-Climate prediction & Services;
- (b). Sebangfai, Sebanghieng, Sedon, Sekong & other disaster risk areas : Enhanced monitoring stations, Observatories.

Major watersheds in Lao PDR with catchment area above 4,500 km²



Sebangfai Basin

Sebanghieng Basin

Sedon Basin

Sekong Basin



Thank you for

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Additional Relevant Information



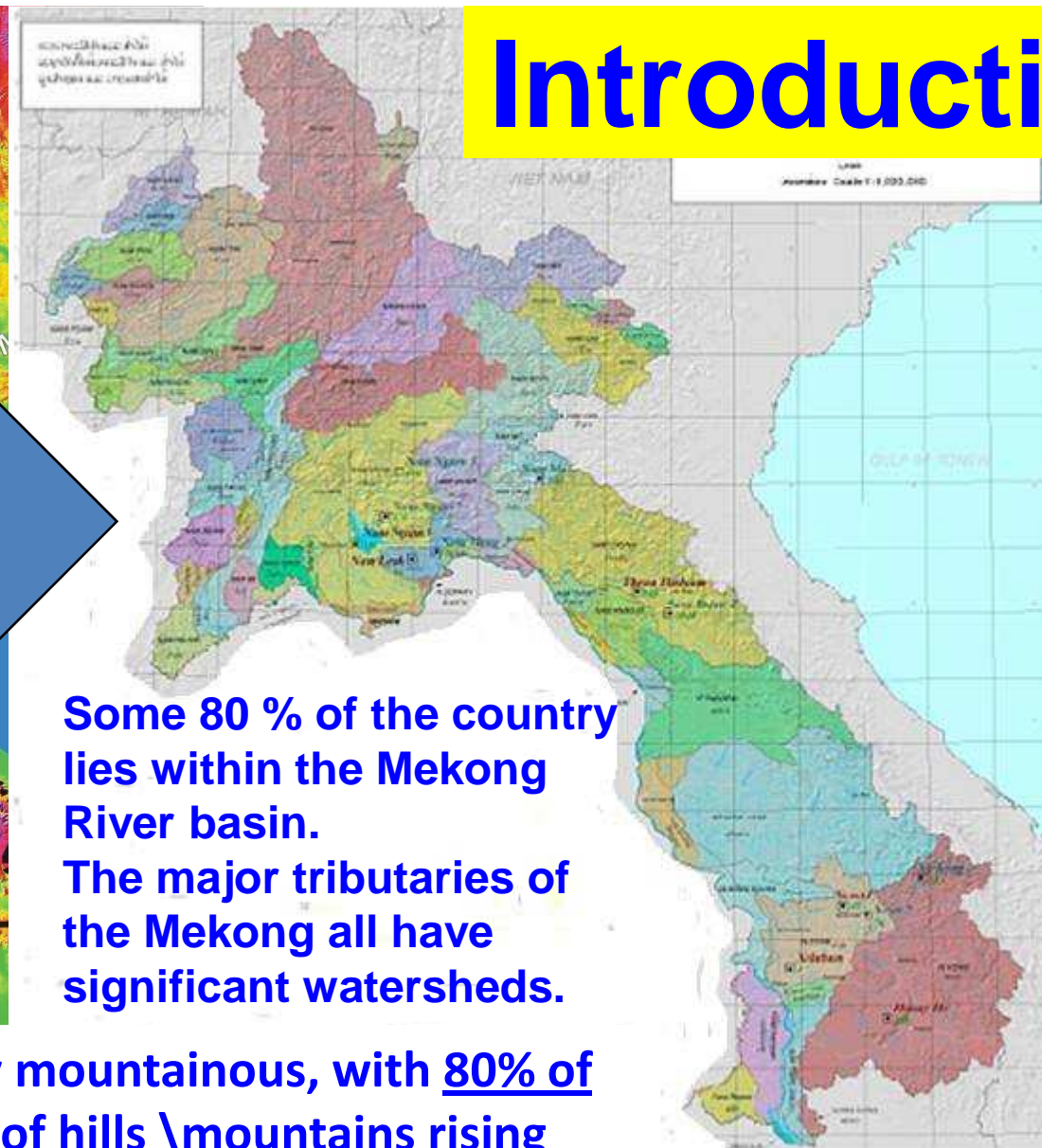
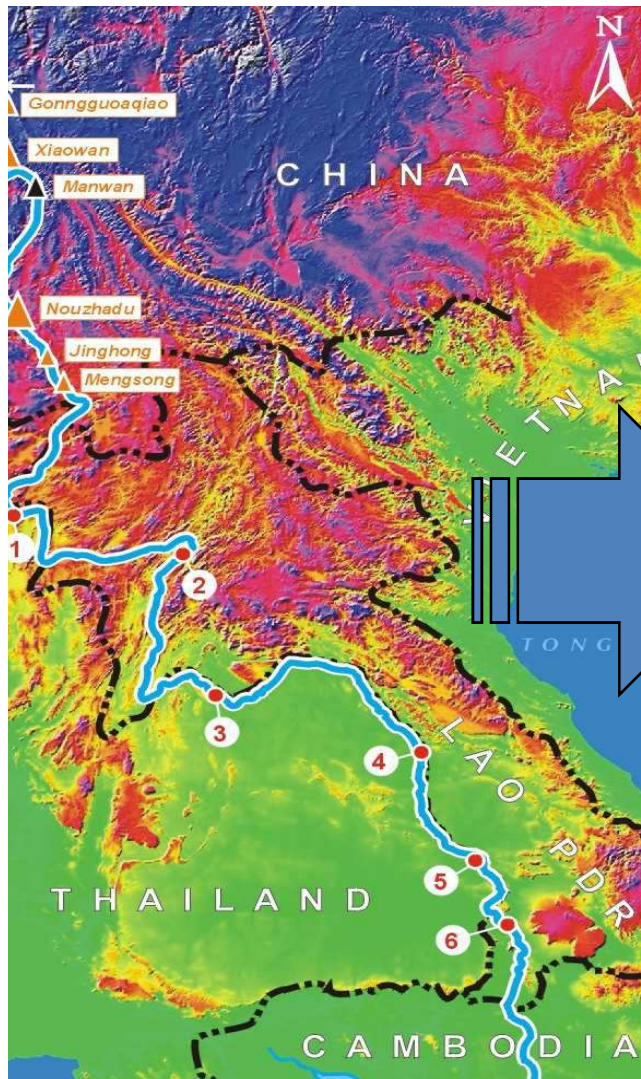
**The 9th Meeting of the GEOSS Asian Water Cycle Initiative
International Coordination Group (AWCI ICG) and the 2nd AWCI
Climate Change Assessment and Adaptation (CCAA) Study Workshop
Tokyo, Japan, 29 September-2 October, 2012**

Lao PDR Climate Change Adaptation and Water Nexus

By: Chanseng, Natural Resources and Environment Institute, MONRE

29 September 2012, Tokyo University

Introduction



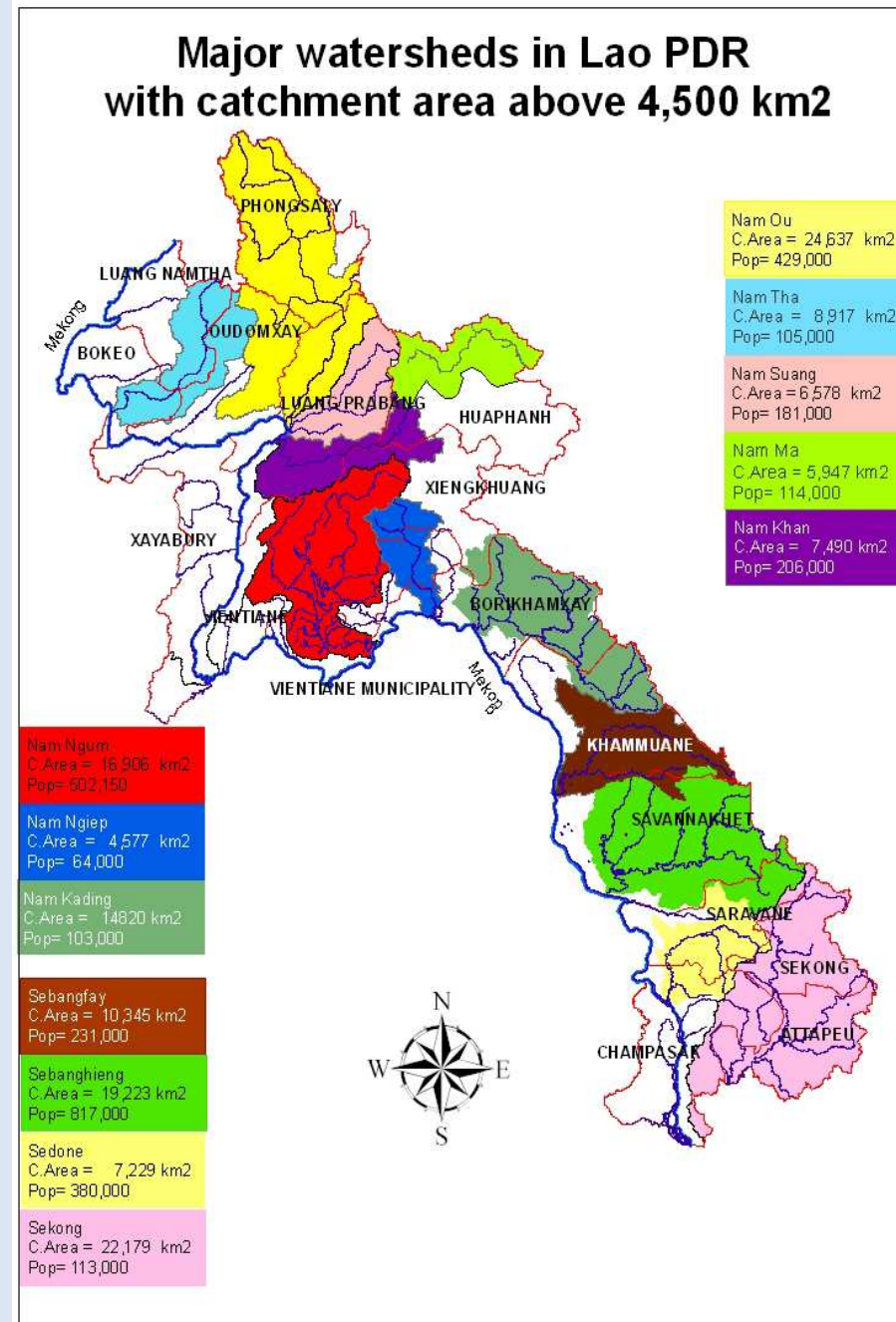
Some 80 % of the country lies within the Mekong River basin. The major tributaries of the Mekong all have significant watersheds.

Lao PDR is predominantly mountainous, with 80% of its land surface consisting of hills \ mountains rising 100 to 3,000 meters above the plains of the Mekong River. Valley \ plains range in elevation up to about 200 m MSL.

Lao PDR has abundant water resources, mainly good quality fresh water. Water is an essential part of the life and culture of Lao people, and also contributes to the socio-economic development goals of the country. Ultimately the welfare of Lao PDR is bound up with water and all development plans will depend on water resources .

There are 9 1 % of Flow into Mekong river such as 13 major river basins such as Nam Tha, Nam Beng , Nam Ou, Nam Seung, Nam Khan, Nam Ngum, Nam Gieup, Nam San, Nam Kading, Sebanfai, Sebanhieng, Sedone and Sekong.

9 % of Flow out of Mekong through Viet Nam into the South China Sea. These are 3 major river basins such as Nam Ma, Nam Sam, and Nam Neune .



Background

- The Government has shown strong commitment to address climate change by ratifying the United Nation Framework Convention on Climate Change (UNFCCC) in 1995 and the Kyoto Protocol in 2003.
- Established inter-agency National Steering Committee on Climate change (NSCCC) now merged into National Environment Committee (NCE); and 8 Technical Working Groups (TWGs).
- The assistance is to enhance the capacity of MONRE, NEC and 8 TWG combined with other initiatives to raise awareness and strengthen collaborative mechanisms for dissemination of climate change information is considered crucial.

*Reference: Nam Ou Climate Change Data
Data Input
Data Analysis
Data Processing on Page #8*

<http://cc.start.or.th/>

According to the IPCC Working Group on Asia and an analysis of extreme weather events in Asia, there is evidence of increasing intensity or frequency of such events on a regional scale throughout the 20th century (Cruz et al, 2007). An average increase of 0.1 to 0.3°C per decade between 1951 to 2000 has been reported, with a decreasing trend in total rainfall between 1961 and 1998, whilst the number of rainy days has declined throughout S-E Asia as a whole (Manton et al, 2001).

The Third Assessment Report (TAR) predicted that the area-averaged annual mean warming would be about 3°C in the decade of the 2050s and about 5°C in the decade of the 2080s over the land regions of

predicts that increasing temperatures and rainfall variability throughout Southeast Asia will cause a 2.5–10 percent decrease in crop yields by 2020 and a 5–30 percent decrease in crop yields by 2050 (Asian Development Bank, 2007). In this connection, Lao PDR is susceptible to the impacts of climate change especially from floods and droughts. These have severe adverse impacts on livelihoods and in particular, the livelihoods of the poorest and most vulnerable groups with the lowest adaptive capacity.

Southeast Asia START Regional Center

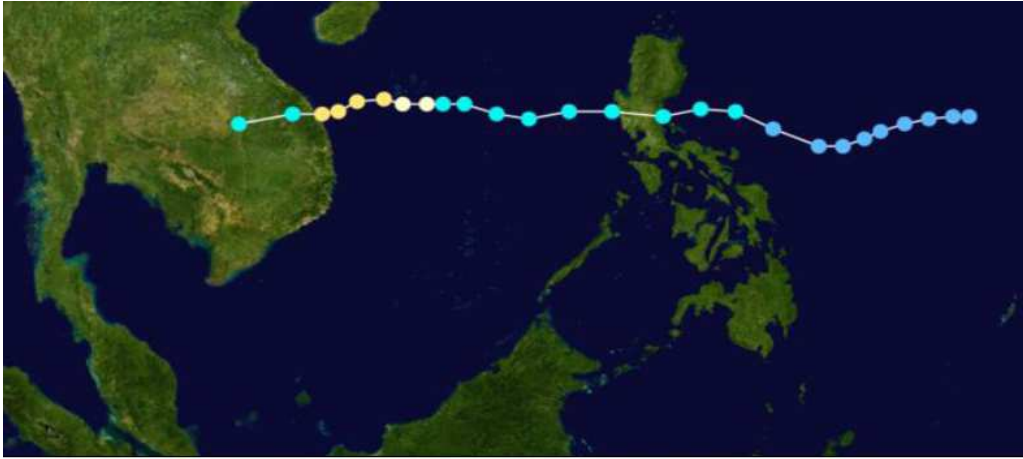


Lao People's Democratic Republic
Peace Independence Democracy Unity Prosperity

NATIONAL ADAPTATION PROGRAMME OF ACTION TO CLIMATE CHANGE

April 2009

Wooden houses



Source: [Wikipedia:WikiProject Tropical cyclones/Tracks](#). The [background image](#) is from [NASA](#).



CC 2009



Hotel flooding in 2009 by TP Ketsana
on the date 29/08/2009



Vientiane Capital flooding in 2008



Hazards and Disaster in Lao PDR



In mountainous areas, flash floods washed away paddy fields and destroyed irrigation systems.

Natural Disaster:

Flood (river flood and flash flood)

Drought

Local Storm ,

Hail

Tropical Cyclone, Southwest

Monsoon,

Landslide

Birth flu

Earthquake

Epidemic (human and animal Disease) Pest



Agriculture was badly hit with many farms flooded.



Man-made

UXO

Fire

Road Accidents



Objective

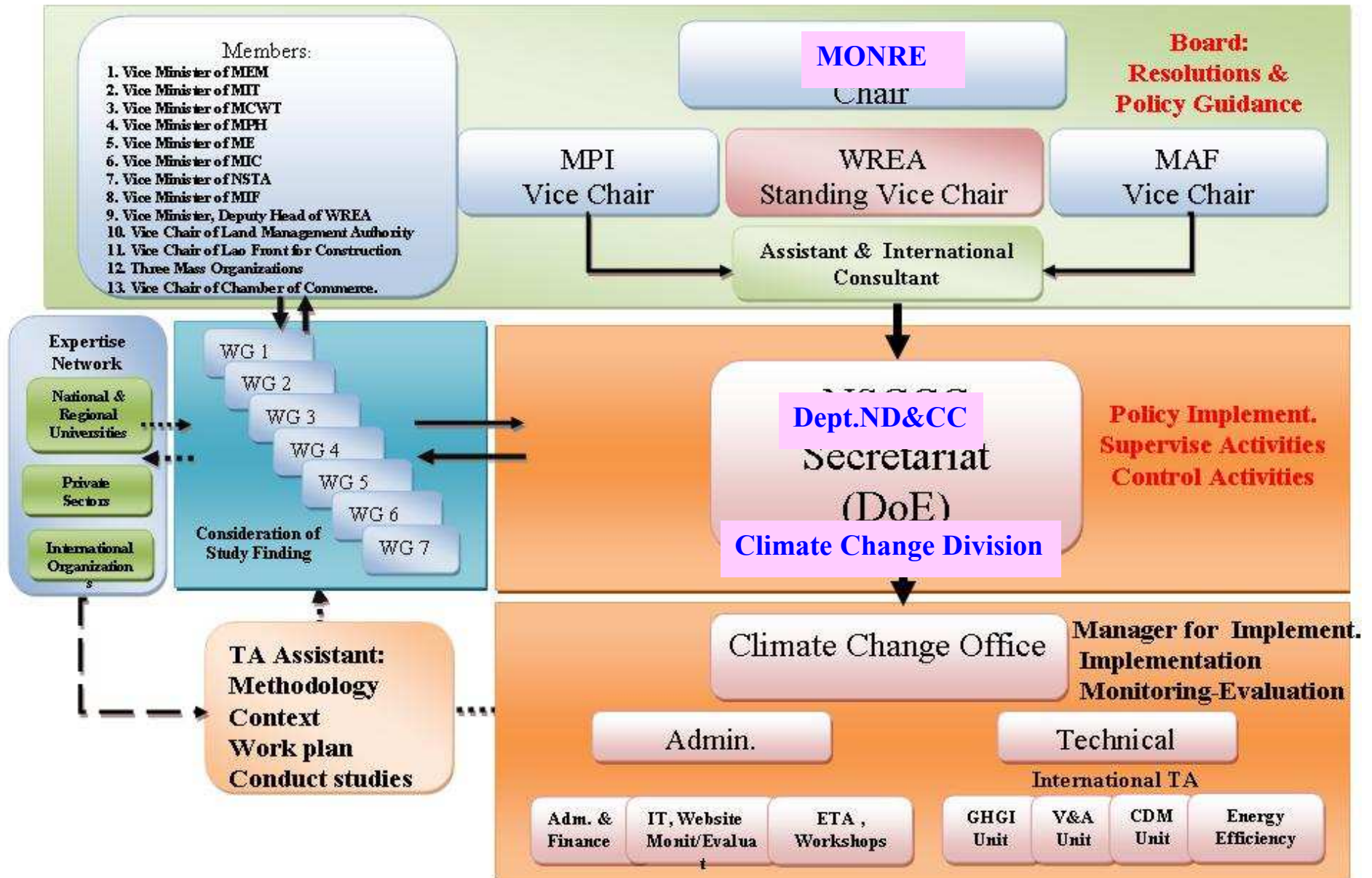


- **Background\Introduction**
- **Strengthen Climate change organization**
- **Depart. Of Disaster &CC \MONRE**
- **Enhancing national capacity building and Awareness**
- **National Capability about Climate Change Scenarios
for Long term**
- **Conclusions**

Strengthen Climate change organization

Proposed Institutional Arrangement for Climate Change, Lao PDR

DRAFT Oct. 08



ROLES AND RESPONSIBILITIES

of the Depart. Of Disaster &CC \MONRE

- Arrangement\ Organize Meeting and Workshops
- Coordination\ Consultation with Organizations
- Preparation and Appraisal of Reports
- Capacity Building and Training
- “[Mitigation] is an intervention to reduce human-caused net emissions of greenhouse gases.”
- some obvious measures for mitigation:
 - Reduction (at the source) of the use of fossil fuels (clean coal technology, renewable energies)
 - Capture of methane from landfills and rice paddies
 - Creation of sinks for storing carbon through natural resource management (carbon sequestration)
- [e.g. reducing tropical deforestation and increasing tree planting]



Capacity Building(CB)



Training courses:

- Basic on Disaster Risk Mgt.(DRM) and CBDRM at all levels including communities\ Villagers.
- For specific sectors such as: police, army, teachers, health, mass media, fire prevention dept., women union.
- Other specific courses such as flood preparedness planning, etc...



Public Awareness and Education

- Meeting and Walking for health.
- Advertising through media means: Radio, Newspaper, TV.
- Pictures exhibition, questionnaires and fire fighting simulation exercise.
- Banner posting along the major road in Vientiane Capital.



Lao PDR Demonstration Site

Savannakhet (Champhone District); Supported by MRC CCAI

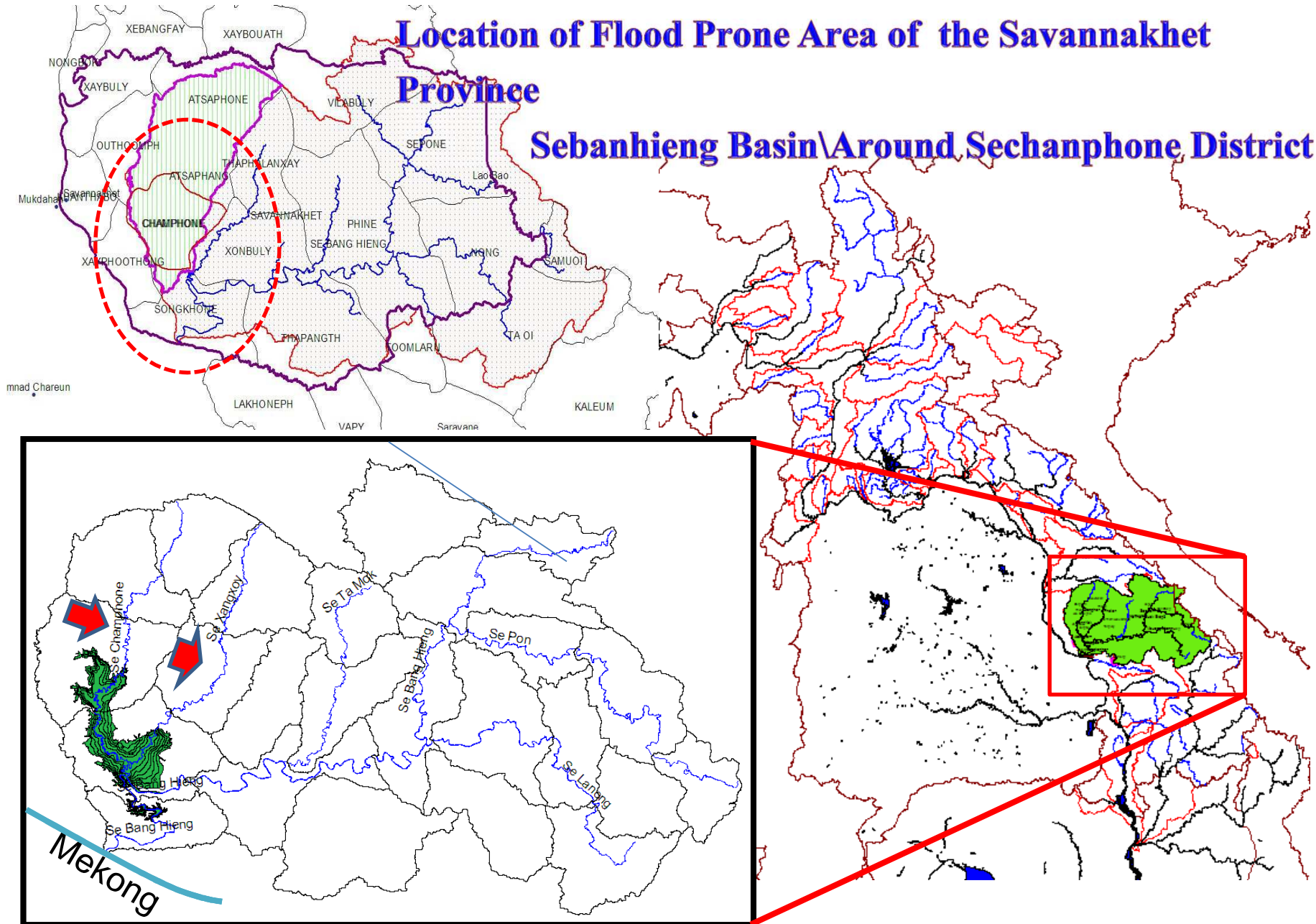
“To increase resilience and adaptive capacity of authorities and local community through the process of assessment, awareness raising, and introduction/implementation of adaptation options”

- Highly vulnerable to flood and drought
- Poor farmers as most vulnerable groups
- Field surveys done to collect relevant information
- Preliminary responses from the local e.g.
 - Extension of irrigation canal
 - Analysis of soil textures and experiment of plants
 - Introduction of flood tolerant rice and short season rice varieties

National Capability about Climate Change Scenarios for Long term

Location of Flood Prone Area of the Savannakhet Province

Sebanhieng Basin\Around Sechanphone District



Drought Informations of Lao PDR

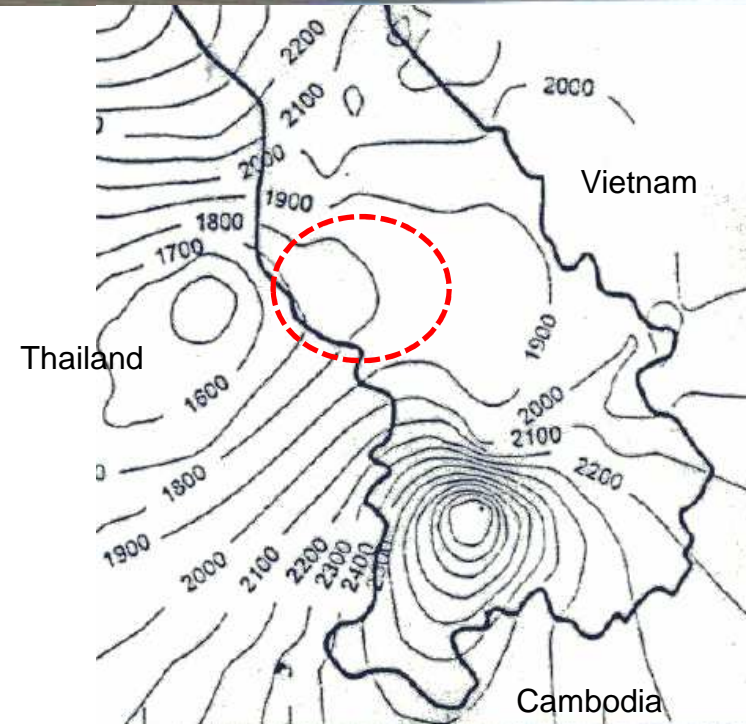
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26Feb1999



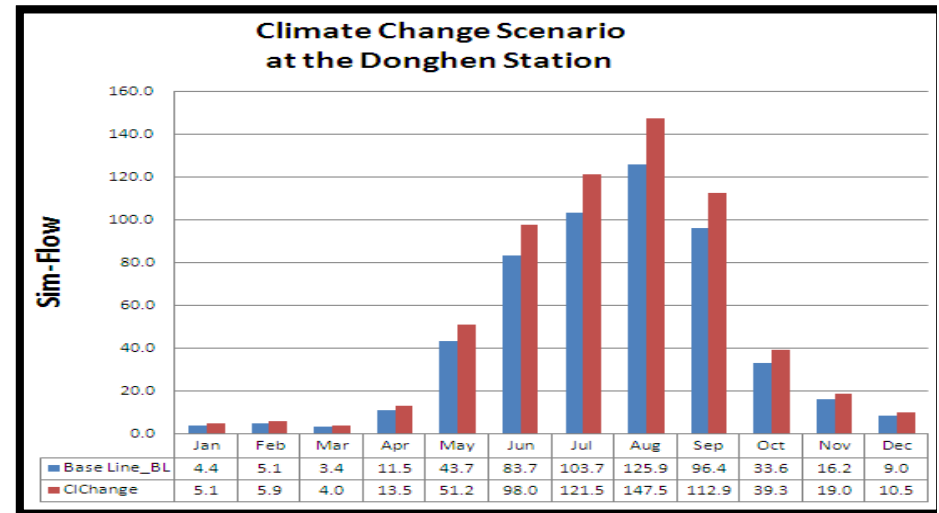
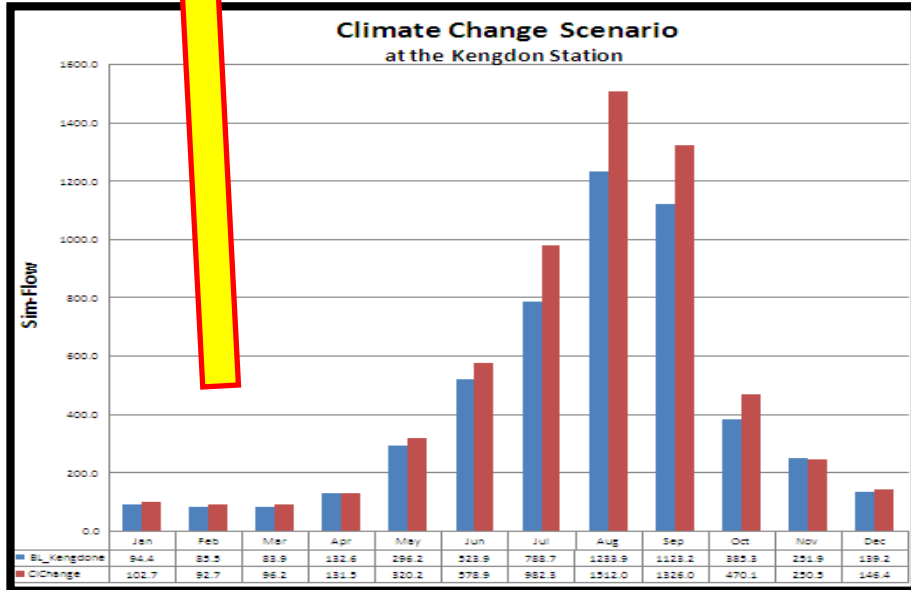
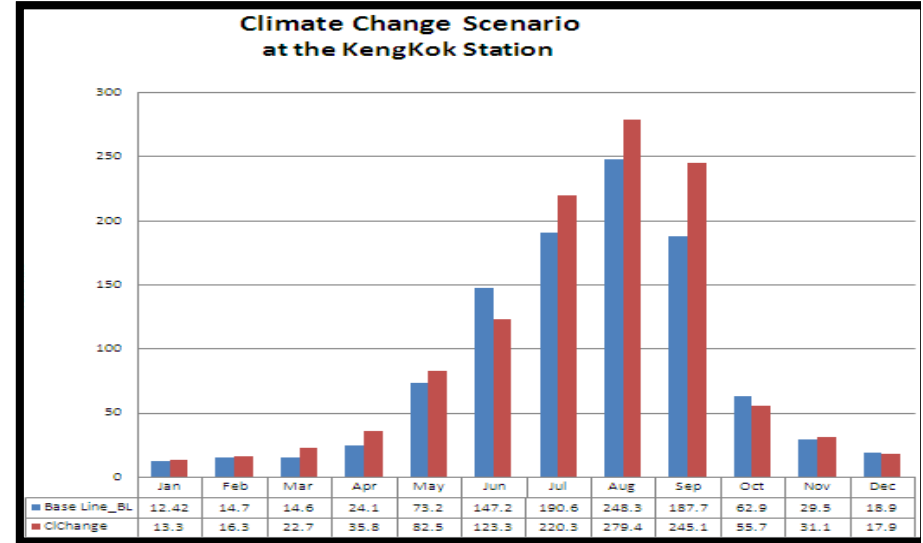
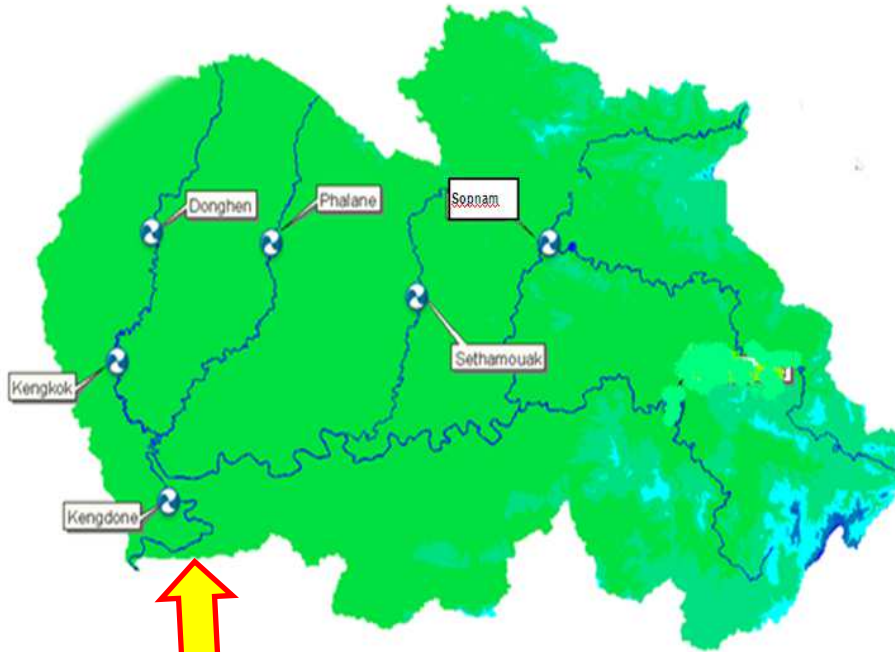
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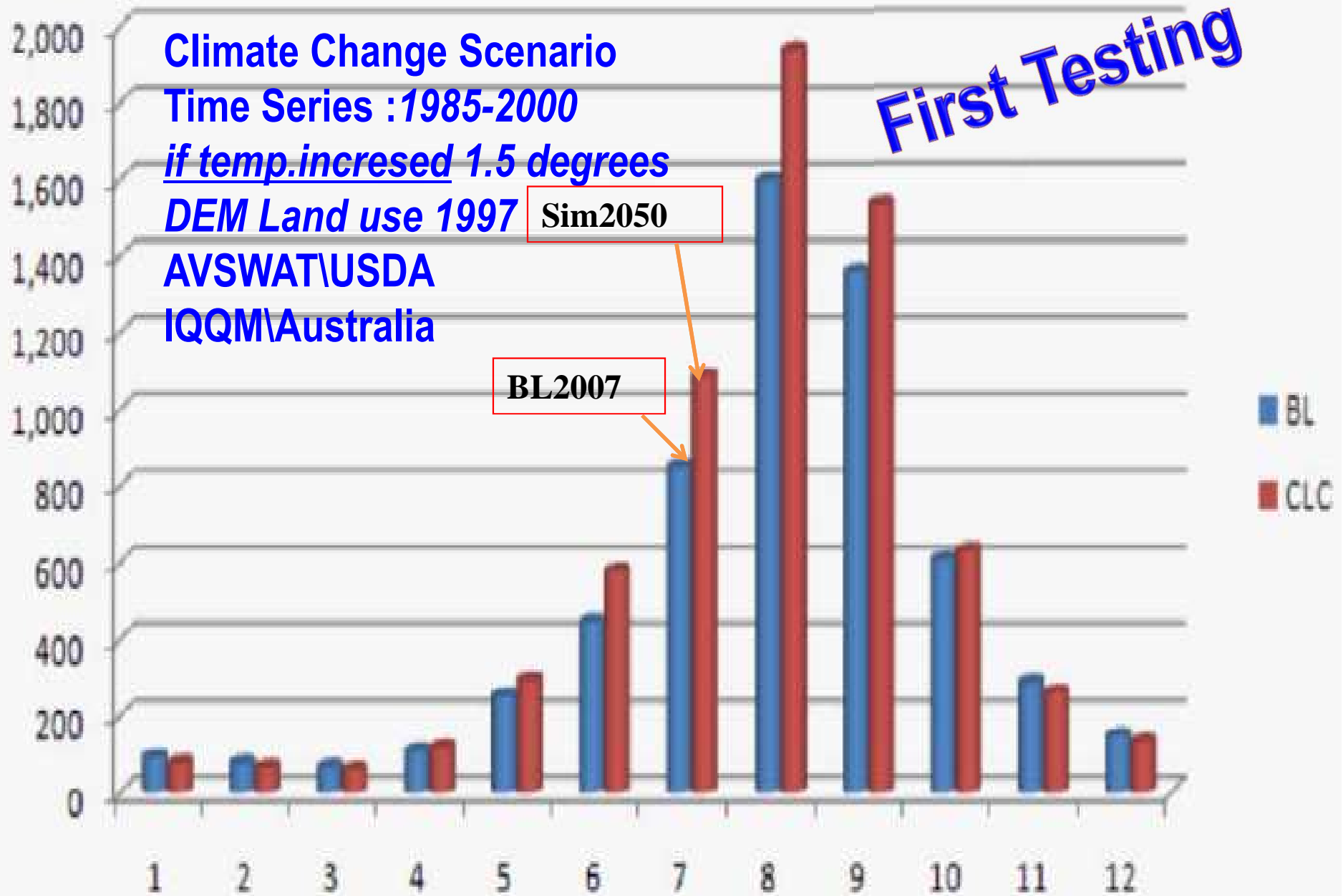
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Long team CC Scenario@Kengdone Station



Lao National Mekong Committee \Lao Modeling team (2007)
At the Kengdone Station



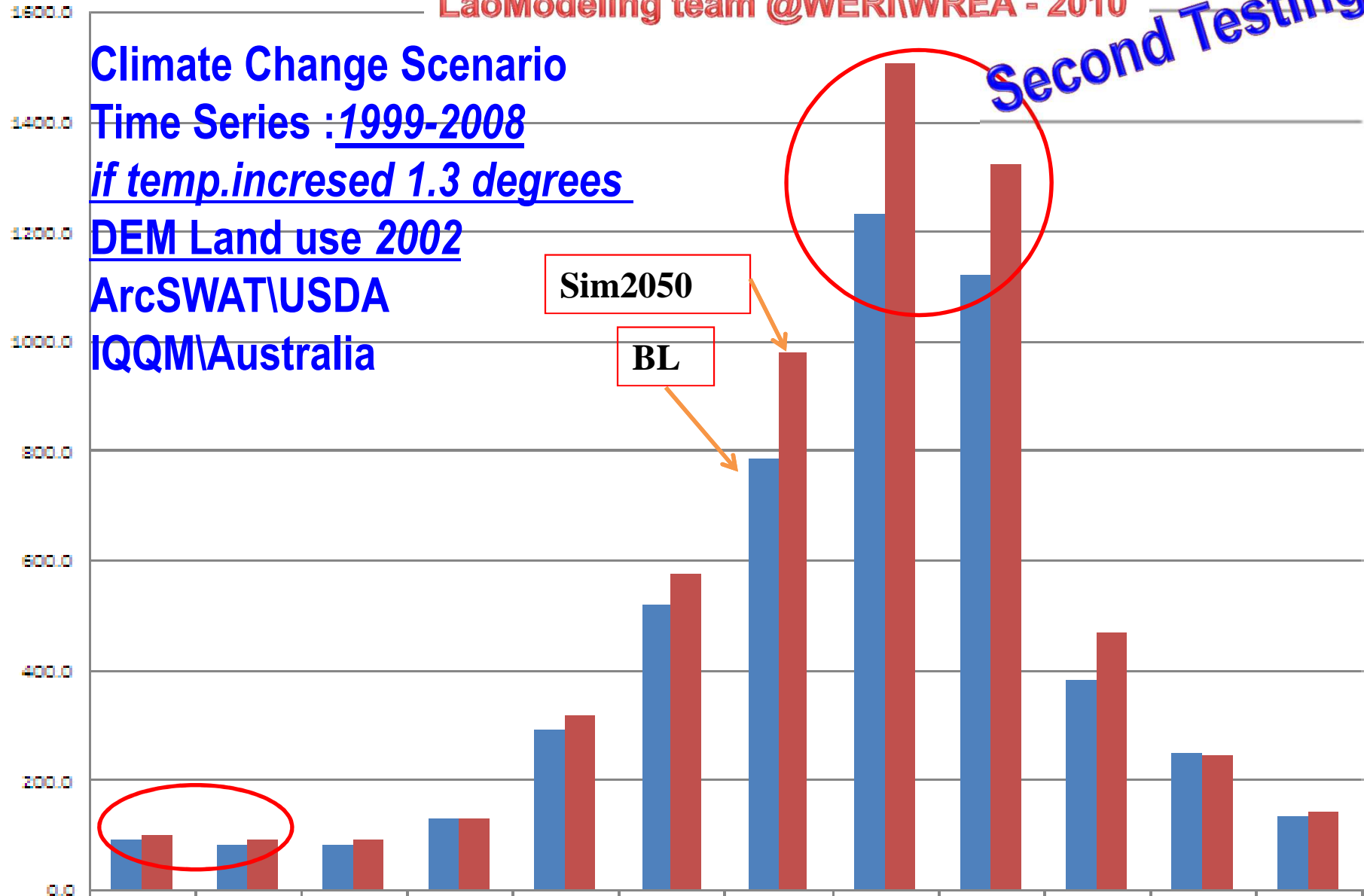
At the Kengdone Station Climate Change Scenario

LaoModeling team @WERI/WREA - 2010

Second Testing

Climate Change Scenario
Time Series :1999-2008
if temp.increased 1.3 degrees
DEM Land use 2002
ArcSWAT\USDA
IQQM\Australia

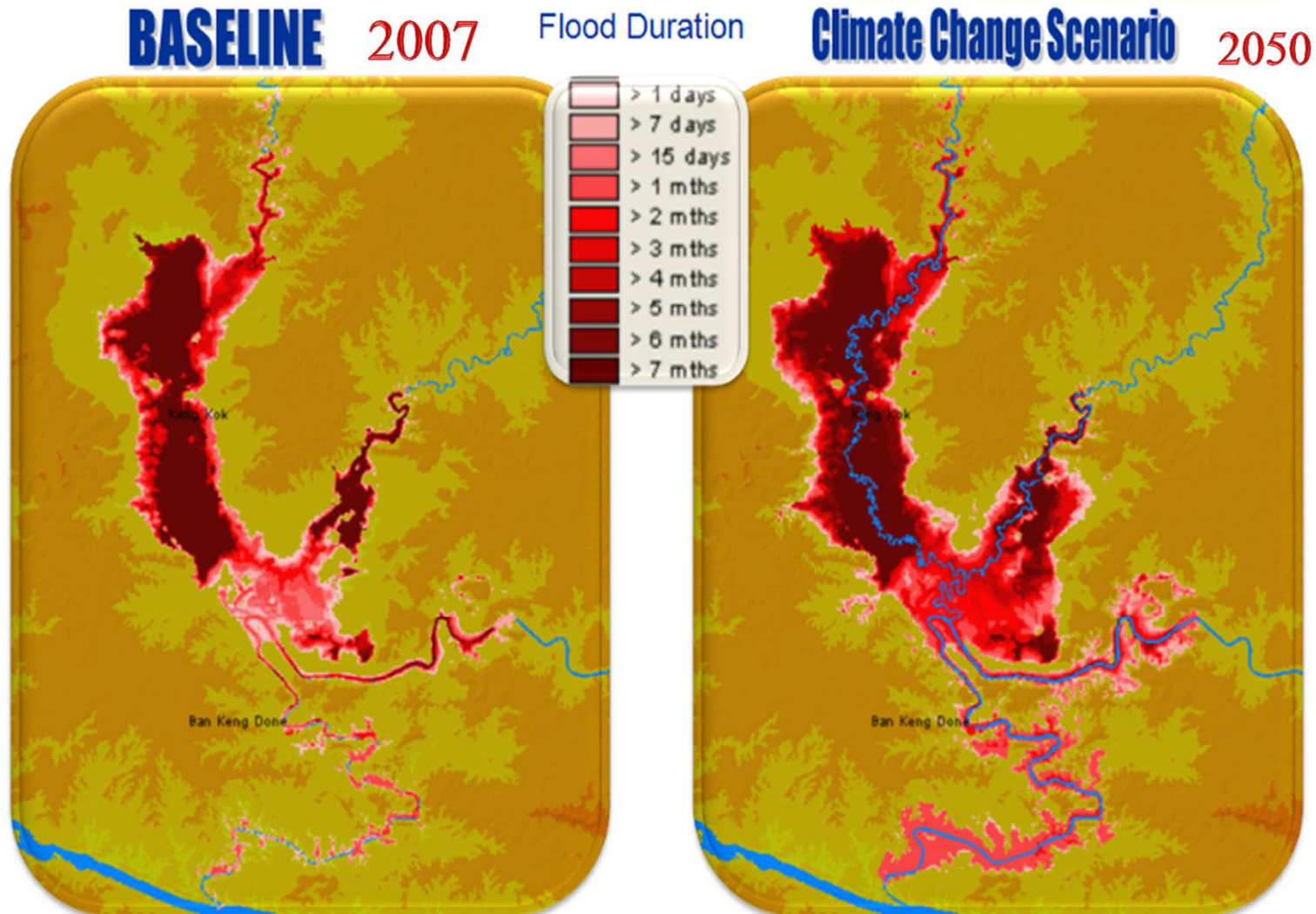
Sim-Flow



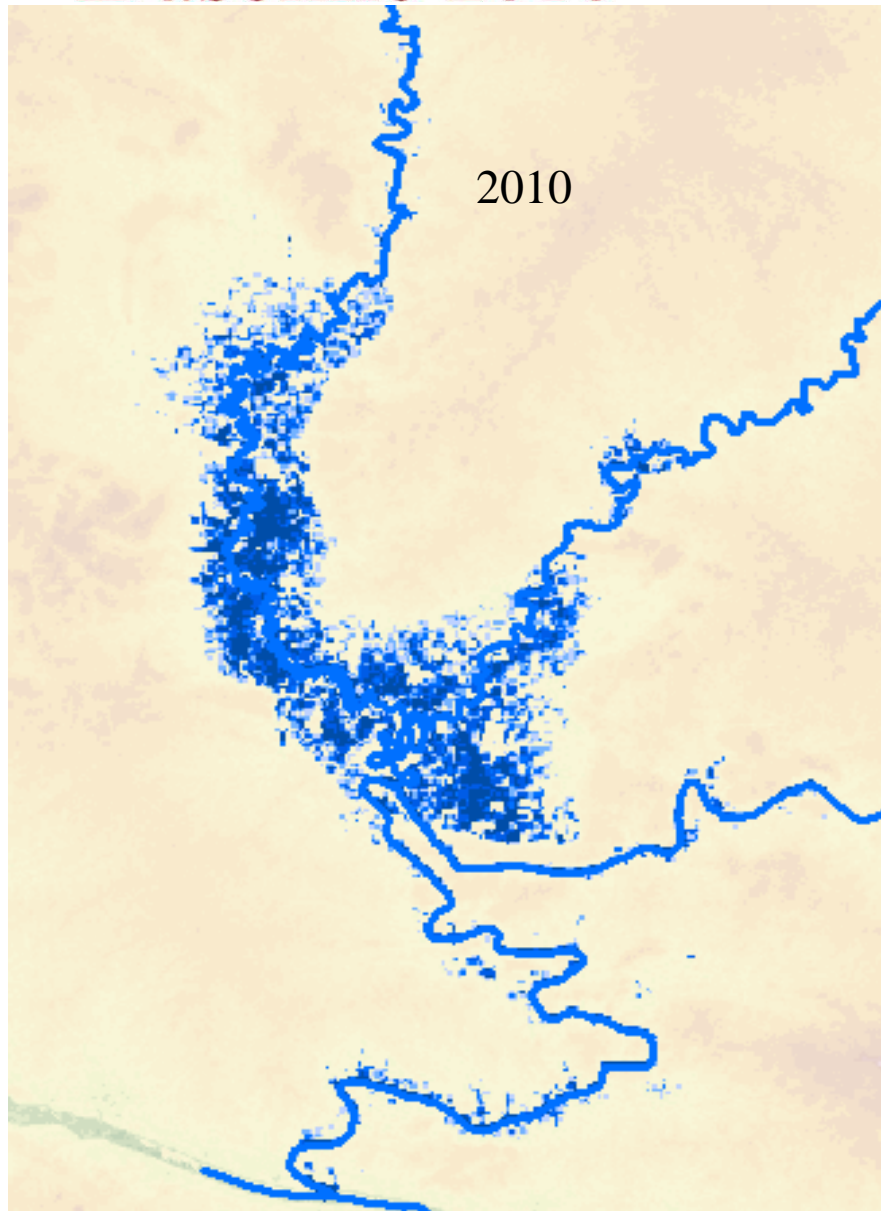
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BL_Kengdone	94.4	85.9	88.9	132.6	296.2	523.9	788.7	1233.9	1123.2	385.3	251.9	139.2
CChange	102.7	92.7	96.2	131.5	320.2	578.9	982.3	1512.0	1326.0	470.1	250.5	146.4

Flood durations of Sechamphone Area

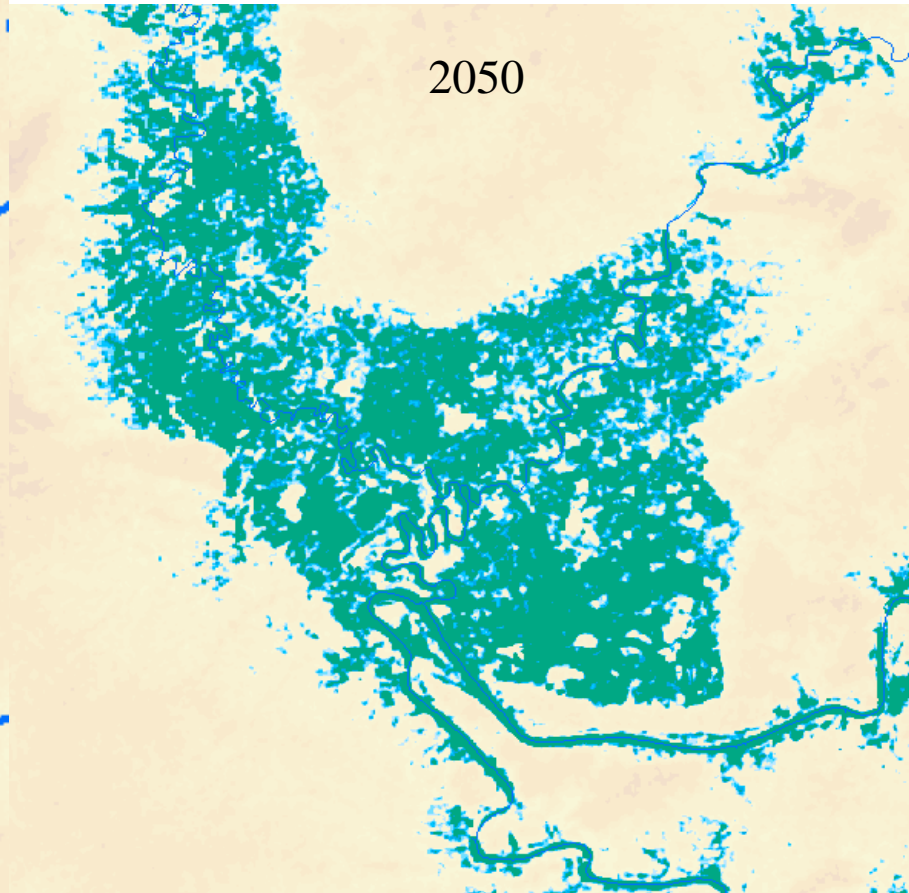
No.	Duration	Area(ha)		% of Increased
		Baseline	Scenario	
1	1days	112,140	94,158	(16.04)
2	7days	4,034	3,602	(10.71)
3	15days	4,255	5,282	24.14
4	1mths	5,541	5,847	5.52
5	2mths	6,656	14,323	115.19
6	3mths	3,508	8,050	129.48
7	4mths	2,269	5,920	160.91
8	5mths	2,508	4,984	98.72
9	6mths	867	3,364	288.00
10	7mths	17,397	24,143	38.78
Total:		159,175	169,673	~ 7



Baseline 2010

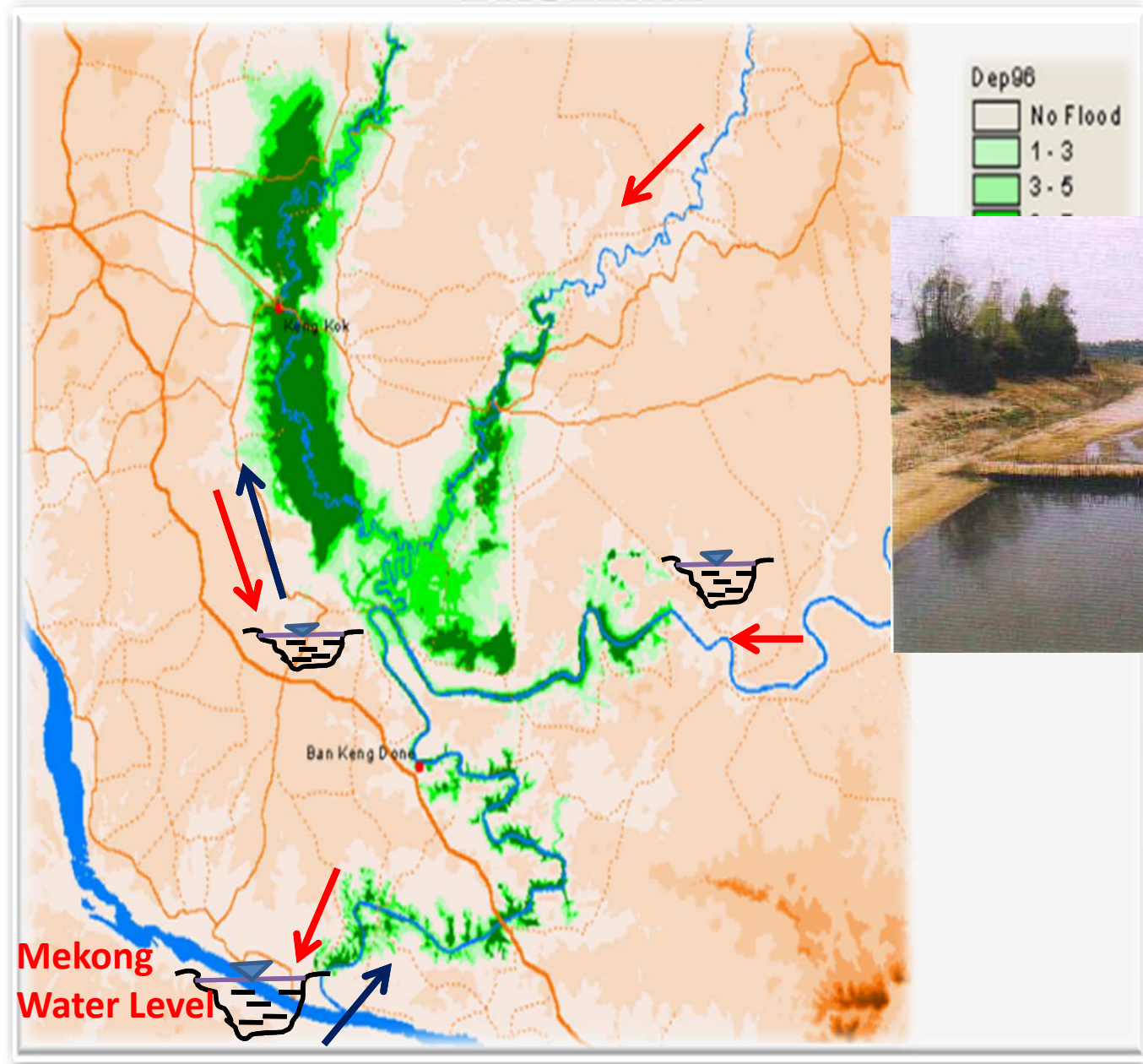


CC Scenario 2050



Xe Champone river at Kengkok Station

BASELINE



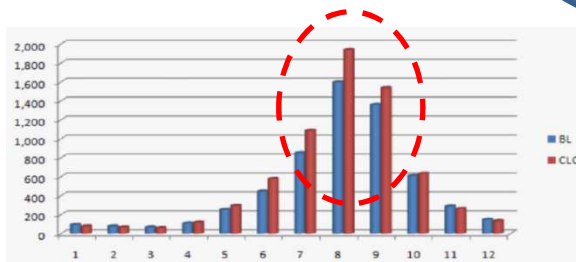
Xe Champone



Water Sectors's Master Plan for Longterm2050

- Irrigated agriculture Development to ensure food security
- Watershed management
- Fisheries (deep pool management)
- Hydropower development
- Tourism and Recreation
- Water supply for households consumption and industrial dev
- Flood management and mitigation
- Navigation and transportation

2010



CC Scenario Study 2007

Time Series :1985-2000

1.5 degrees

DEM Land use 1997

AVSWAT\USDA

IQQM\Australia

ISIS\UK

CC Scenario Study 2010

Time Series :1999-2008

1.3 degrees

DEM Land use 2002

ArcSWAT\USDA

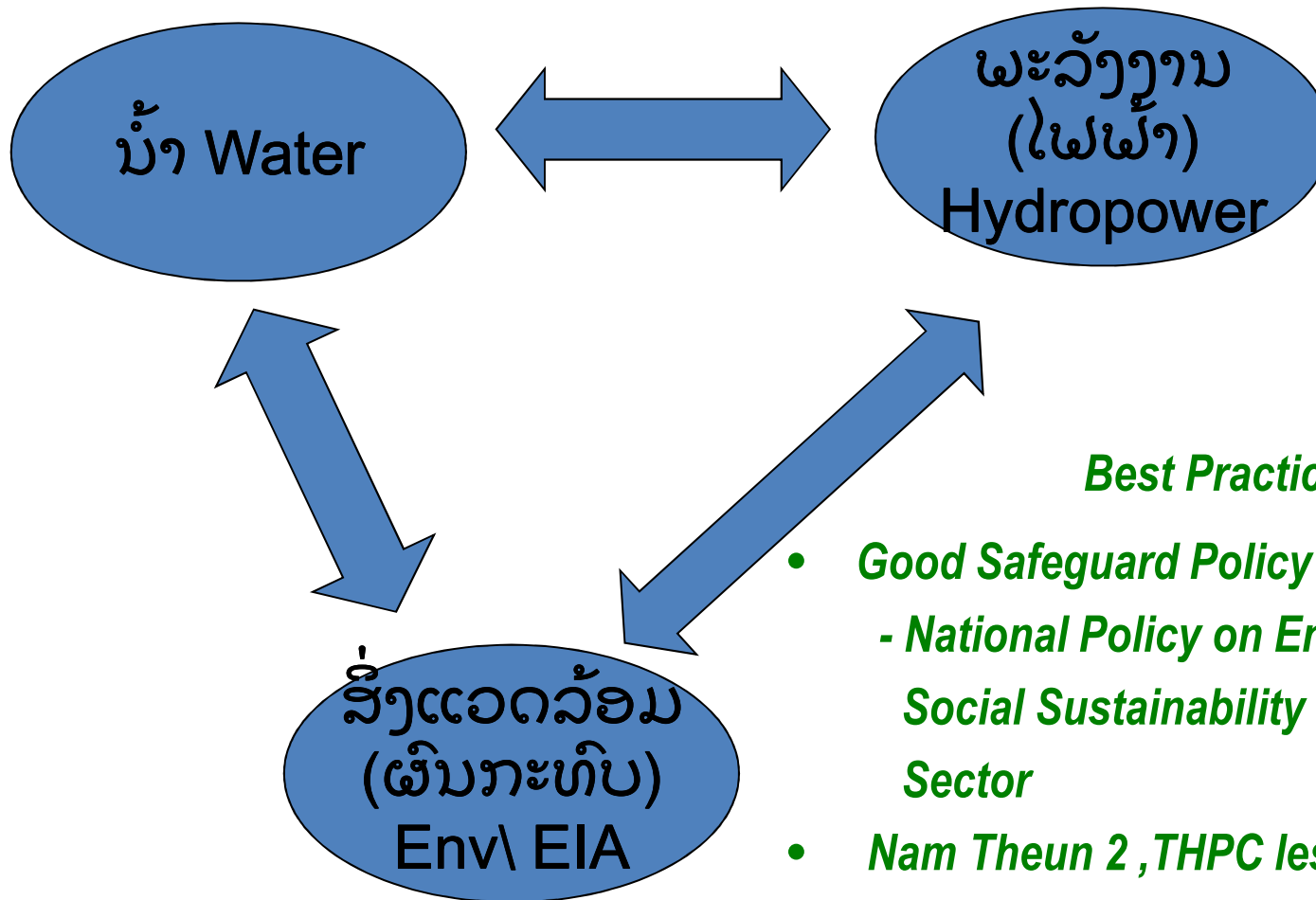
IQQM\Australia

ISIS\UK



Water Nexus

(Integrated Water Resource Management)



Best Practices:

- *Good Safeguard Policy Launched*
 - *National Policy on Environmental and Social Sustainability for Hydropower Sector*
- *Nam Theun 2 ,THPC lessons learned in environmental and social management of future hydropower projects*

Ongoing Activities

❖ CCA for Agriculture & Irrigation:

- Working on organic rice and vegetables.
- Ongoing research conducted by agriculture sector has found five kinds of rice that can withstand *flooding for about 21 days*, and four kinds of rice that are resistant to drought.

❖ CCA Mitigation Options for Energy Sectors:

- Electrification
- Renewable energy
- Cleaner energy
- Energy efficiency and savings
- Low-carbon transport
- Improving the public awareness on energy
- Seeking the opportunities under the CDM

TRAINING PLAN for CAPACITY DEVELOPMENT PROGRAM
(WORKSHOPS and AWARENESS CAMPAIGNS)

ADB TA7509-LAO: Capacity Enhancement for Coping with Climate Change (CECCC)

WP Ref.	Dates and Locations	Description of Training/ workshops	Number of		Performance Indicators		Est. Cost US\$	Trainers / Remarks
			Particip. Descript.	Days	TA/ADB	Achievement		
2.7.6	July 2012	Exchange Site Visits relevant to pilot projects.	45 project personnel	5	Site visit arranged for 45 persons at least 1 visit for each project.		20,000	
2.8.5	June 2012	Exchange Site Visits relevant to pilot projects.	50 persons of chosen pilot projects	5	On the job training conducted for at least 50 persons		10,000	
2.8.6	July 2012	On the job training site visits for first hand information and experience/climate proofing communities	20 persons X four visits	5	Site visits arranged for 20 persons at least 1 visit for each project		10,000	

Conclusions

CC Practices and Lesson learns:

- Sustainable Education
- *Near Future: CC Scenarios to adaptation&apply into “ Water Use Sectors”*
- Need Improvement Awareness\Educatations
- Climate Change Scenarios for supporting Master Plan into2050
- Insufficient Scientific data
- Insufficient Capacity Building\Improving & Sustainable Modelling Team

Check List of Climate Change Adaptation Gap Analysis in Lao PDR

Note: Some Capacity
 No Capacity

1	Awareness of climate change in the general population	<input checked="" type="checkbox"/>
2	Awareness of climate change at different institutional levels	<input type="checkbox"/>
3	Low adaptation capacity to climate change in the general population	<input checked="" type="checkbox"/>
4	Adaptation capacity	<input checked="" type="checkbox"/>
5	Institutional strength and capacity	<input checked="" type="checkbox"/>
6	Technical knowledge among government agencies & NGOs	<input type="checkbox"/>
7	Concrete implementation of climate change policies	<input type="checkbox"/>
8	Perception of climate change as sector and not mainstreaming necessity	<input checked="" type="checkbox"/>
9	Prediction and assessment tools	<input checked="" type="checkbox"/>
10	Climate change literature translated into local languages	<input checked="" type="checkbox"/>
11	Tools for advising and instructing policy makers	<input checked="" type="checkbox"/>
12	Analytical studies on climate change impacts	<input type="checkbox"/>
13	Reliable climate change data	<input type="checkbox"/>
14	Progress in implementation of NAPA/NTP	<input checked="" type="checkbox"/>
15	Sectoral implications and adaptation	<input type="checkbox"/>
16	Coordination to respond to climate change in developing policies & plans	<input checked="" type="checkbox"/>
17	Financial support for climate change initiatives	<input type="checkbox"/>
18	Climate change Sustainable Education	<input type="checkbox"/>
19	Local Knowledge and Tradition	<input checked="" type="checkbox"/>



Thank You

For your kind attention !



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