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Mekong Climate Change Adaptation Initiative (CCAI): example of adaptation from a regional perspective

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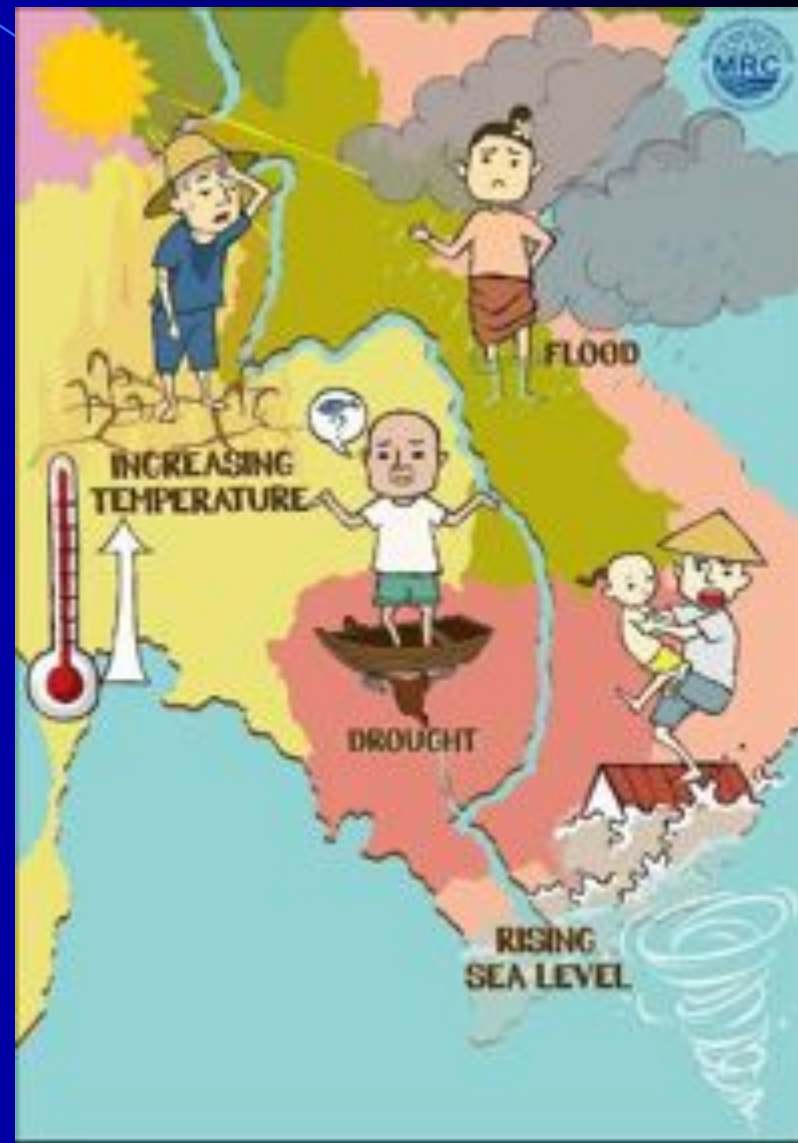
Outline

- Climate Change (CC) & Development challenges from regional Mekong-Basin perspective
- Introduction of the MRC CCAI: Linking regional basin-wide view with national and local activities
- Some initial activities: CC impacts to Mekong Flow, Basin-wide Pilot and Local Demonstrations
- Way forwards: Collaboration and Partnerships

Climate Change & Development challenges in the Lower Mekong



- CC and variability will exacerbate/ **overlay the current development challenges** to the Mekong region, its unique environment & 60 mill. people living in the basin
- No one country alone can tackle CC effectively enough: **Need for a regional strategy and support** to adaptation planning & actions at national and local levels
- **MRC CCAI** role & challenges: How to consolidate approaches/ tools & bring regional concerns to the national policies/strategies, sub-national projects and specific community actions?



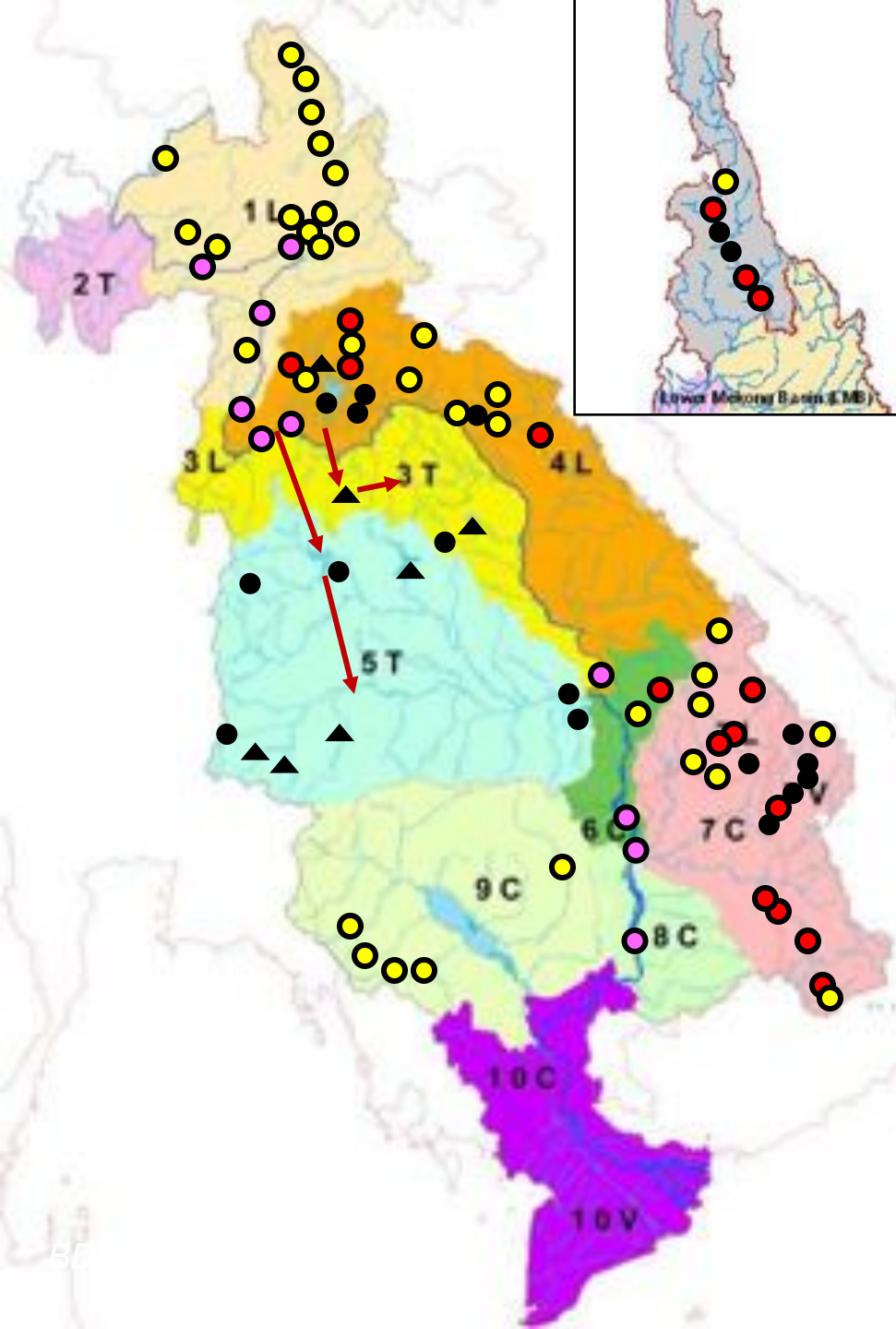
CC and Development Impacts on LMB

Previous study by CSIRO (Eastham et al., 2008):

- Dry season precipitation: increase in the North & decrease in the South of the basin; strong water stress in some areas (e.g. North-Eastern Thailand & Tonle Sap)
- Increase in flooding in all parts of the basin, especially downstream
- Uncertainties: extreme events, impacts on ecosystems, livelihood and food security, modeling methods

MRC-CSIRO 2010: Projection and impacts on river flow

- Temperature increases about 0.9 C by 2050, more in the northern part;
- Sea Level Rise & serious saline intrusion in Mekong Delta
- Under CC, annual river flow increases 6-16% (in average 2-11% and 18-40% in wet and dry season, respectively)
- Development may increase river flow in dry season by 30-60% but reduce wet season flow 8-17%



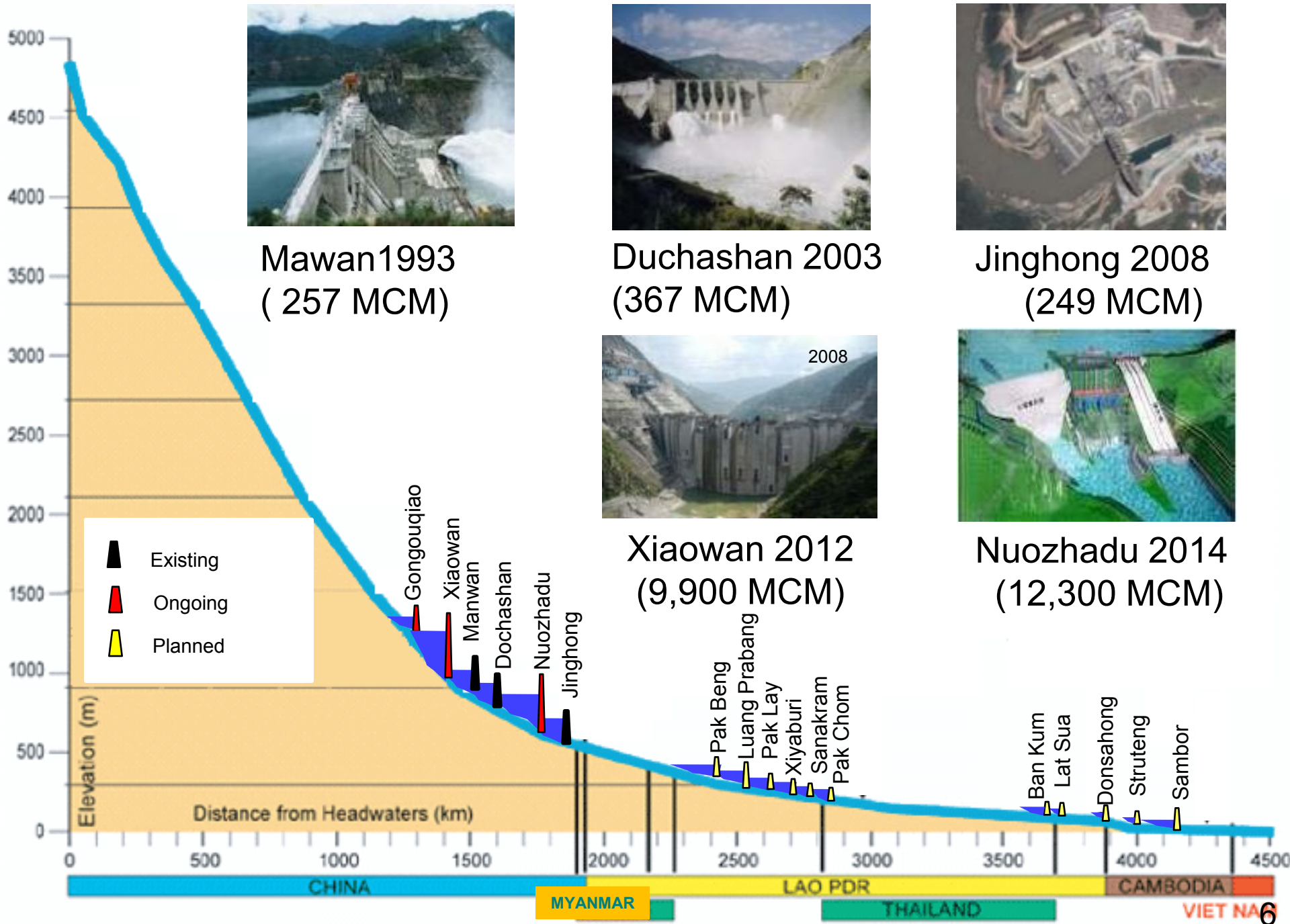
E.g.: Hydropower & CC



Scenario	No Project	Installed Capacity (MW)	Active Storage (MCM)
Baseline	11	1,553.2	9,638.2
Upper Mekong Dam	17	17,003.2	32,871.2
Definite Future	35	21,073.2	44,003.9
LMB Mainstream Dam	45	35,152.2	48,909.9
LMB Tributary Dam	70	26,728.2	71,936.9
LMB 20-year Plan	80	40,807.2	76,843.9

Climate Change impacts must be considered in broad development context:

- How will climate change affect the development in the Mekong?
- How will regional development together with climate change affect national development and natural systems in each country?



Mawan 1993
(257 MCM)



Duchashan 2003
(367 MCM)



Jinghong 2008
(249 MCM)



Xiaowan 2012
(9,900 MCM)



Nuozhadu 2014
(12,300 MCM)

What impacts are of regional and basin-wide concern?

- More frequent & intensive extremes/disasters: **Flood** & Typhoons; **Drought** & Forest Fires
- **Flow changes** & water availability/quality
- **Sediment** & Nutrient; River & Estuaries Morphology
- Ecosystems services: **Wetland & Biodiversity**
- Most affected sectors: **Agriculture & Fisheries**, Water & Infrastructures, Public Health & Tourism
- **Livelihoods**: Poor people & marginal groups (women, children & elders, ethnic minorities)
- **Mekong flood-plain & Tonle Sap; Mekong Delta**: the most vulnerable areas with doubled impacts from upstream from **Sea Level Rise**, (land loss/ erosion, saline intrusion, storms)



E.g. Typhoon Ketsana: October 2009



Death toll in:

- **Lao: 16**
- **Vietnam: 163**
- **Cambodia: 17** *(Source AFP)*

People missing	19
People injured	199



Now, October 2011:

Typhoon Nesat!
??

Can we be more
prepared and
adaptive to those
challenges?

What is CCAI?



A collaborative regional initiative of Lower Mekong Basin countries aiming to support the countries in adapting to the impacts and new challenges of climate change through improved planning, implementation and learning

- **Where:**
 - Lower Mekong Basin – 4 Member Countries
 - Involve the Upper Mekong partners: China and Myanmar
- **CCAI Phasing:**
 - Long-term initiative (with three 5-years phases, up to 2025)
 - Linked into the cycle MRC's Strategic Planning process & National planning cycles

CCAI Outcomes and Outputs

Climate Change Adaptation Planning and Implementation

- Methods and tools for assessment and adaptation planning and Climate Change Database for the Mekong Basin
- Demonstration site/project for each member country for implementation of adaptation activities at local level
- Basin-wide demonstration activities for adaptation in key sectors or transboundary issues
- Lesson learned of demonstration activities for replication and upscaling in local, sector and national development planning

Improved Capacity to Manage and Adapt to Climate Change

- Institutional capacity strengthened in policy making and planning for climate change adaptation in LMB countries
- Enhancement of capacity in using methods and tools for adaptation planning and implementation
- Enhancement of capacity in monitoring/reporting the climate change and adaptation in the region and The Mekong Panel of Climate Change (MPCC) is established

Strategies and Plans for Climate Change Adaptation

- Regional and National policy frameworks to facilitate and guide adaptation and implementation
- System of monitoring and reporting on the status of climate change and adaptation
- CCAI communication plan for raising awareness, sharing information and knowledge on climate change and adaptation

Regional Exchange, Collaboration and Learning

- Agreements and productive collaboration with CCAI core implementing partners on climate change adaptation related issues
- Institutional arrangement and implementation of CCAI
- Regular monitoring and evaluation and reporting to MRC Joint Committee and Council, Donor and Core Implementing partners of CCAI progress with revision and improvement
- Fund raising for the periods of 2011-2015 and 2016-2025

IWRM



The Mekong CCAI is a cross-cutting initiative under IWRM umbrella in Mekong context

Adaptation planning steps

- Baseline assessment
- Projecting climate and hydrological change
- Socio-economic projections
- Impact assessment
- Vulnerability assessment
- Developing adaptation options
- Integrating with development plans

Development planning levels

- Basin wide
- Sub-basin/transboundary
- National
- Sub-national – eg river basins
- Province
- Cities/towns
- Local government
- Community

Development sectors

- Water supply
- Water sanitation
- Energy
- Transport
- Agriculture
- Fisheries
- Forestry
- Public health
- Tourism

Gender Mainstreaming and Gender Responsiveness

- Gender analysis to understand climate change impacts on women and men, their different roles in coping with climate risks;
- Involvement and empowerment of women at different steps and levels in adaptation planning and decision-making;
- Ensuring that the initiative benefits men and women equally, in accordance with their different needs, and with the input and equal participation of men and women at all levels



Active Stakeholder Engagement and Capacity Building



- National & Regional **Consultations**;
- Engage **Riparian and National Experts** to work with International Specialists in one team
- Regional & National **capacity need assessment** leading to integrated training programmes;
- **Partnership & collaboration** other MRC Programmes and with regional partners
- Informal consultation with dialogue partners China and Myanmar

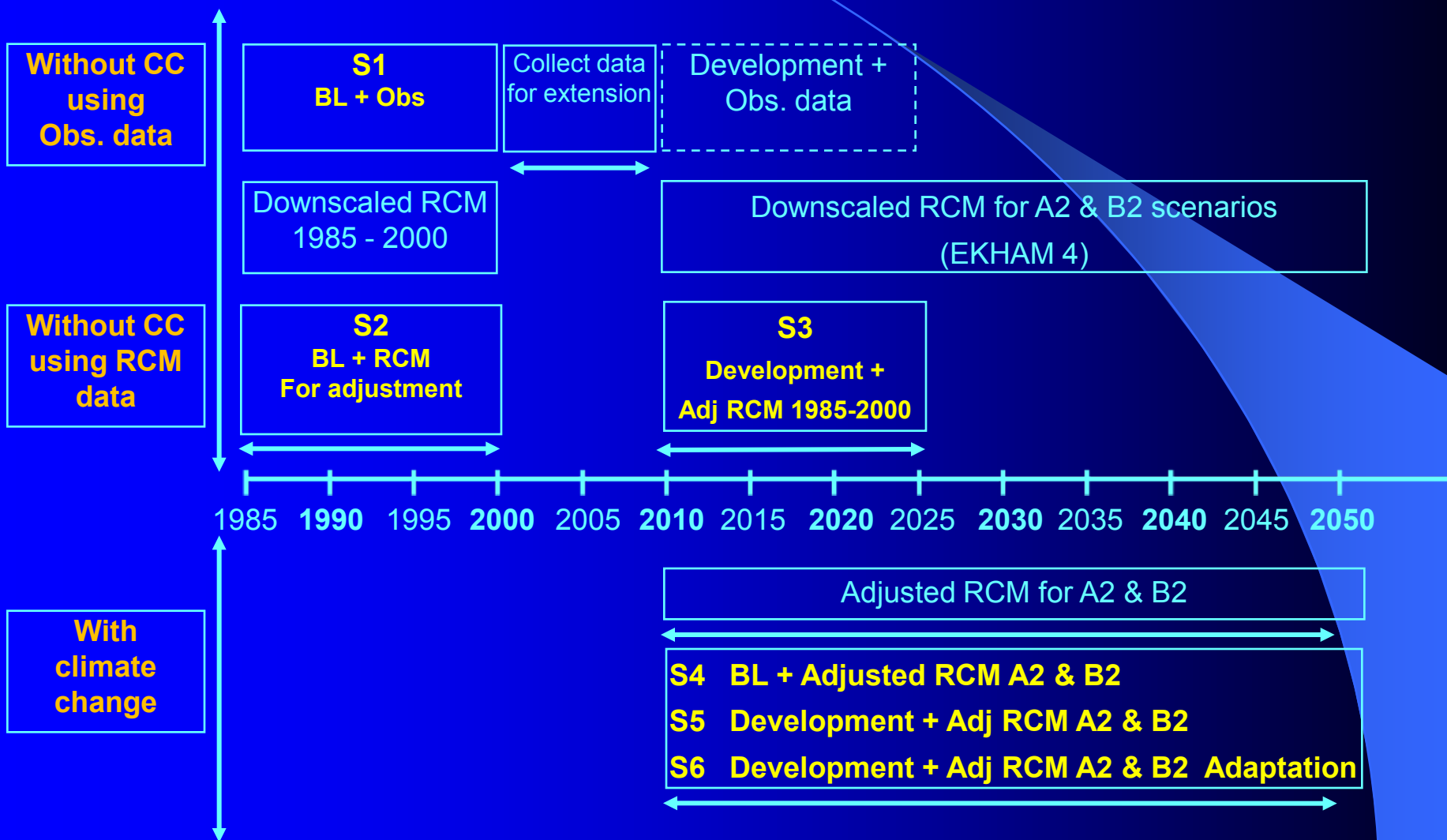
Awareness raising activities



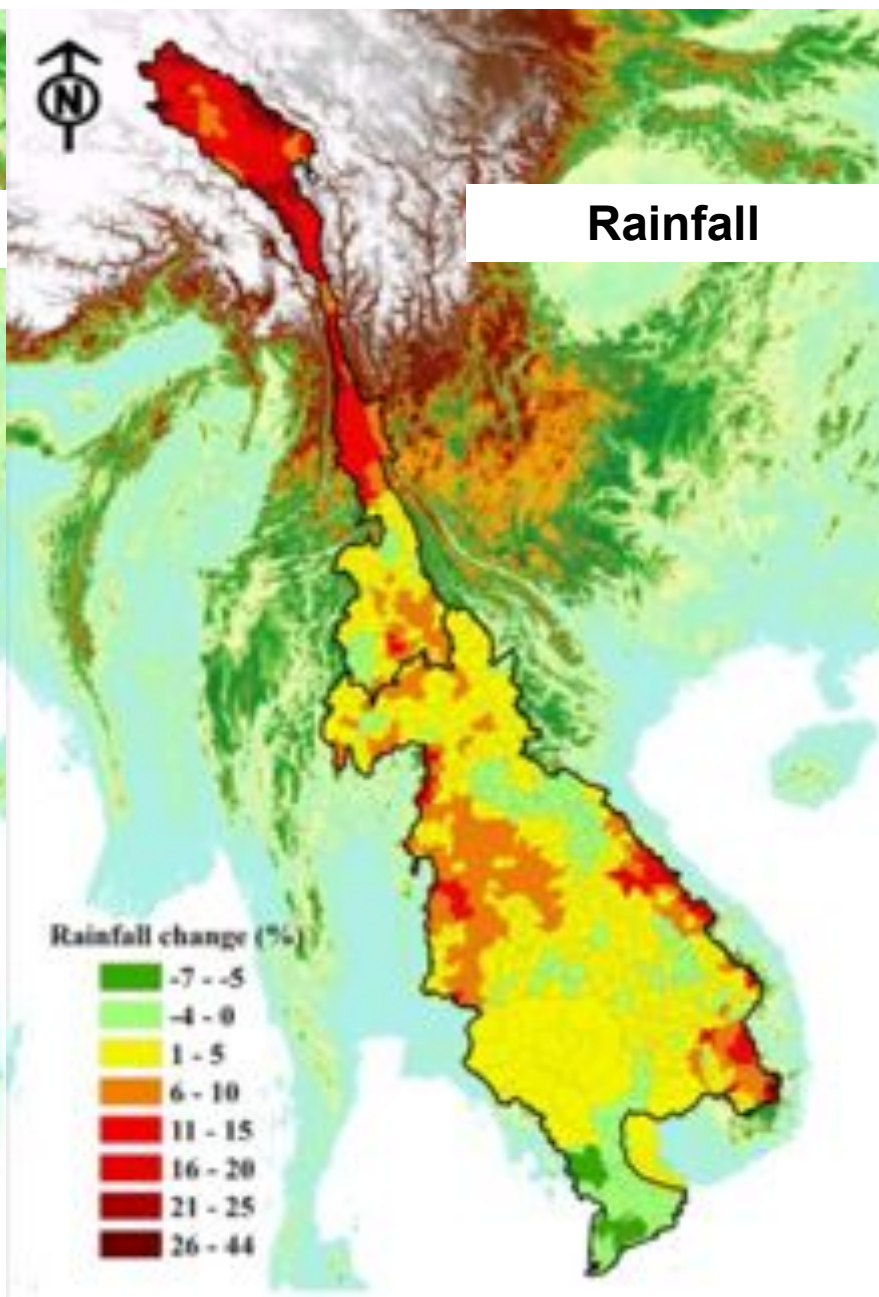
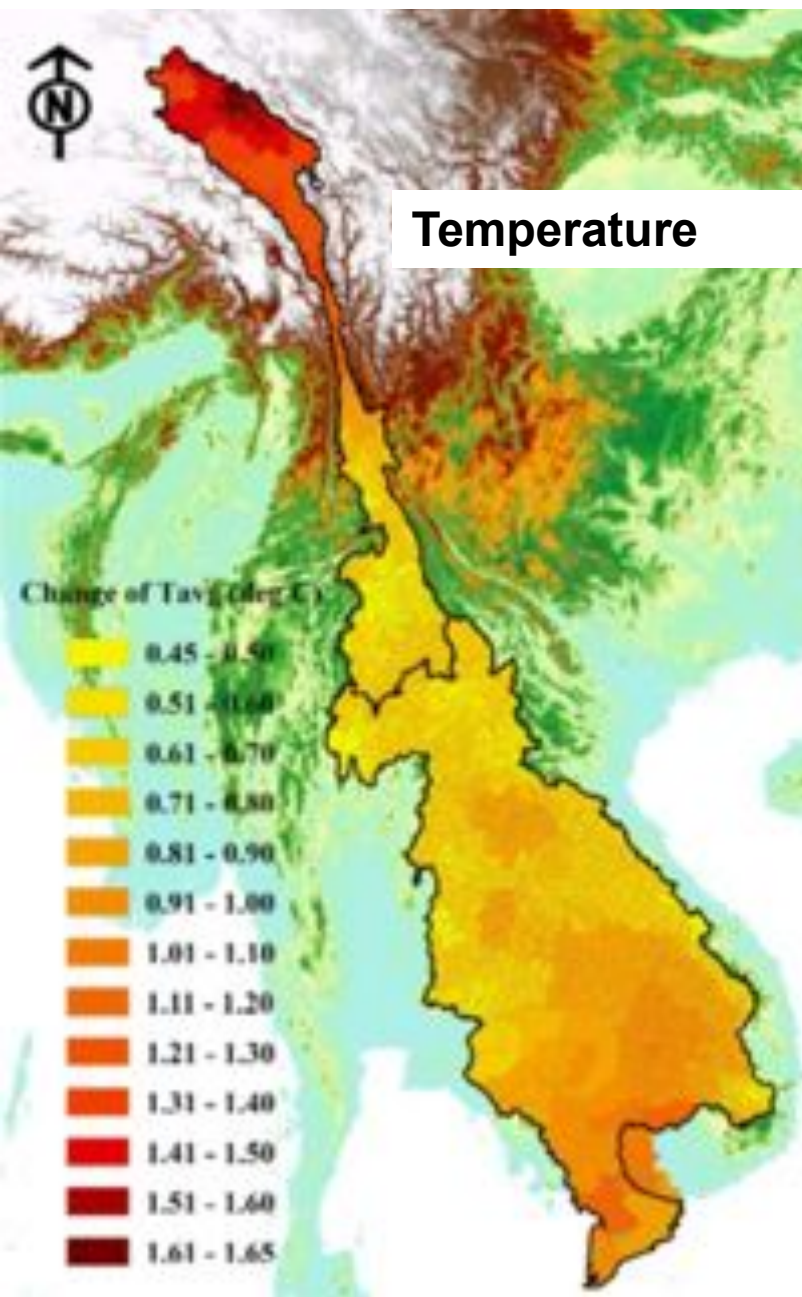
Some initial activities:

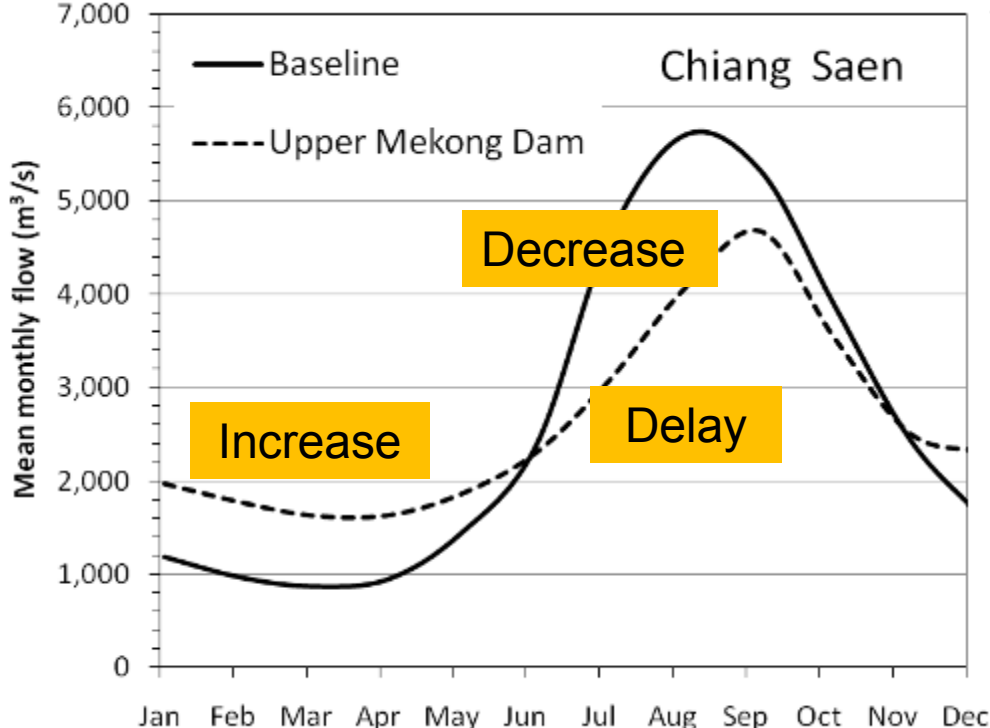
- CC & Development impacts to Mekong flow regime and some sectors;
Basin-wide Pilot: CC impacts to Wetland & Biodiversity
Local Demonstration Projects

CC impacts to Mekong Flow: Scenario Analysis framework



Change in mean annual temperature (°C) and precipitation(%) during 2010–2050 compared to 1985–2000



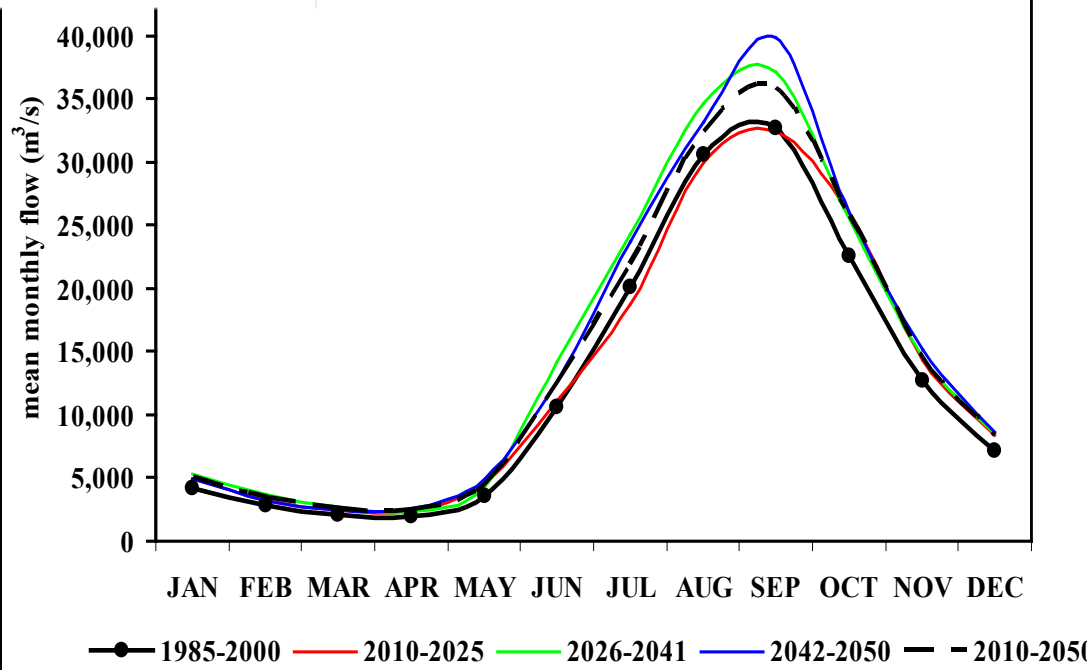


Change in flow due to upper Mekong dams - without climate change

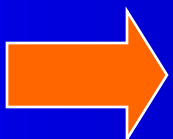
Water level (m)



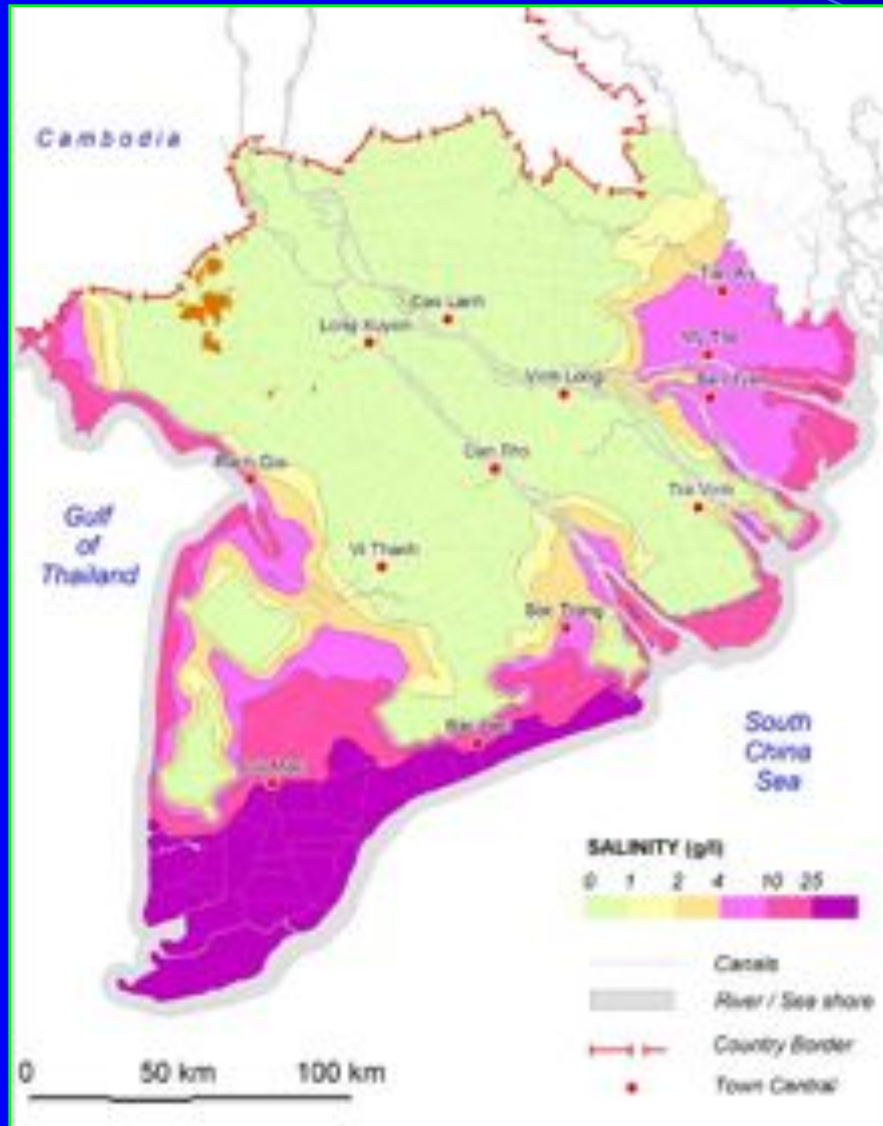
Baseline Scenario
Mean Monthly Flow of Mekong at Kratie



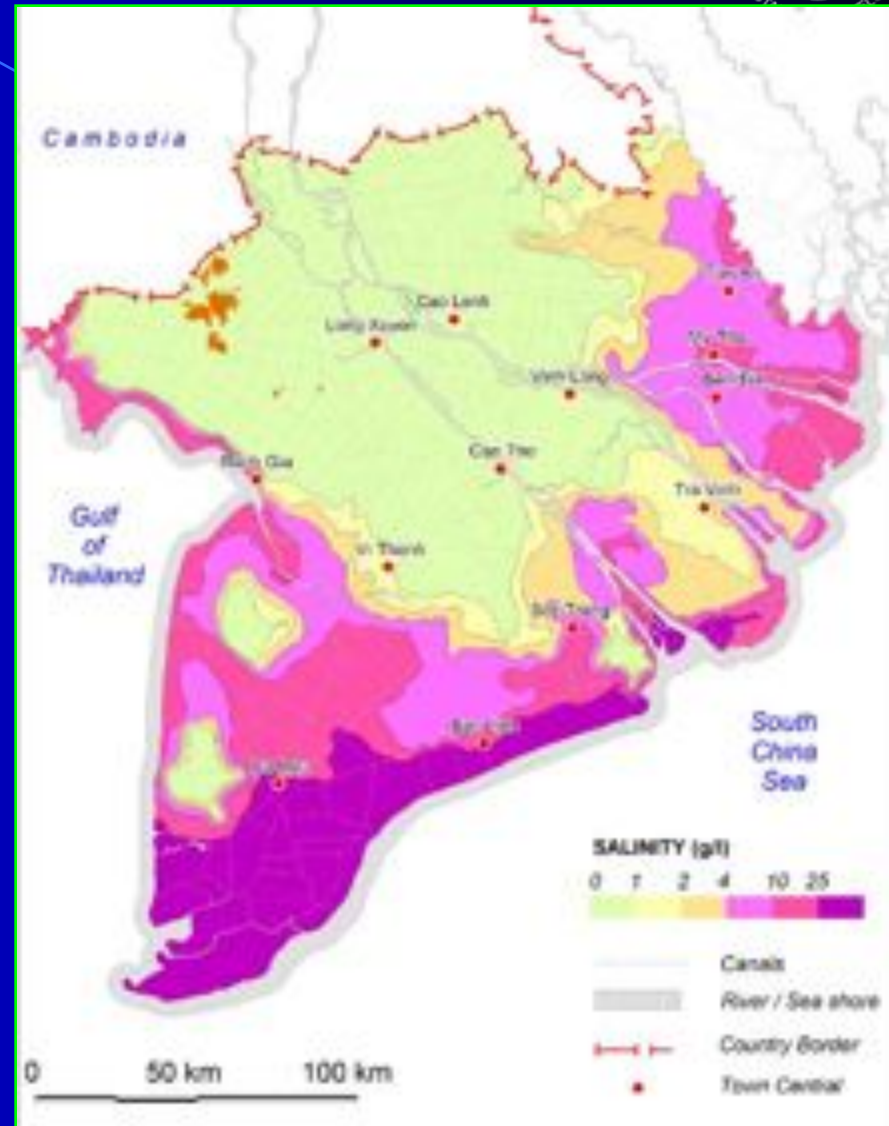
Change in flow with climate change for different periods up to 2050 (Scenario A2, ECHAM4)



Saline intrusion in the Mekong Delta

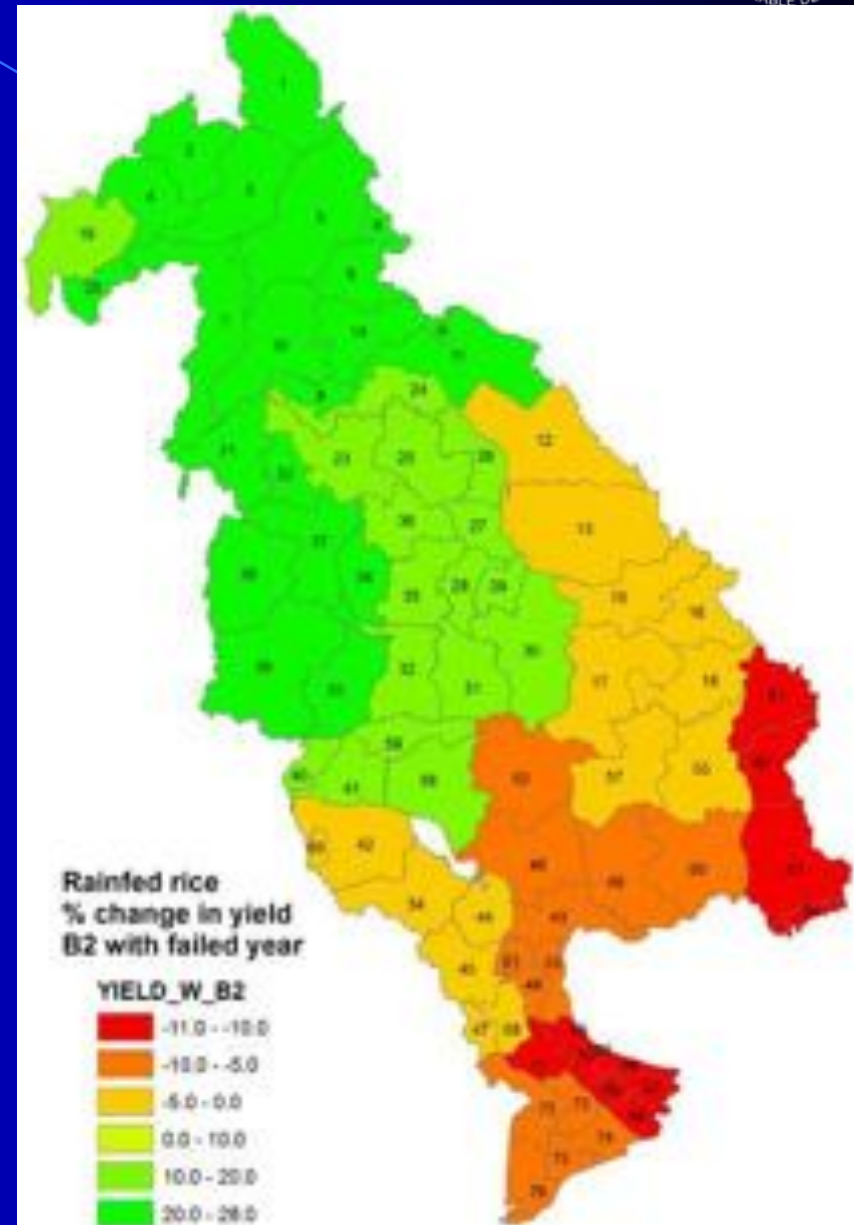
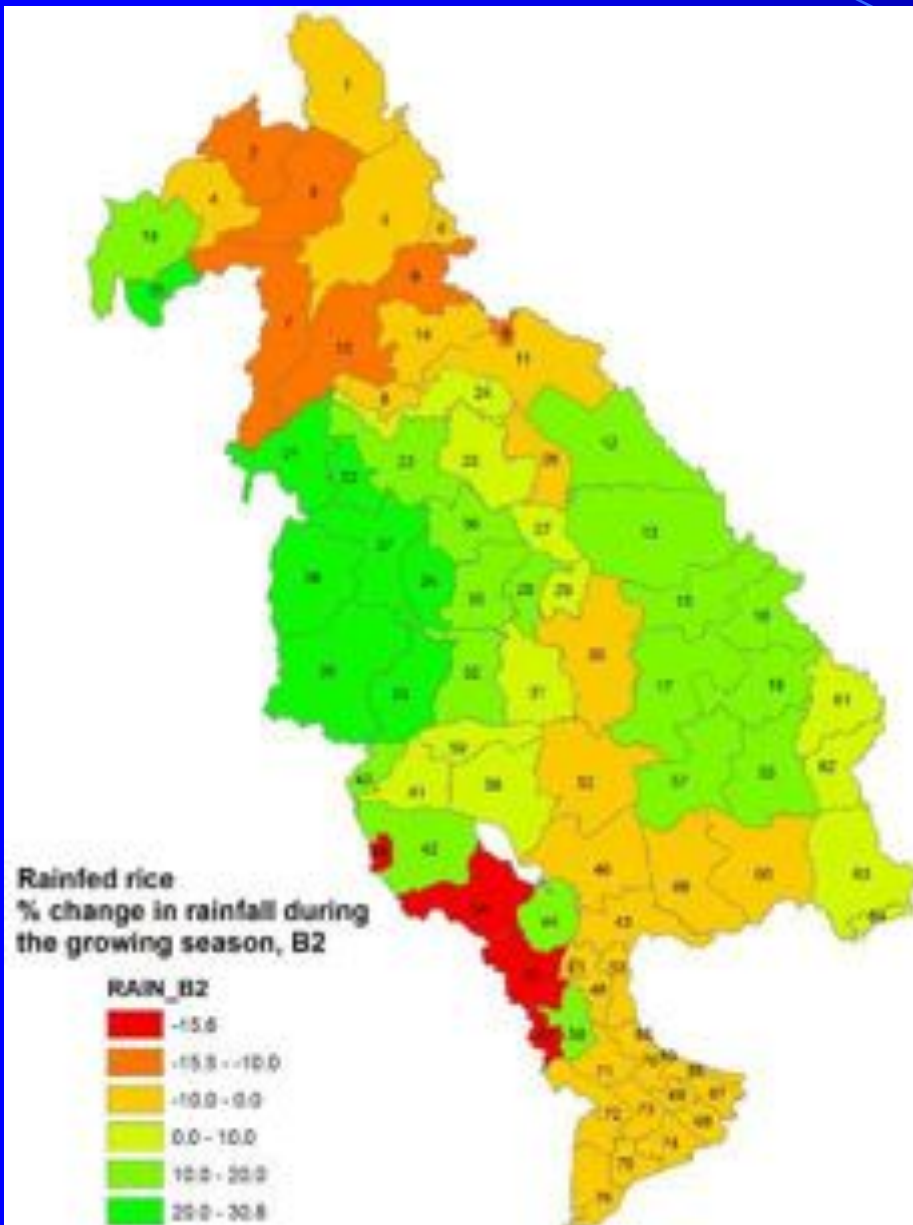


50 cm sea level rise



100 cm sea level rise

Food security: changes in rainfall and yield in LMB (B2), crop modeling results



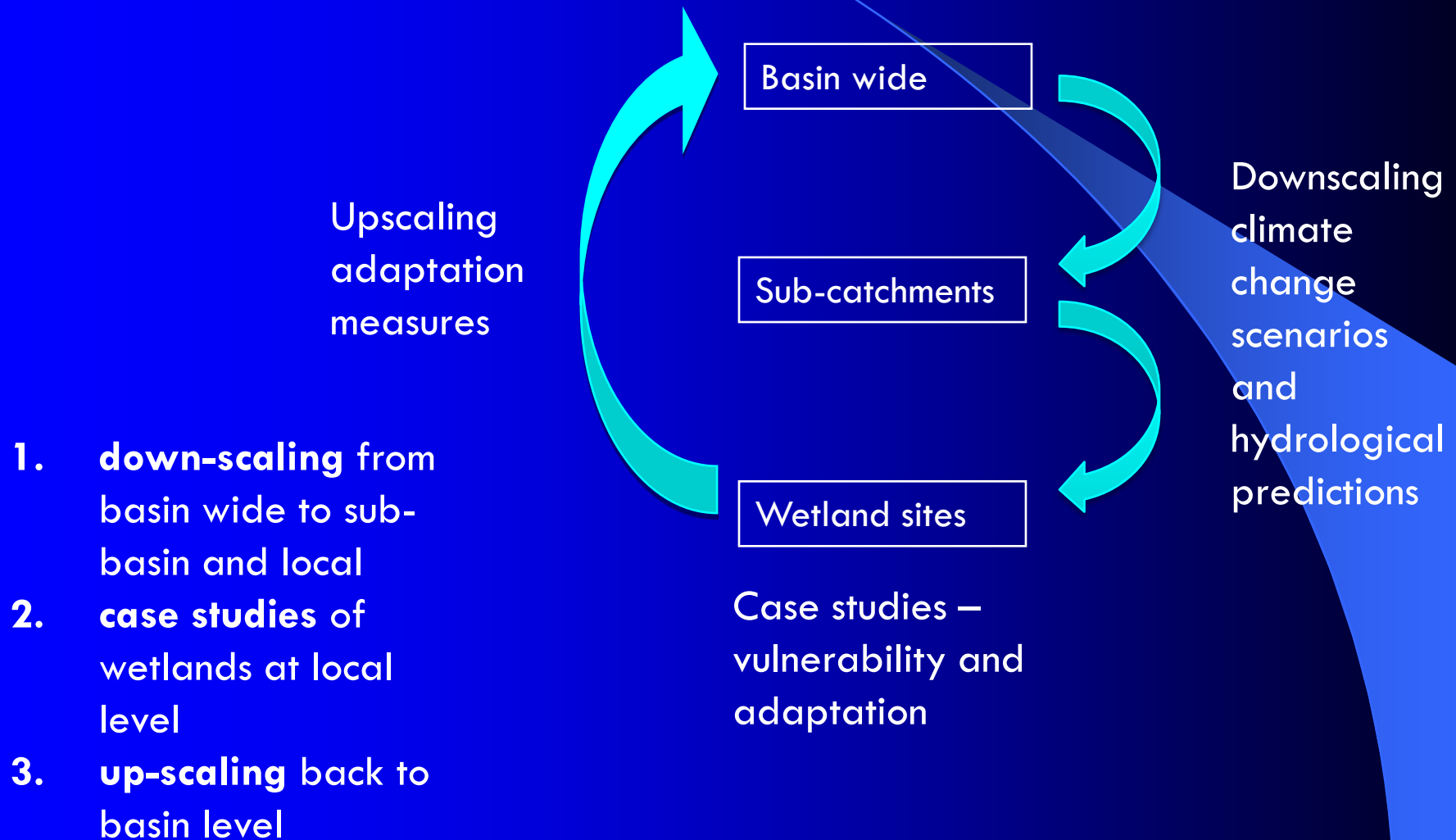
CC Impact & Vulnerability Assessment for Wetlands & Biodiversity in the LMB



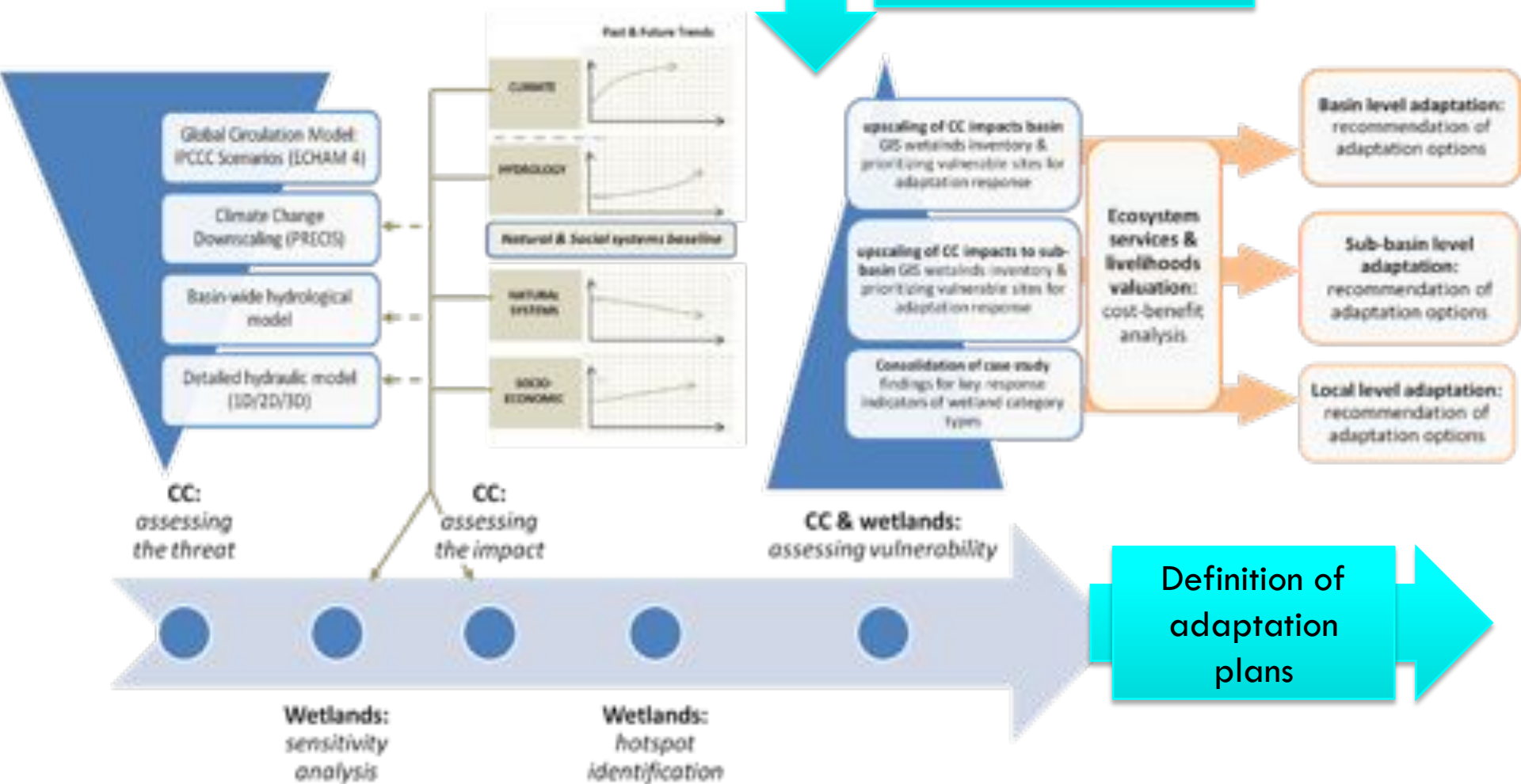
Objectives:

- To undertake a climate change impact and vulnerability assessment for the Mekong wetlands considering their functions and biodiversity
- To provide recommendations for adaptation options aiming at securing wetland values
 - Provide detailed understanding of **CC implications to the health and function of wetlands** in the Mekong basin
 - Formulate specific **adaptation and management recommendations**
 - Develop an **evidence base** from case study sites & **capacity building**
 - Develop a **methodological framework for assessing CC vulnerability of wetlands**

Three Phases to the approach



Projected baseline to 2050, considering other developments





Key to features

Elevation



Key to features

Wetland types

Cambodia-Wetland types

CCAI Local Demo-Sites

- **Cambodia**
 - Prey Veng province
- **Lao PDR**
 - Savannakhet (Champhone District)
- **Thailand**
 - Nam Yang Basin (Tributary to Chi River)
- **Vietnam**
 - Kien Giang province



Cambodia Demonstration Site

Problems & issues:

- Increasing risk of flood, drought & extreme climate events
- Key vulnerable sectors: Agricultural and Fisheries
- Key vulnerable groups: farmers and fishermen, children, elderly people, ethnic groups and women
- Significant decline in water table. (In some places, wells cannot be used for more than a year)

Key activities:

- Assess the risks and impact of extreme climate events on socio-economic condition & people livelihood;
- Conduct community-based vulnerability & adaptation assessment at district level to develop local action plan
- Support in local planning and decision making, methods and tools; Capacity building & awareness raising on CC

Local demonstration project: Problems and Challenges



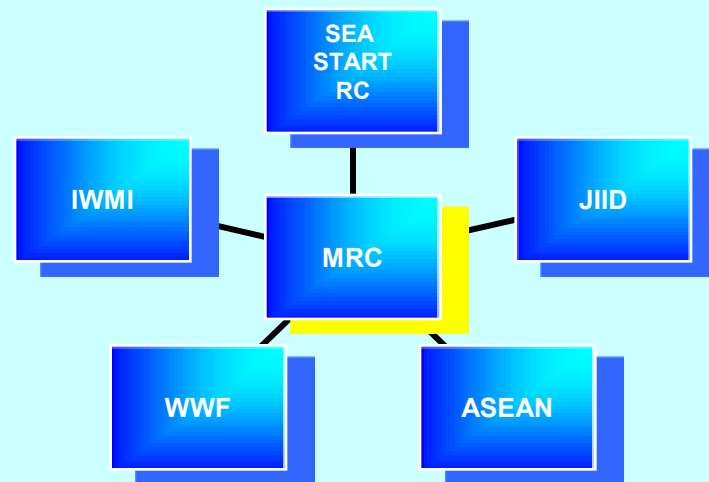
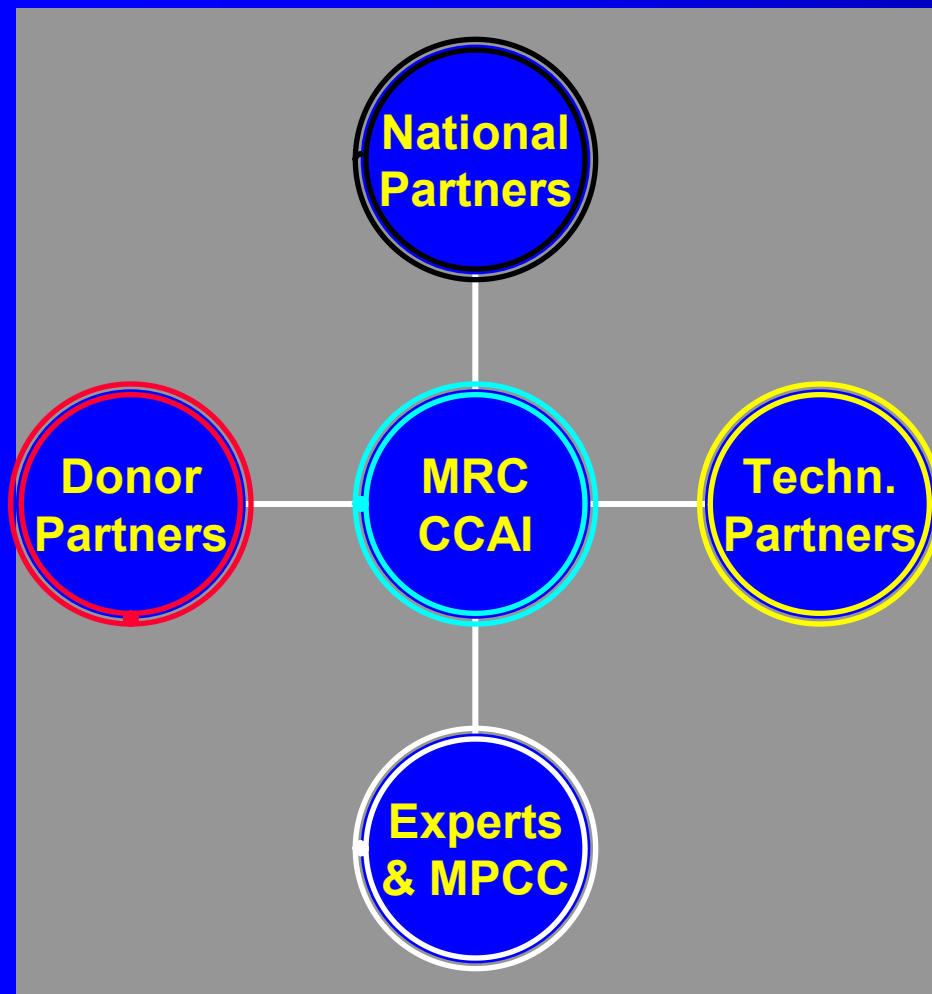
- Different geographical setting and scale, climate risk/vulnerability and corresponding climate adaptation options;
- Different capacity of national teams and political systems;
- Lack of common understanding on adaptation planning process and tools;
- Coordination and information sharing among national line agencies;
- Communication and information exchange among demo sites due to language barrier;

Ways forwards through regional collaboration & partnership

- Establish a **regional network** of collaborative local demonstrations with **national & regional partners**
- Other Basin-wide and trans-boundary pilots
- Working through other MRC Programmes
- **The Mekong Adaptation Strategy** and Action Plan supporting national frameworks and guidelines for Adaptation at national and sub-national level
- **The Mekong Panel on Climate Change (MPCC):** “regional analogue” of IPCC in the Mekong region

CCAI network of regional partners

Technical & financial support
from CCAI partners



CCAI implementing partners core group

Climate and hydrology group

- IWMI
- Sea START
- CSIRO
- ANU ICAM
- Others ...

Natural systems assessment group

- Wetland Alliance
- WWF
- IUCN
- World Fish
- Others ...

Socio-economic systems group

- OXFAM
- CARE
- GTZ
- SEI
- Others ...

Potential CCAI technical collaboration

- | | | |
|-----------|--------------------|---------------------------|
| ▪ ACIAR | ▪ UNEP | ▪ SEAFDEC, |
| ▪ ADB/EOC | ▪ UNESCAP | ▪ ADPC |
| ▪ FAO | ▪ ICIMOD | ▪ UNISDR |
| ▪ M-POWER | ▪ IFRC (Red Cross) | ▪ Donor technical experts |
| ▪ UNDP | ▪ NARBO/NAHRIM | ▪ Others ... |

Future Network of collaborative “CCAI & Co.” Demonstration Projects



Global Phenomenon
Regional Collaboration
Local Action

Thank you!



Mekong River Commission
Climate Change and Adaptation Initiative
www.mrcmekong.org