

# Lower Mekong Initiative- Linkages between Climate Change and Food Security

US Embassy Science Fellowship-Bangkok  
Thailand 2010  
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# Lower Mekong Initiative 2008 USGS DRAGON



# Science diplomacy--CCA & DRR



# US Embassy ESTH

## Environment, Science, Technology and Health



# US Embassy Science Fellowship



- Act as Science Advisor for all related Ag, Climate Change, Food Security Meetings
- Review ongoing projects, issues
- Look for linkages for LMI

# US Embassy Science Fellowship



# Mekong Region *is more than the Mekong river*



When people speak of ‘the Mekong’ they may mean the river, the river basin or the region.

***The region includes Irrawaddy, Salween, Mekong, Chao Phraya, Red and other smaller basins in between.***

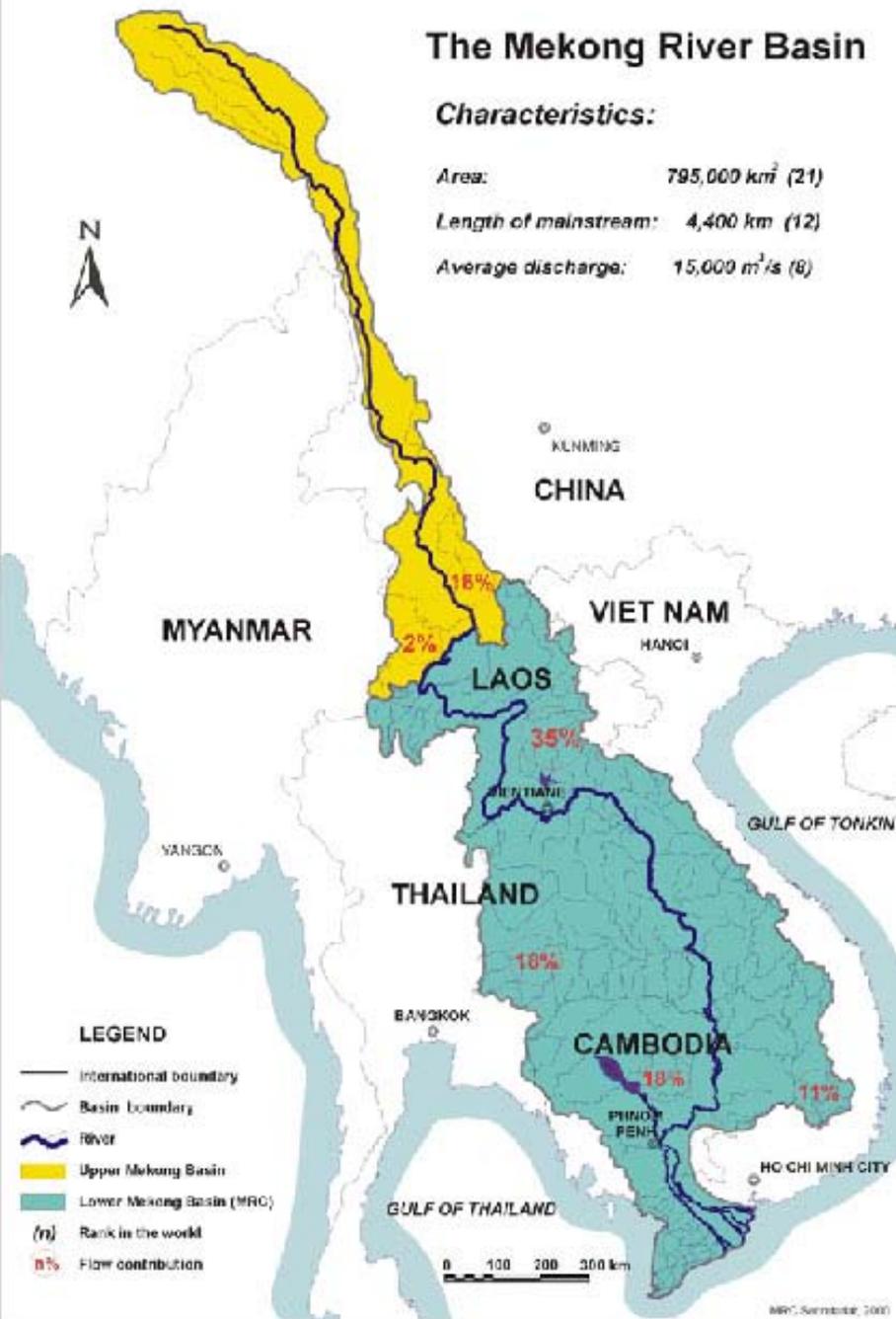
## The Mekong River Basin

### Characteristics:

Area: 795,000 km<sup>2</sup> (21)

Length of mainstream: 4,400 km (12)

Average discharge: 15,000 m<sup>3</sup>/s (8)



- Total area of Lower Mekong Basin, Vietnam is of 40.604,7km<sup>2</sup> .
- Population: 16.5 M.
- Most of area has been used for agroforestry production.
- In recent years, deficit of water resources has resulted many problems for life of community.



# Climate change in the Mekong

- Basin wide temperature increase of  $0.8^{\circ}\text{C}$  ( $1.44^{\circ}\text{F}$ ), with greater increases in the northern part.
- Average annual precipitation increase of 20 cm, (equivalent to 15.3%) predominantly in wet season.
- Increase in total annual runoff of 21%, but strong water stress during dry season remains in some areas such as North-Eastern Thailand
- Increase in dry season precipitation in northern part and a decrease in dry season precipitation in southern part
- Increase in flooding in all parts of the basin, with the greatest impact in downstream part of mainstream.



# Main role of Mekong River to Lower Mekong Basin

## Improved soil quality:

- Washing toxicity in acid sulphate soils
- Supply alluvium (nutrients) for soils , particularly for degraded old alluvial soils.

## Irrigation for Agricultural production:

- Crops cultivation
- Aquaculture

## Nature fish resources:

- Have supplied river fish resources

## Water supply to rural community:

- Drinking and cooking
- Other use for the life of rural community



# Damming the Mekong

- 8 dams planned on Lancang/ Upper Mekong
- 12 more in the Lower Basin in Thailand, Laos, and Cambodia



# Mekong River Commission (MRC)

## Analysis

- models– flood, drought, sea level rise..
- risk assessment
- monitoring

## Adaptation

- demonstration local level
- strategy development
- capacity building

## Networking and Reporting

- links from community to national to regional levels
- ‘State of climate change in the basin’ reports



ISSN: 1583-1489



Mekong River Commission

Adaptation to climate change in the  
countries of the Lower Mekong Basin:  
regional synthesis report

MRC Technical Paper  
No. 24  
September 2009



Meeting the Needs, Keeping the Balance



# Lower Mekong Initiative Mekong Forecast

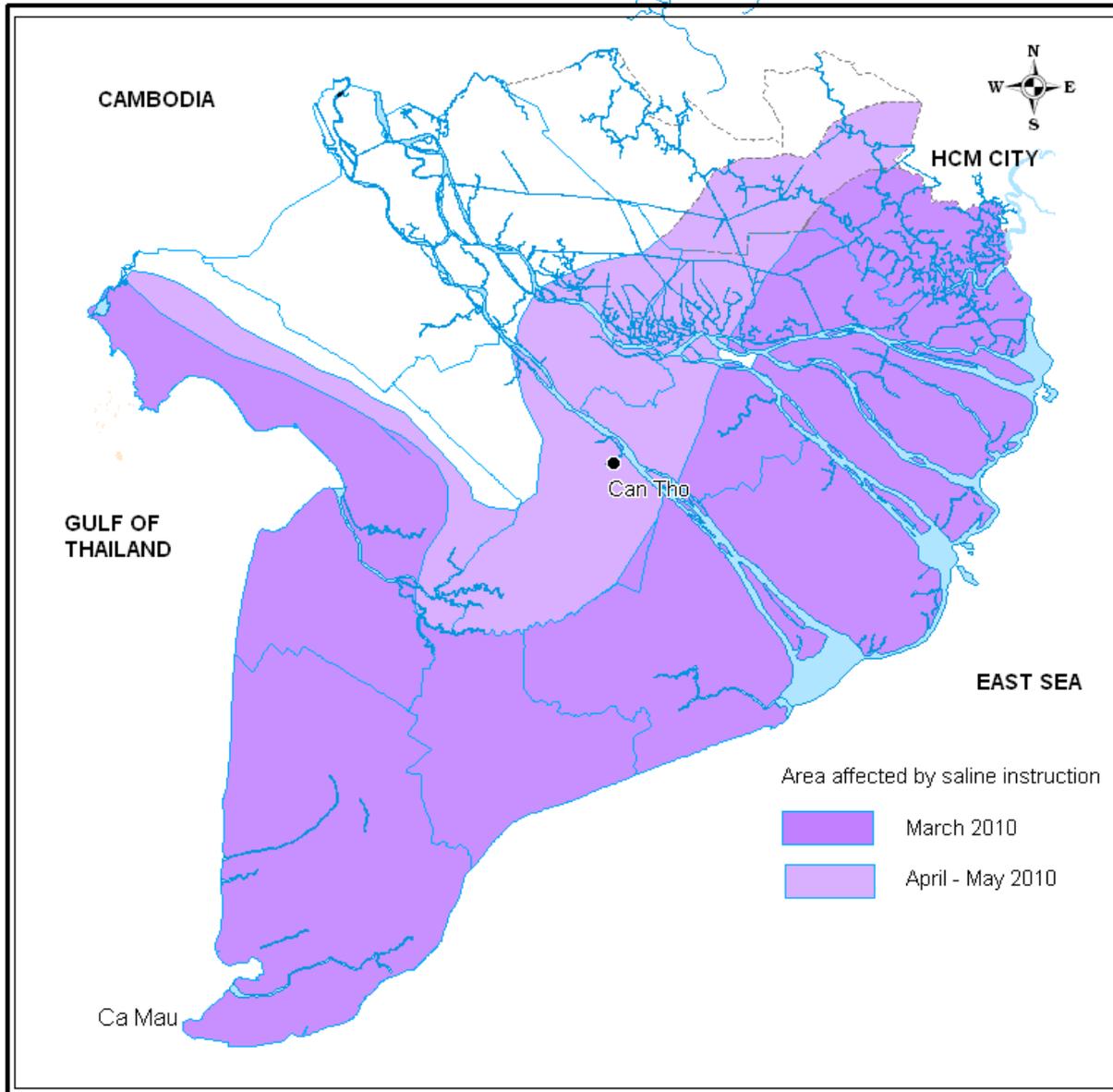


Development at the cost of Food Security?



# Saline Intrusion in March 2010

AREA AFFECTED BY SALINE INTRUSION IN LOWER MEKONG BASIN, VIETNAM - 2010



# US Embassy Science Fellowship





# 4 Scenarios

- Delta Megacities
- Coastal Erosion, Saline intrusion & Mangroves
- Legal Trade Timber, Agroforestry and “Jungling it up”
- Integrated Ag, Biogas futures and Self Sustaining Economy



# Is Bangkok Sinking?

- Delta Mega cities
- Subsidence
- Flooding
- Sea level rise
- Monkey Cheeks



# Coastal Erosion, Saline intrusion & Mangroves



แผนโครงการบูรณาการจัดการทรัพยากรชายฝั่ง







# Legal Trade Timber, Agroforestry and “Jungling it up”





# Food Security/Reforestation



# Jungling it up



- 1x9 Meter spacing
- Drought resistant
- Shade resistant
- Survival Plants
- High Value Food







# Integrated Ag, Biogas futures and Self Sustaining Economy







# Biogas 3 levels

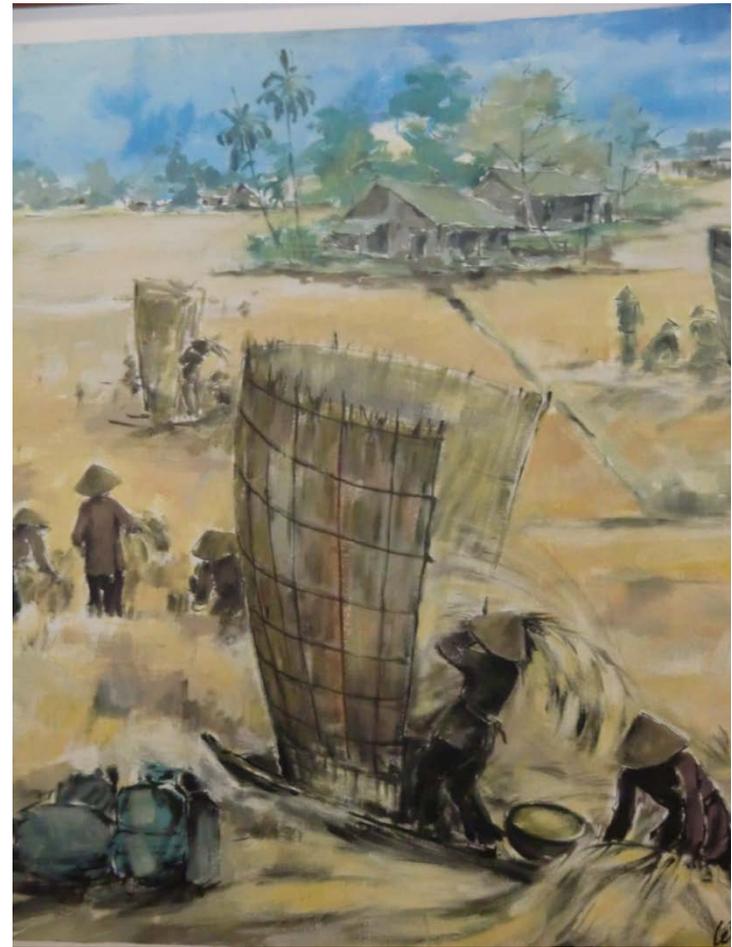


# Mr. Clean



# Self Sustaining Economy

## Know your Farmer; Know your Food



# Lessons Learned

- **Payment for Environmental Services (PES)**
- **Value in the eye of the beholder**
- **Politics and timing**
- **Science Diplomacy**



# LMI Opportunities for USDA

- Soil Carbon sampling & measurement (Mangroves, Ag land)
- Wetland and Hydric Soil Workshops
- Subaqueous soils techniques for sampling
- Conservation Planning & Rapid Watershed Assessment
- CSA—Know your Farmer; Know your Food Campaign
- LMI Harmonization of Soils Database
- GLOBE outreach-Young Soil Doctors
- Cooperatives (Ag & Legal Trade Timber)

# LMI Opportunities for USDA

- Science Advisors for US Embassy ESTH Officers
- Engineering for irrigation, subsidence, reservoirs (monkey cheeks)
- Forecast for Flash Flood Scenario modeling
- Tech transfer of Methane capture (Biogas) systems for Ag Waste with USDA-NRCS field office standards

# LMI Opportunities for USDA

- Dryland rice culture for uplands (Northern California)
- Integrated wetland rice systems with shrimp & fish farming
- “Jungling it up” agroforestry
- North-South Market Analysis

# LMI Opportunities for USDA

- Input to Mega-City Summits (next in Hanoi 2011)
- Outreach on LMO's/GMO's at the provincial level
- Data Gaps of Biodiversity assessments on Tributaries of major river systems
- Active input to State Department LMI International Visitors Program



