



# Summary of Technical Backstopping Work under IIEPF/AIFP in the Dry- Season Cultivation (2006-07)

The 2<sup>nd</sup> IIEPF Regional Workshop  
MRCS Conference Room, Vientiane, Laos  
25 March 2008

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*AIFP, MRCS*

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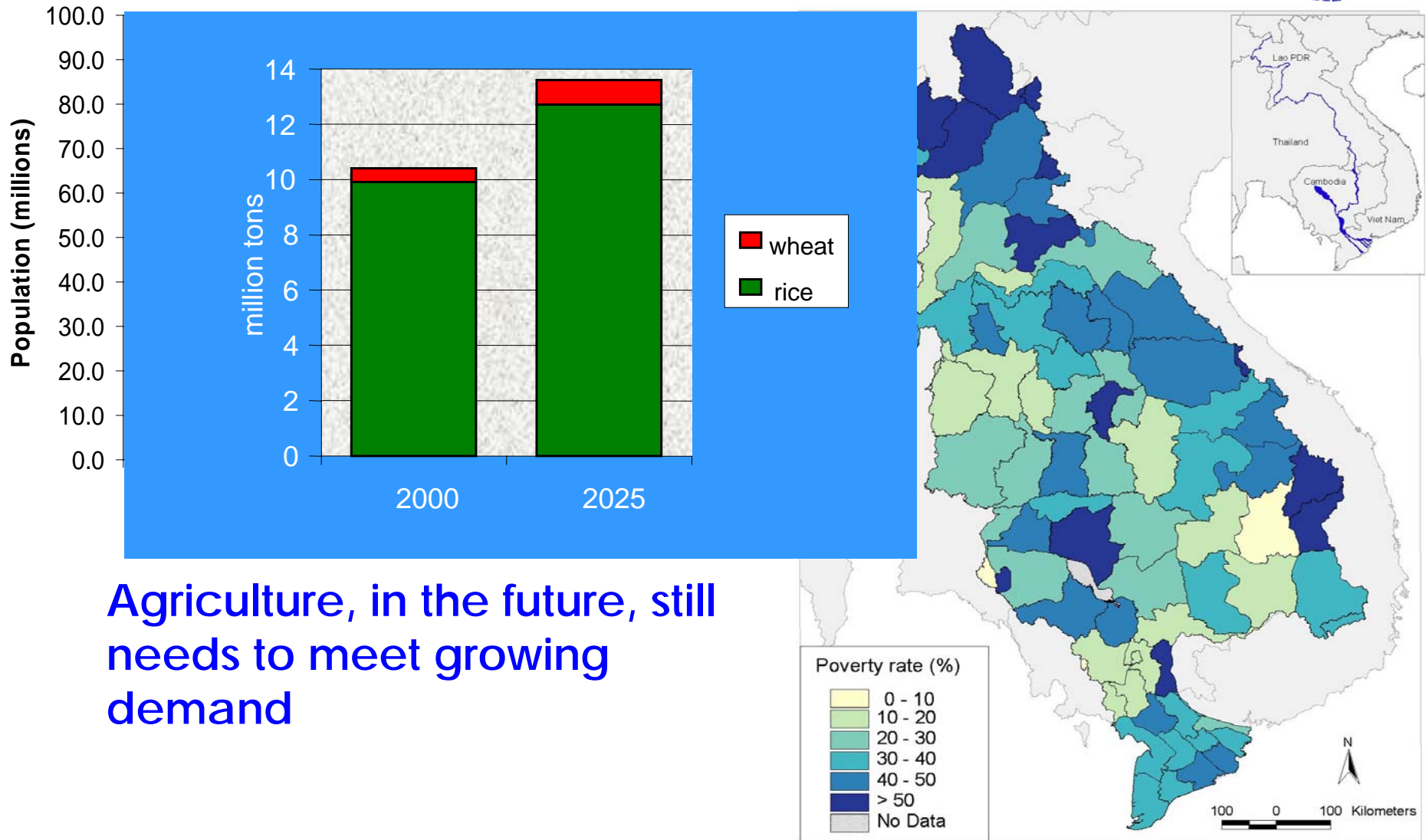
*Project is funded by Government of Japan, MAFF with technical cooperation of FAO-RAP*

# Content

- Agriculture & Irrigation in the Basin
- IIEPF Project
- Summary of Field Activities
- Summary of Major Findings
- Conclusion



# 1. Agriculture & Irrigation in LMB



**Agriculture, in the future, still needs to meet growing demand**

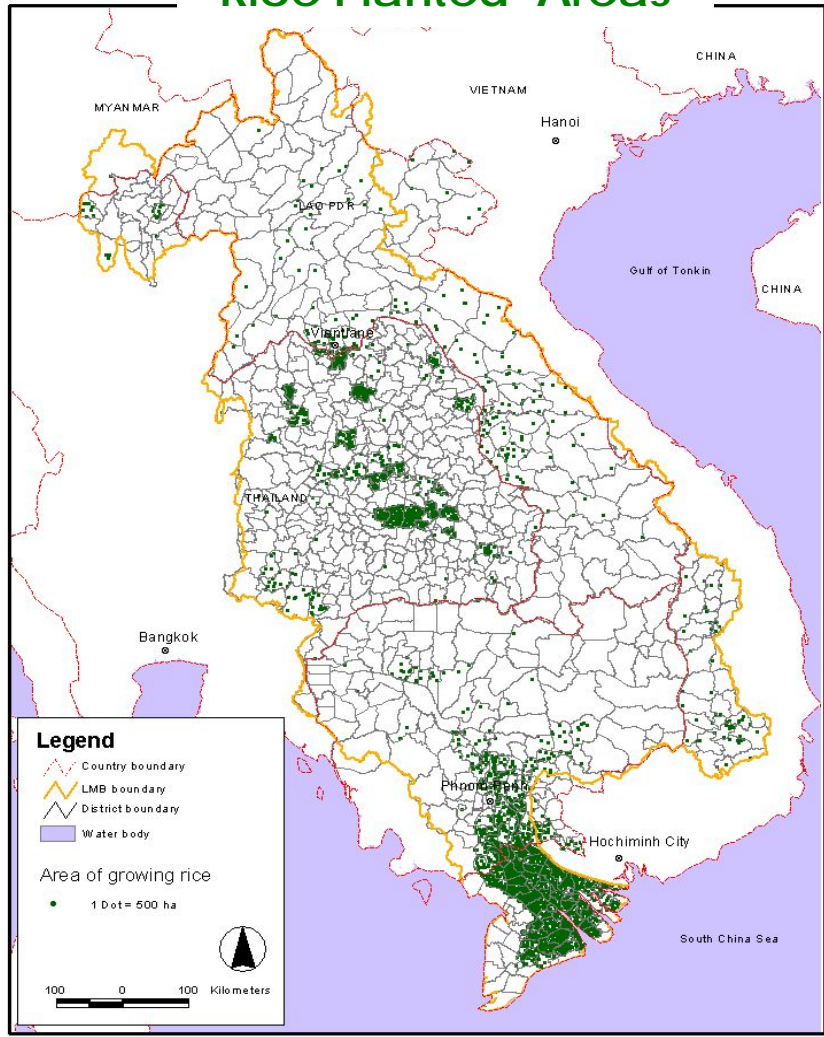
# 1. Agriculture & Irrigation in LMB



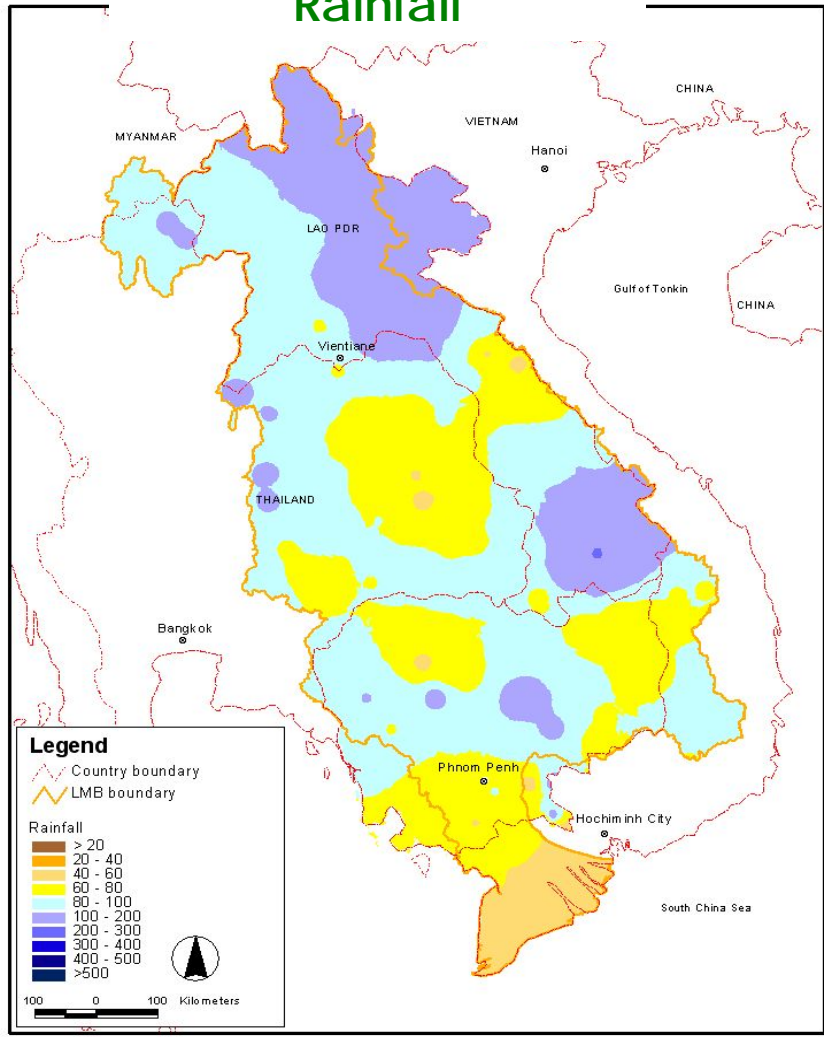
April

2004

### Rice Planted Areas



### Rainfall

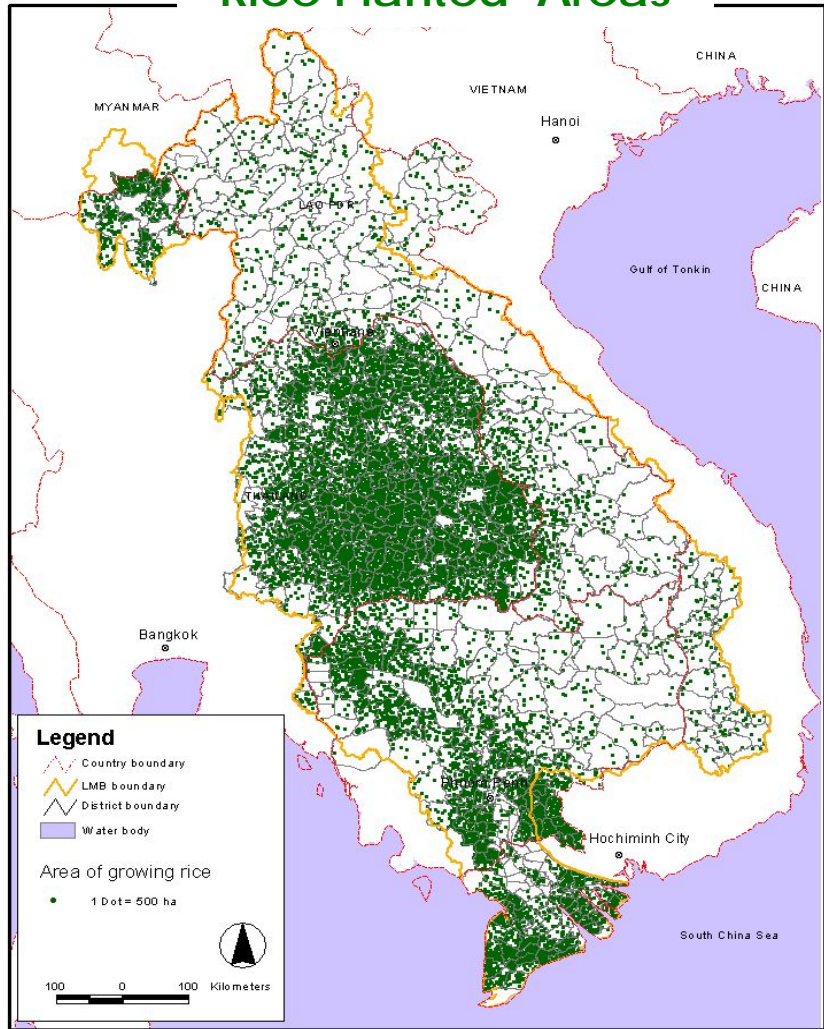




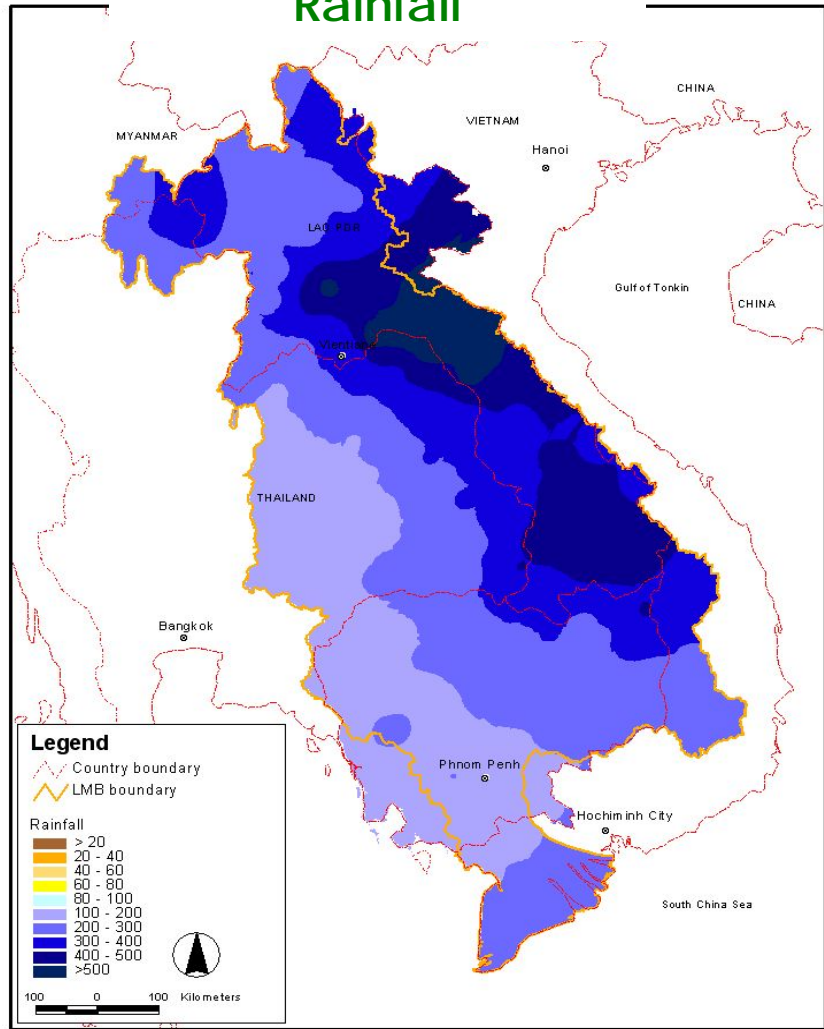
# 1. Agriculture & Irrigation in LMB

August

## Rice Planted Areas



## Rainfall

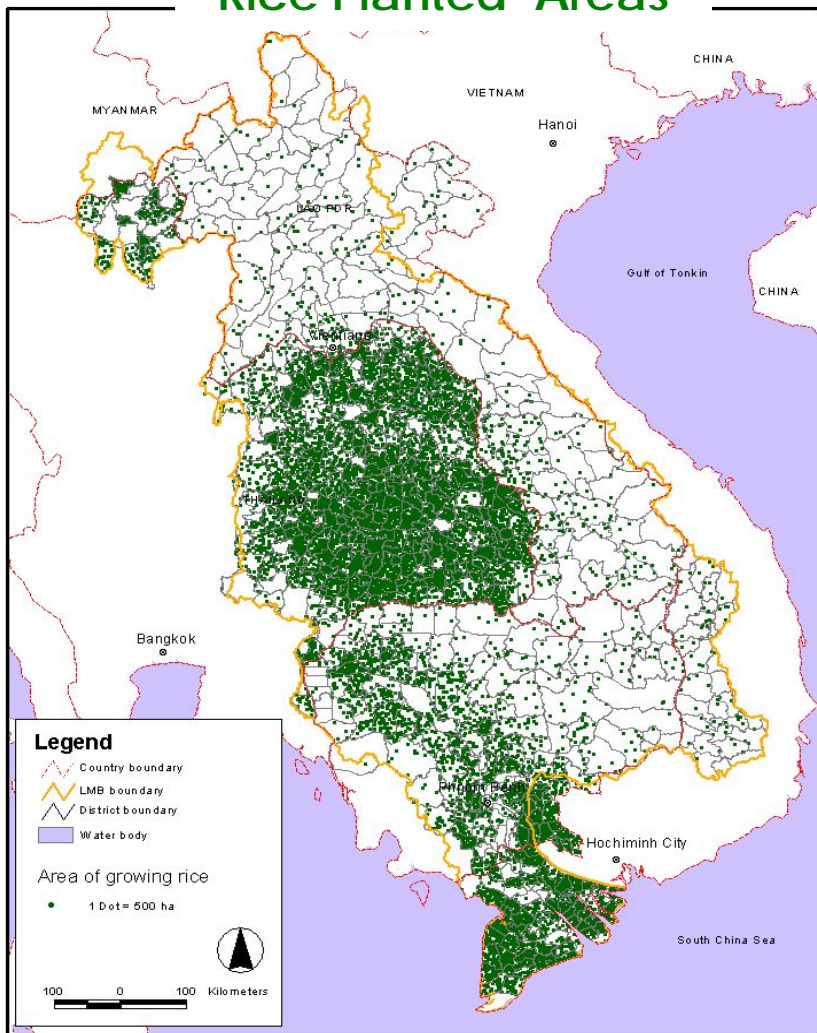


# 1. Agriculture & Irrigation in LMB

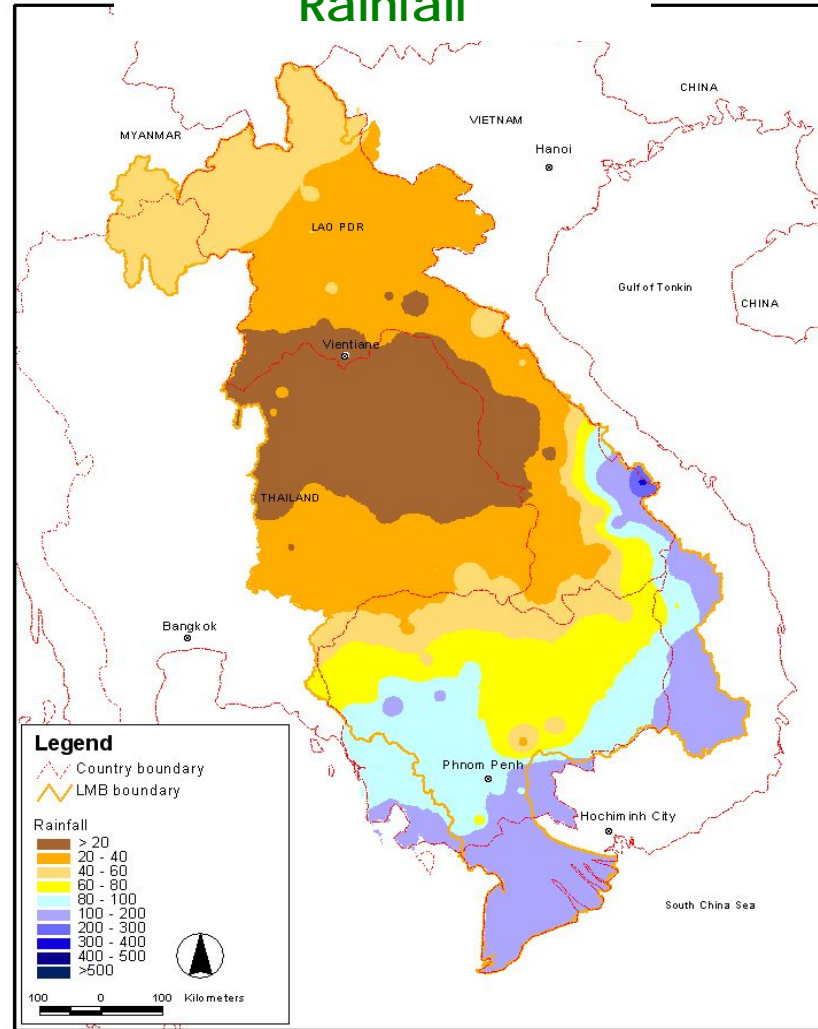


November

### Rice Planted Areas



### Rainfall



# 1. Agriculture & Irrigation in LMB

Annual water use (billion m <sup>3</sup> )	
Cambodia	2.7
Laos	3.0
NE Thailand	9.4
Vietnam Delta	<u>26.3</u>
Vietnam Highlands	0.5
<b>LMB total</b>	<b>41.8</b>

- 8.8% of annual discharge (475 bill. m<sup>3</sup>)

## 2. IIEPF Project- Objectives

- to appraise irrigation efficiencies in selected irrigation systems
- to enhance the capacity of stakeholders in using up-to-date concepts of irrigation efficiency and water balance tools and procedures for their assessment
- to produce guidelines for improving irrigation efficiency on paddy fields based on actual water use practices in the LMB member countries



## 2. Expected Impact

Improve livelihood of people

Maintain the ecology and environment of the river basin



Minimize gap between crop water requirement & actual water use



Effective of Water Use



Increase Efficiency and Water Productivity

# 3. Field Monitoring

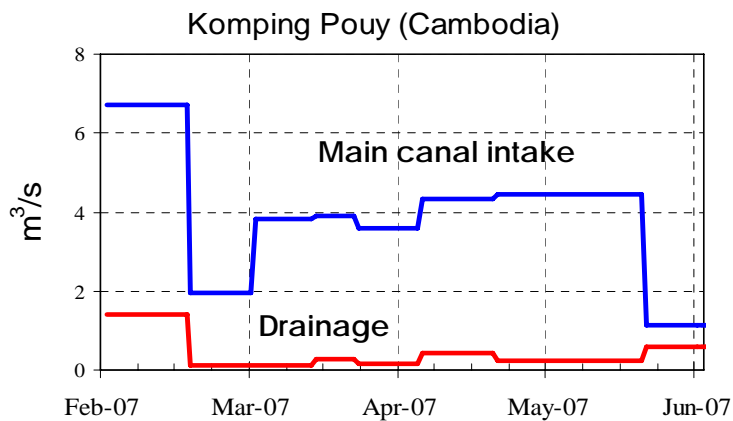
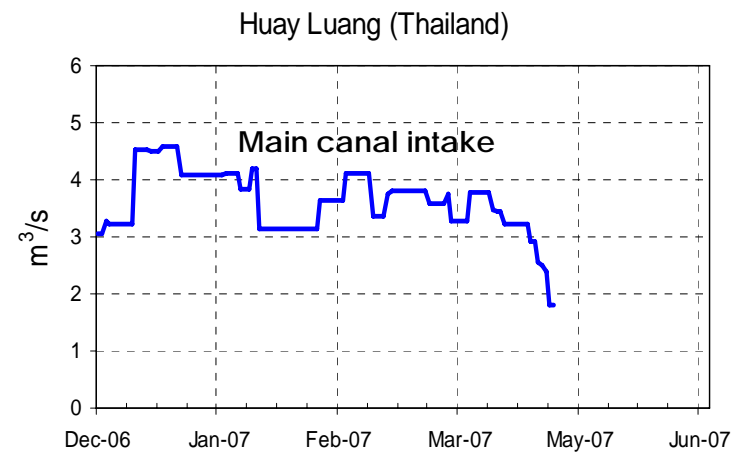
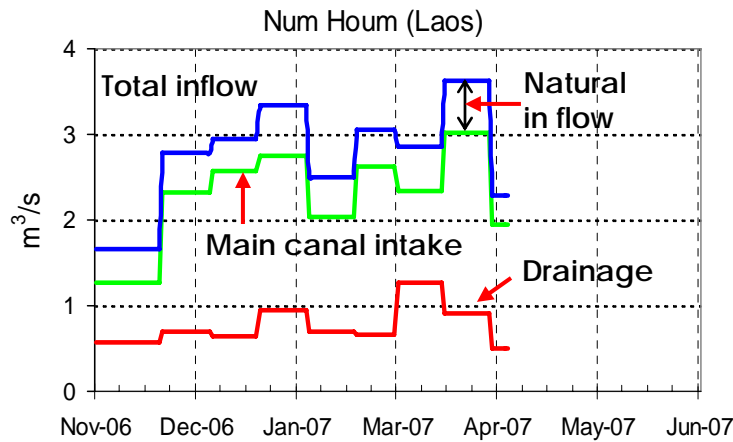


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## 4. Major Findings

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# Flows ( DS 2006-07)



**NH (Laos) :** 83% supplied by main intake, 17% by natural streams, much water drain out

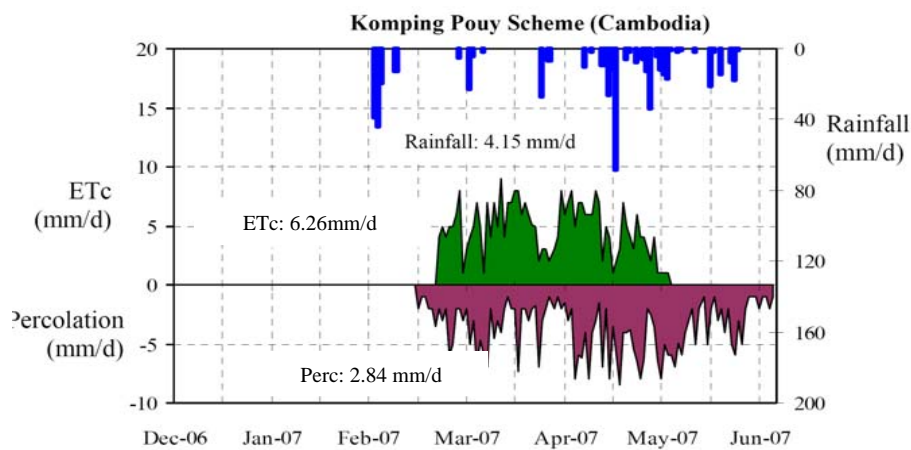
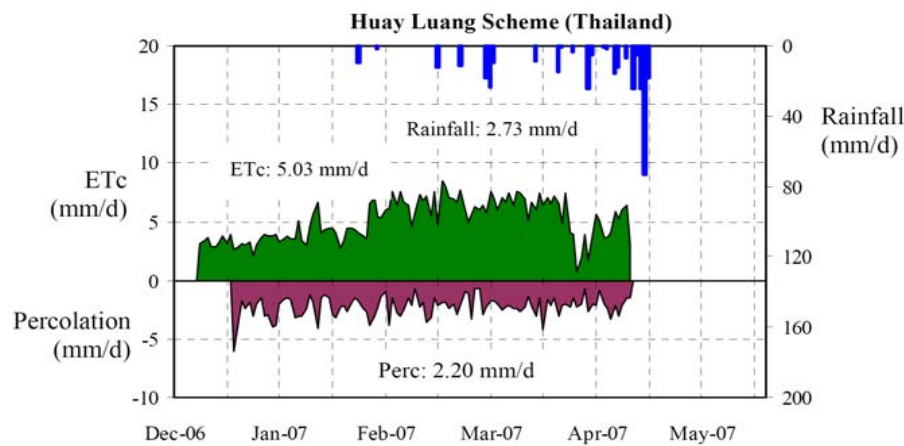
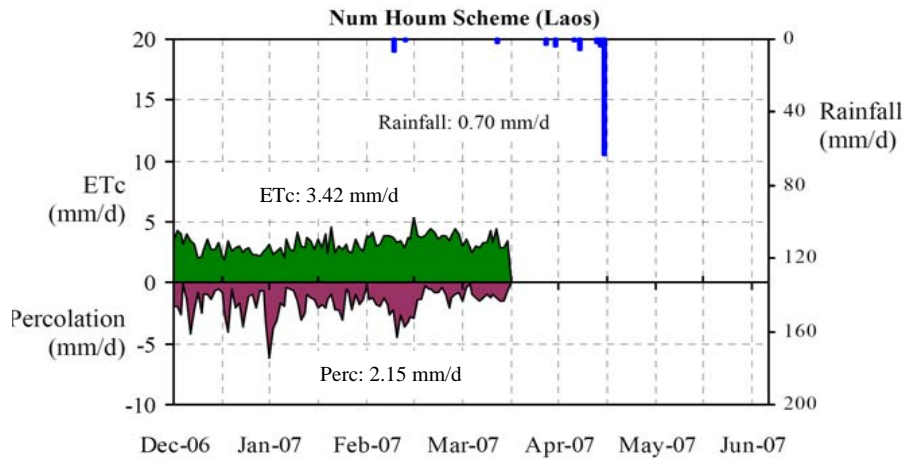
**HL (Thai) :** peak supply at land prep., approx. 20% by rainfall,

**KPP (Cambo) . :** high peak at land prep., huge drain out at same time



# Rain, ETC, and Perc. (DS 2006-07)

- **Rainfall**  
more in lower basin  
peak Apr – May
- **ETC**  
constant in L.  
clear variation in T.
- **Percolation**  
high-initial, low-late in L.  
constant in T.  
big fluctuation in C.



# Water Requirement (Observed Value VS Plan Value)

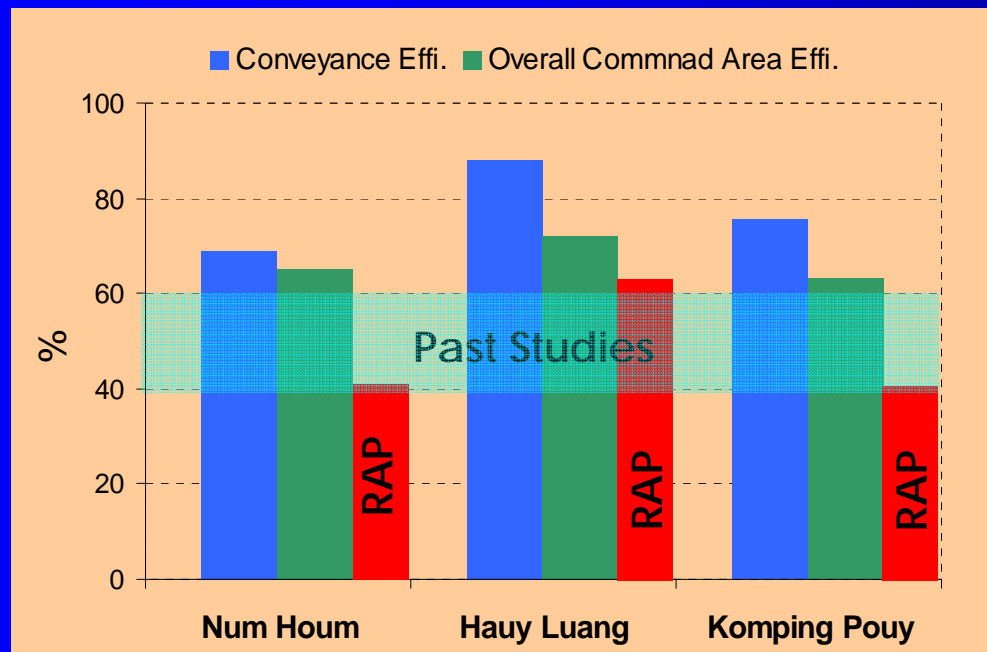
- Almost the same between NH & HL
- Gap between observed & planned values
- High gap in **Num Houm** (Laos) & **Komping Pouy** (Cambodia)
- Gap filled if increasing water use efficacy
- **Huay Luang** (Thai) adapt to actual observed value

Project	On-farm (m <sup>3</sup> /ha)	System (observed) (m <sup>3</sup> /ha)	Planned Value (m <sup>3</sup> /ha)
<b>Num Houm</b>	<b>8,263.34</b>	<b>12,000.23</b>	<b>20,000</b>
<b>Huay Luang</b>	<b>8,306.94</b>	<b>13,185.62</b>	<b>15,625 in HL (18,750 in NE Thai)</b>
<b>Komping Pouy</b>	<b>11,437.59</b>	<b>15,667.94</b>	<b>20,000</b>

# Efficiencies

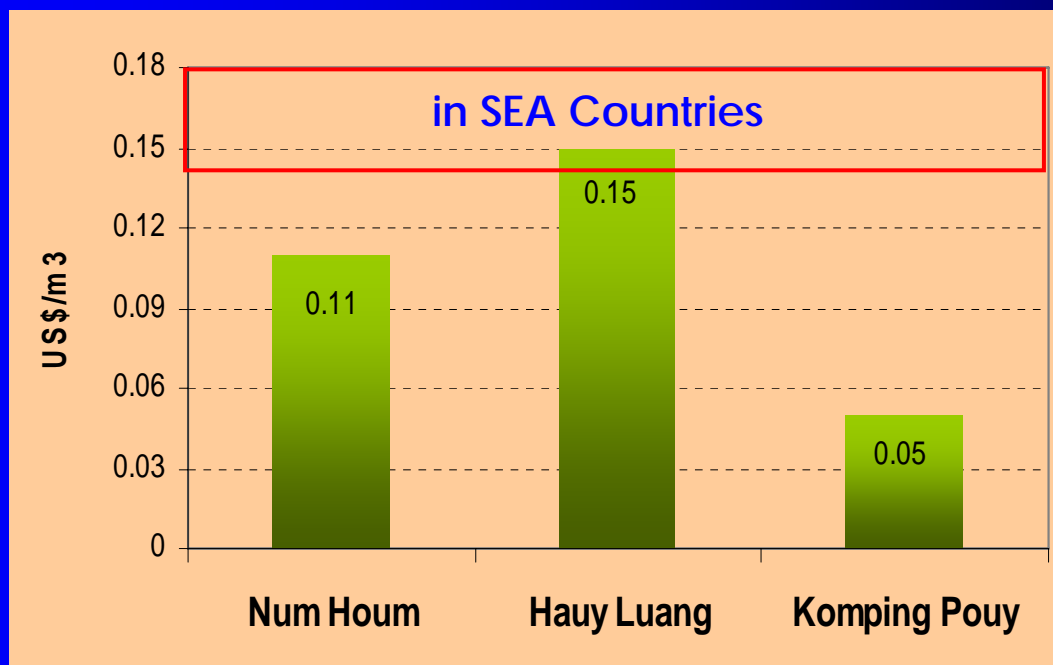
- High efficiency caused by Water Balance Approach
- Active & intensive water management in **Huay Luang** ---> high efficiency
- Poor irrigation factor  $(WR-ER)/(Inflow * Conveyance\ Effi.-Drainage)$  cause by reuse of drain water, less out flow observed
- Too large capacity of main canal compared with planted area ,but water allocation schedule often feedback

## Water Reuse in Num Houm



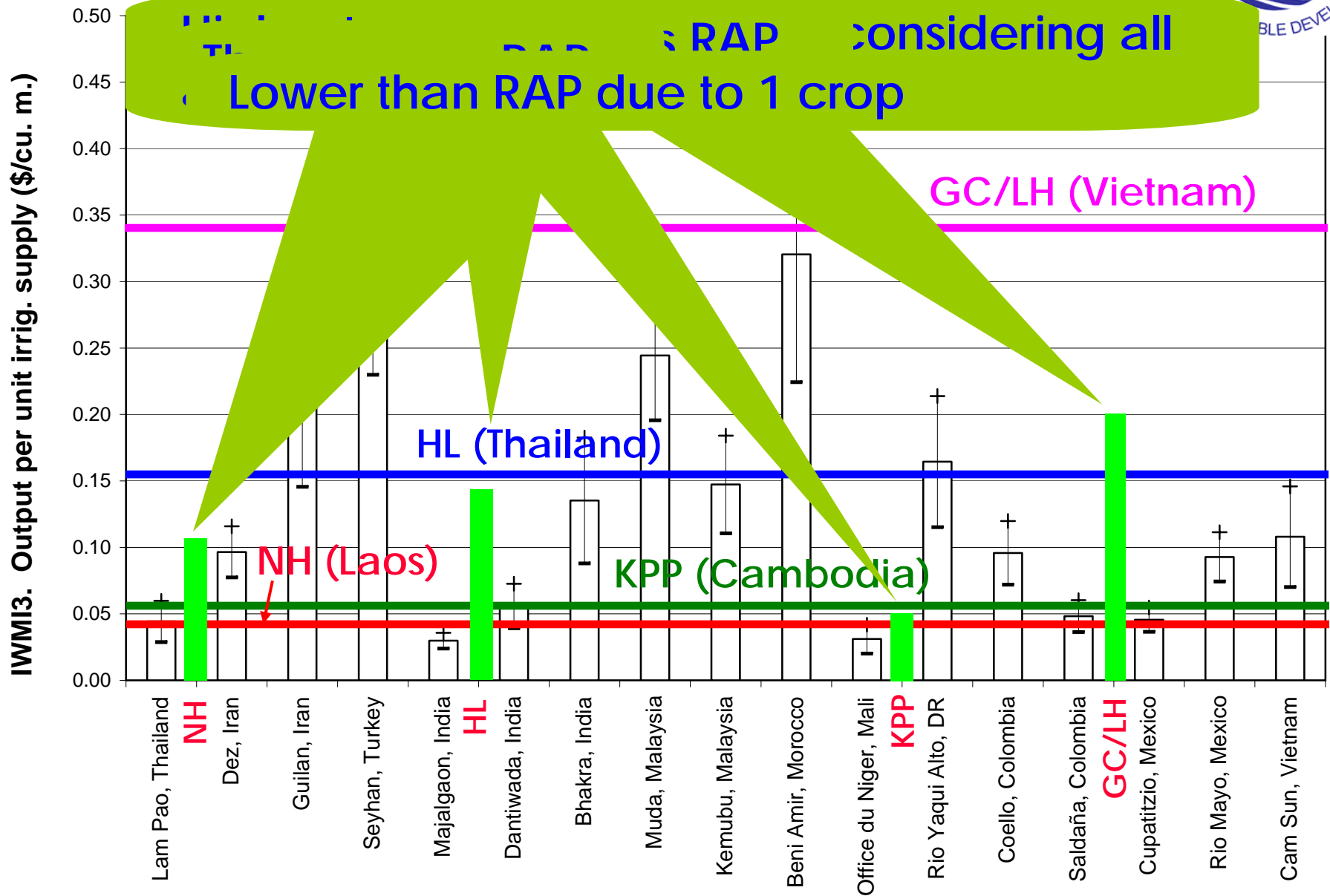
# Water Productivity

- Low value in general
- High value in scheme practicing multiple crops & variety agriculture diversification
- Low value in scheme practicing single crop e.g. **Komping Pouy**
- Fish farming & cash crops give high value because of high price
- Scheme with high water use efficiency also provide high water productivity

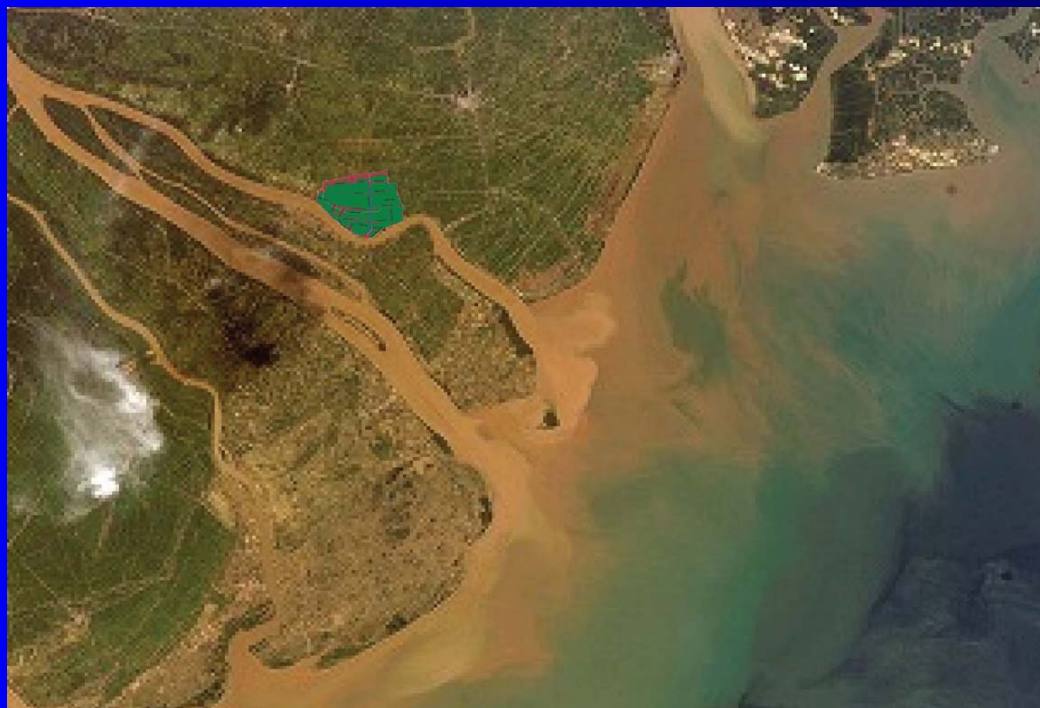




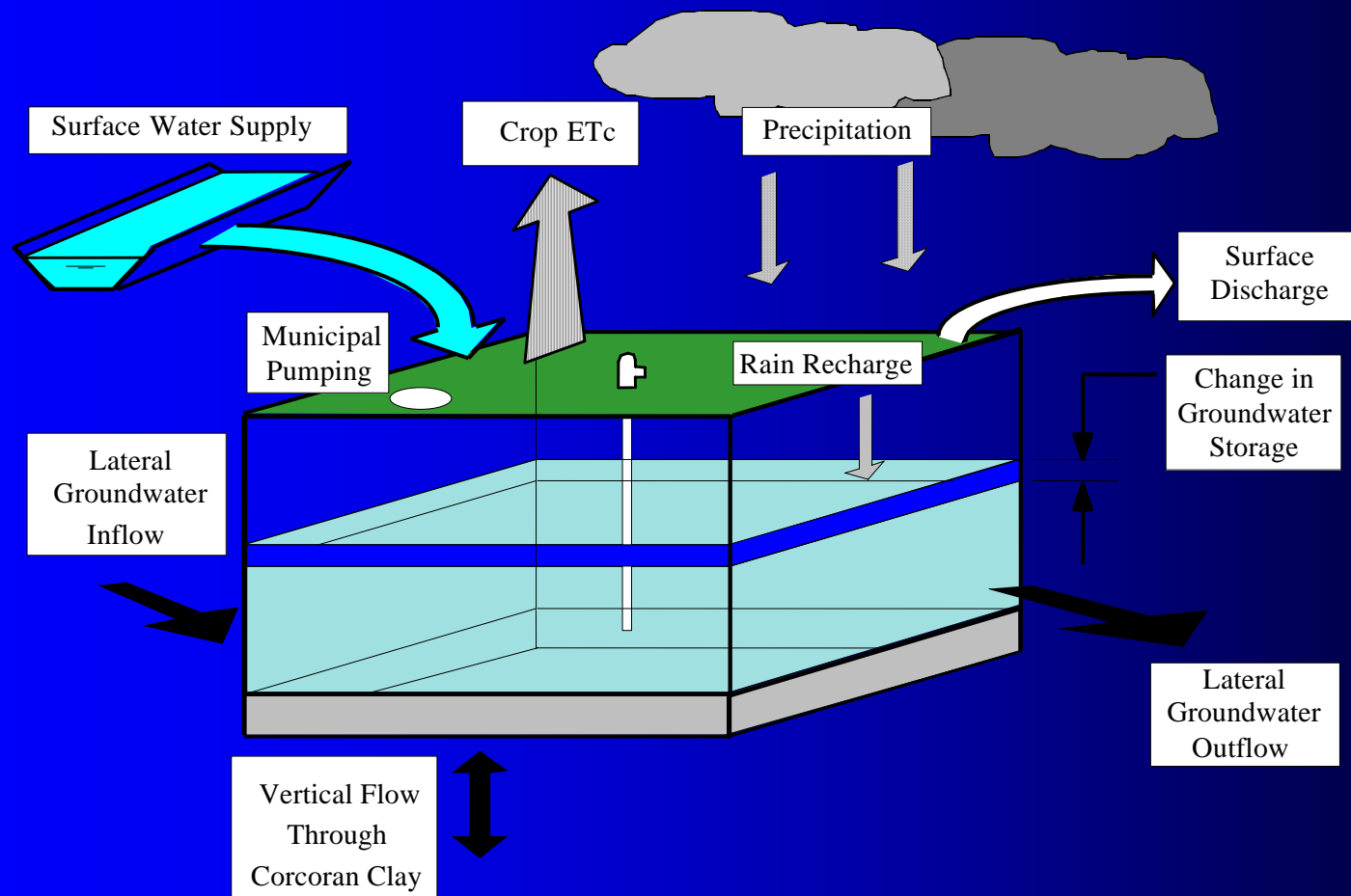
# Water Productivity - RAP & Field Analysis



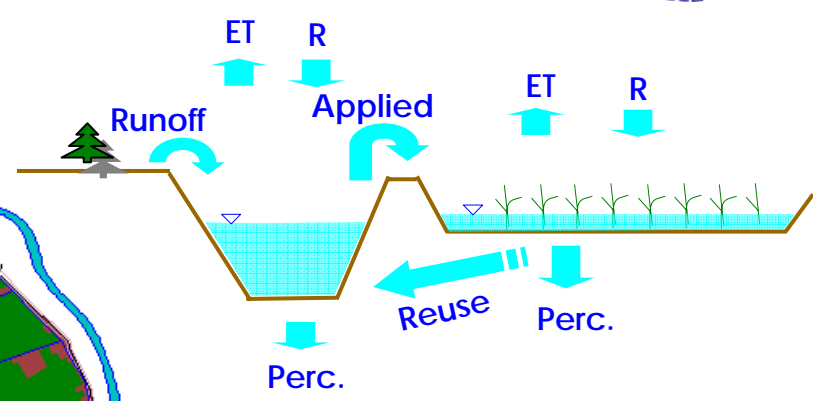
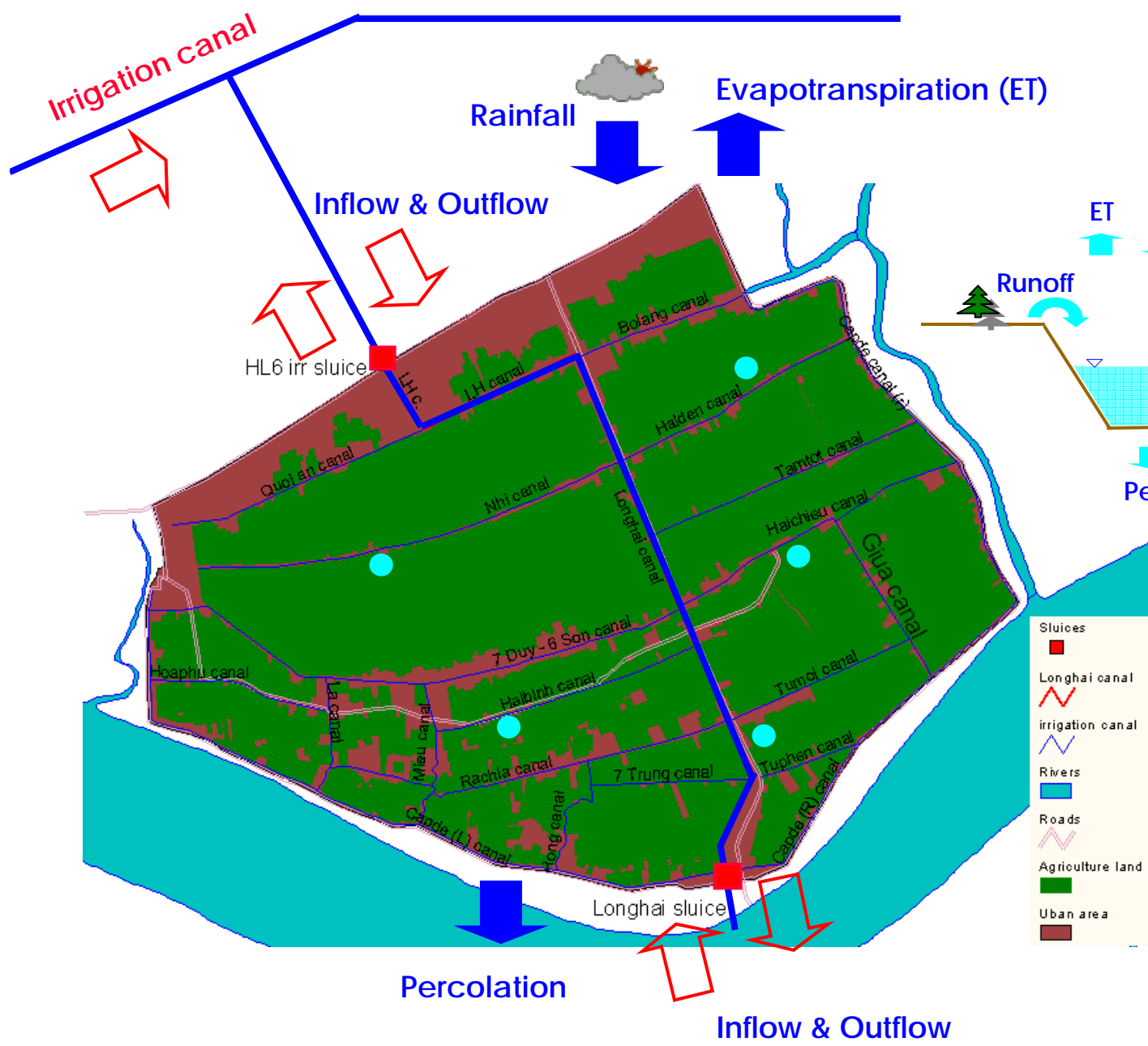
# Tidal Irrigation (GoCong/Longhai Project)



# Water Balance Concept



Source: FAO



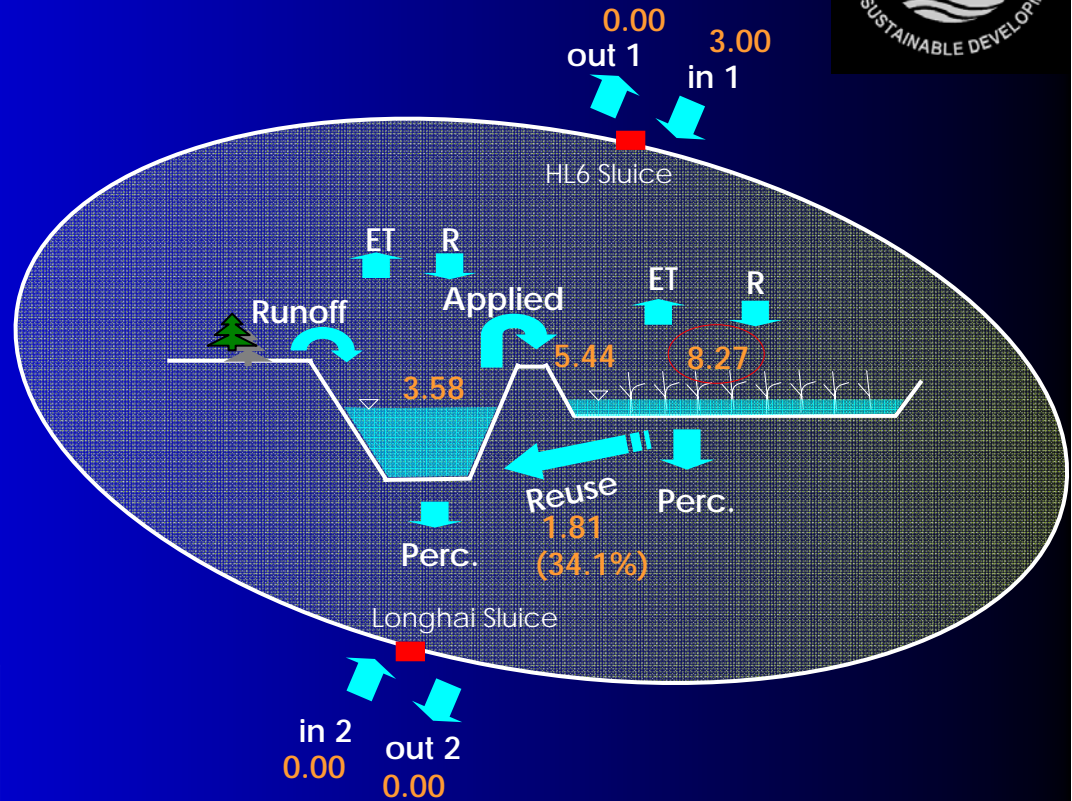
- Sluices
- Longhai canal
- irrigation canal
- Rivers
- Roads
- Agriculture land
- Urban area



# Water Balance Results



Water Balance Component	MCM
Crop Water Requirement (CWR)	3.47
Effective Rainfall (ER)	0.29
Irrigation Water Requirement (IWR)	8.28
Actual Water Applied (AWS)	5.44
Available Water in Canal (AWC)	3.58
Reuse Water (return to canal)	1.81



Efficiency	%
$(CWR-ER) / (AWS)$	58.80
$(IWR-ER) / (AWS)$	152.20
$(CWR-ER) / (\text{Intake Diverted})$	105.84
$(IWR-ER) / (\text{Intake Diverted})$	275.80

With total IWR, 36.3% from diverted water from sluice, 8.9% from rainfall ---> shortage water? Canal functions as water as on farm storage

- Water available in canal less than applied amount to paddy field, but the gap filled by recycling water returned into canal after being applied
- Recycling amount account for 34% of total applied amount

Water Productivity	kg/m <sup>3</sup>	US\$/m <sup>3</sup>
Total production / Volume of water applied to the field	1.18	0.24
Total production / Volume of water available in canal	0.65	0.13
Total production price/AWC	1.0	0.20

# Major Findings- *Tidal Irrigation*

## *Role of Water Management*

- Maintain good water quality inside command area & diverting fresh water as much as possible to replace the stagnant condition of water
- To ensure availability of water in the canal, raising up water level to support gravity condition
- **Conveyance efficiency has no meaning since no control & service by each canal level**
- No requirement of farmer participation in managing water distribution

# Conclusion

- **Examining irrigation water use efficiency for one year crops, interesting results found**
  - **High efficiencies due to the water balance approach & outstanding performance pilot sites**
  - **High water productivity observed in scheme where combine multiple agriculture activities**
- **Similar practical approach expects to be applied for whole basin to understand situation of irrigation system in LMB**





03.04.200

Thank you for your support & cooperation during field Work

