FRAMEWORK FOR ECOSYSTEM-BASED ADAPTATION(EBA) AT SUBNATIONAL LEVEL FOR THE GMS- IMPLEMENTATION AND MAINSTREAMING

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VULNERABILITY TO CLIMATE CHANGE IN THE GMS

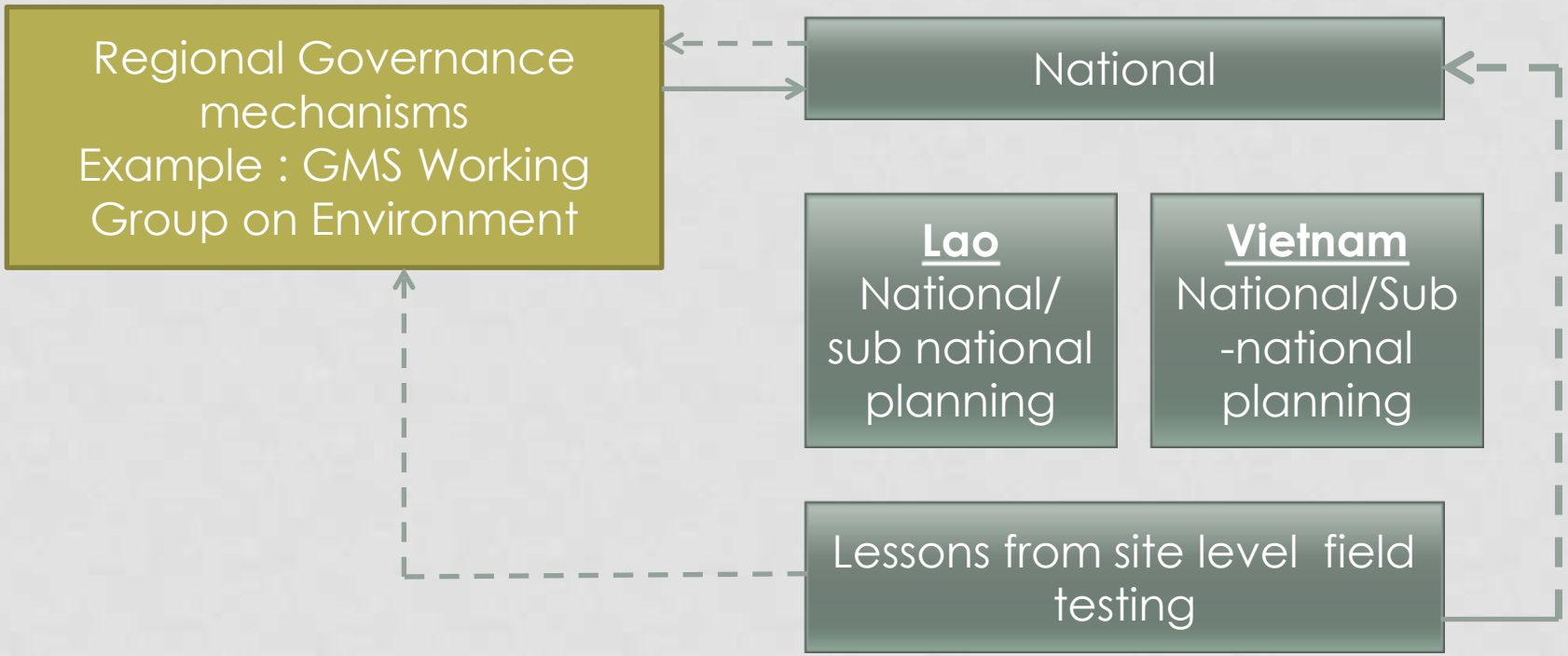
- Remarkable increase in the frequency of climate related disasters such as floods, typhoons, storms and droughts. The economic impact associated with extreme weather events has increased to 108 billion USD in 2000-2009 from USD 14 billion in 1980-1989. (Source: The international disaster database,http://www.emdat.be/database)
- At risk geographic conditions such as extensive low-lying coastal zones.
- Currently 67 percent of the rural population lives in areas with high incidences of poverty.
- Relatively low levels of economic development, technical capacities, and enabling policy structures.
- Insufficient investment in the region to adequately maintain and restore ecosystem services.

BACKGROUND: EBA FRAMEWORK FOR GMS

- Adaptation to Climate Change increasingly recognized in development agenda in the GMS countries
- Planned and likely investments on adaptation (including investment on infrastructure-such as dykes, channels for water diversion) could benefit from linkages with the ecosystems
- A need for operationalizing the concept of EbA in a locally accessible way
- A need for better understanding of the effectiveness of EBA, including cost effectiveness and include it in policy and planning processes
- WWF-Greater Mekong Program conducted EbA study and prepared the framework in partnerships with the governments of Laos and Vietnam and the World Bank

OBJECTIVE

- Help the target users (governments in the GMS) to consider EbA options, assess and implement where possible and mainstream in planning processes
- Tool to inform regional and country planning processes



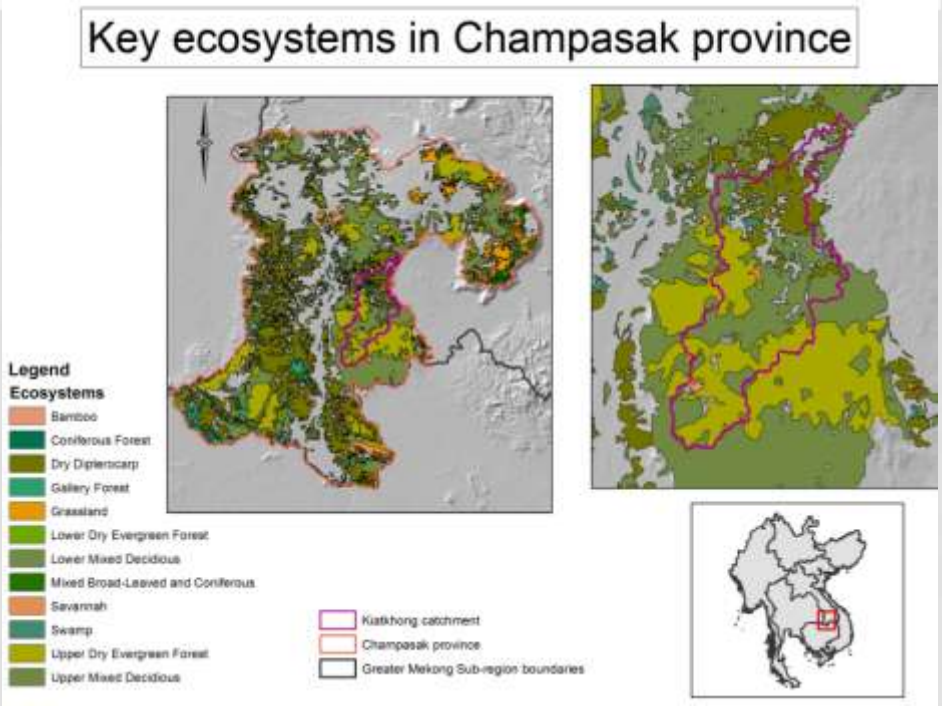
FRAMEWORK: FOCUS ON SOCIO-ECOLOGICAL SYSTEM

Steps	Ecosystem lens	Tools
Preliminary context setting	System representation-communities and ecosystem	Secondary data collection; Stakeholder consultation
1. Vulnerability assessment – current and potential risks and impacts	Risks and Impact assessment of communities AND ecosystems-socio ecological systems	**PRA tools**: seasonal calendar ,timeline, Focus group discussion GIS mapping and modeling
2. Prioritization of Adaptation measures	Value of natural capital recognized (Qualitative); Integrated approach	Stakeholder consultation Multicriteria analysis Cost effectiveness analysis
3. Implementation & monitoring guidelines (not field-tested) 4. Mainstreaming guidelines (not field-tested)		

IMPLEMENTATION AND MAINSTREAMING

Vulnerability Assessments should clearly identify:

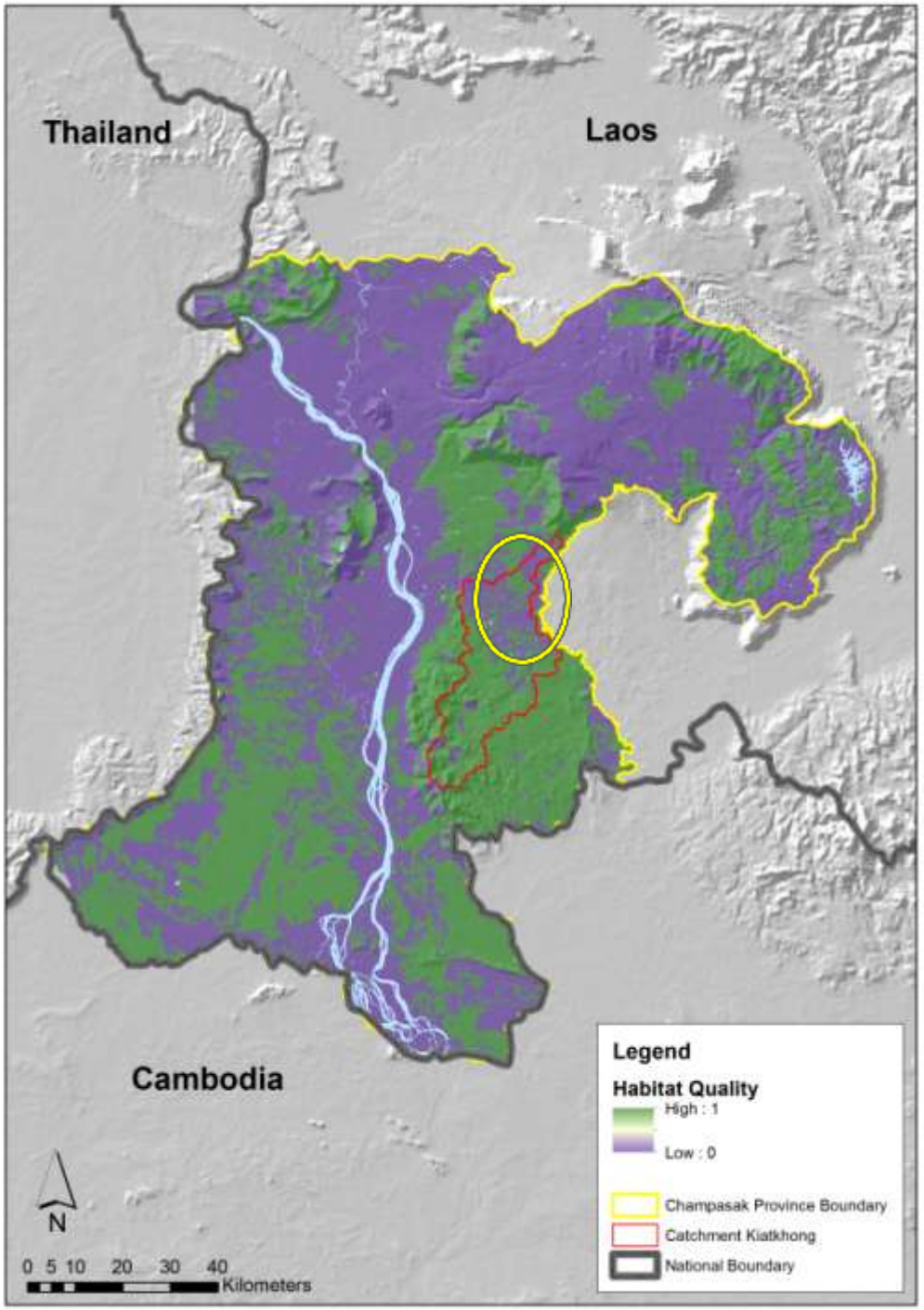
- **What to implement:** Adaptation options have to be identified and prioritized
  - Use of multicriteria analysis
- **Where to implement:** Spatial Analysis needs to be done
  - Use of softwares for modeling/discussion
- **Whether its cost effective**
  - Comparative CBA/CEA



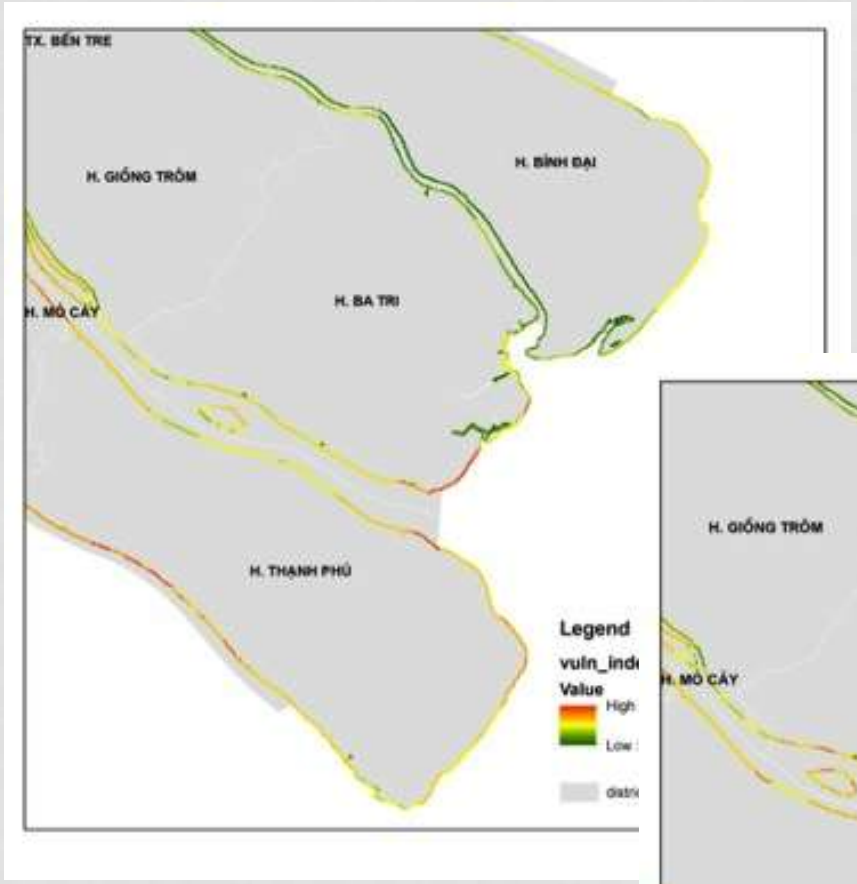
Mapping and Analysis of ES
Output: Habitat Quality

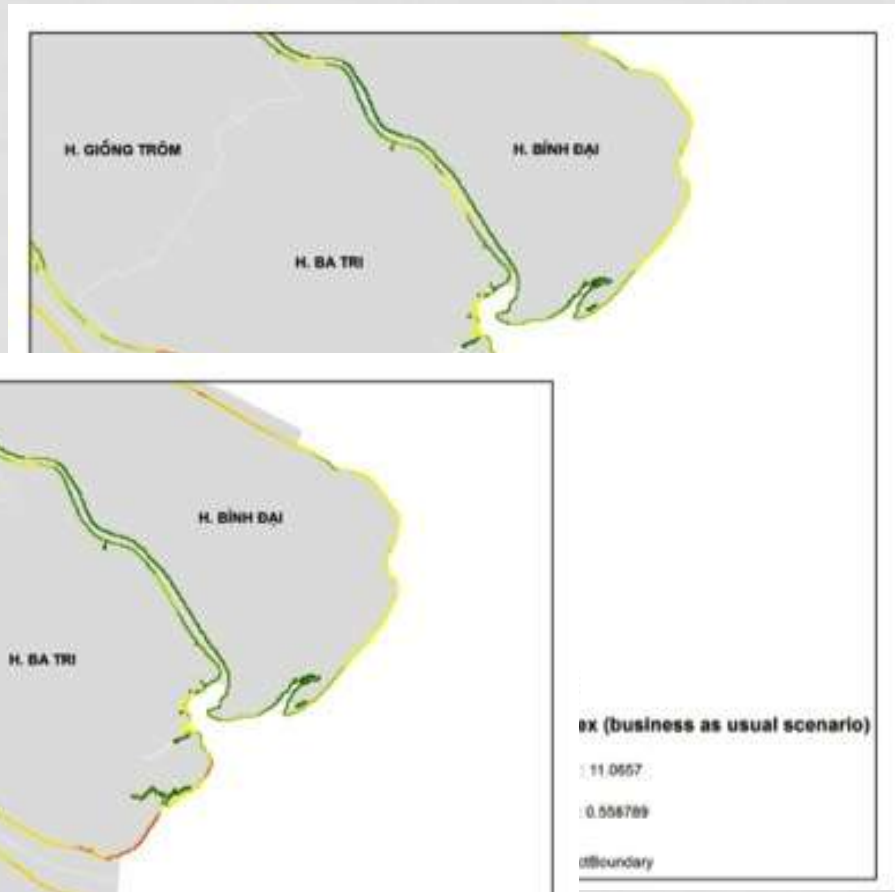
The green areas are the ones where the habitat quality has high values. The yellow circles show areas potentially suitable for rehabilitation/reforestation programs, to re-establish connectivity processes

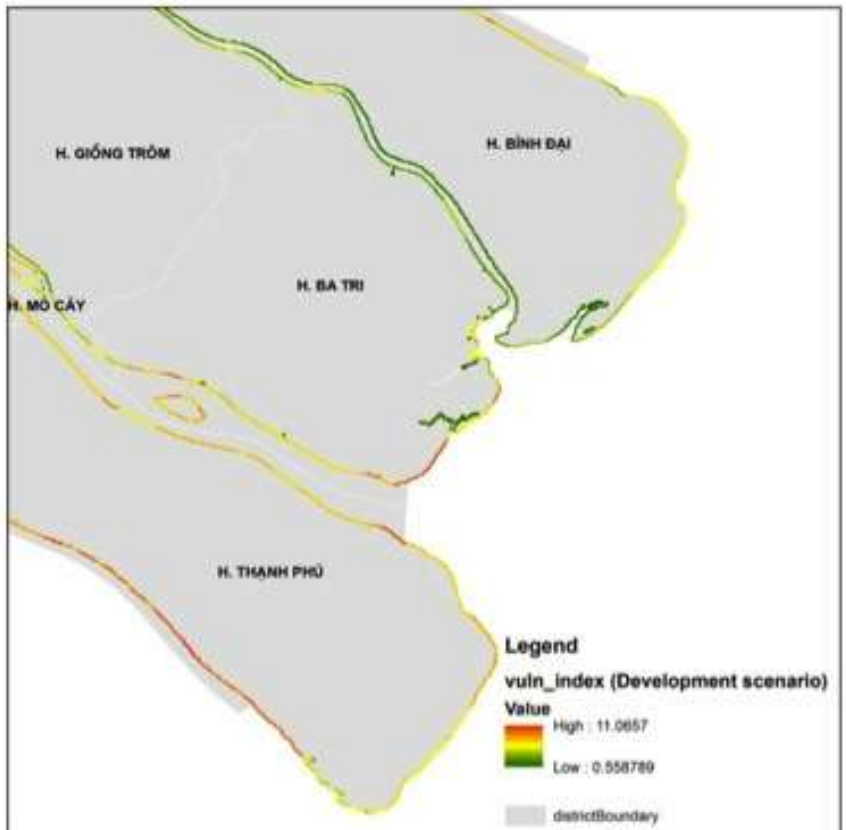
Model: Biodiversity and Rarity (InVEST)



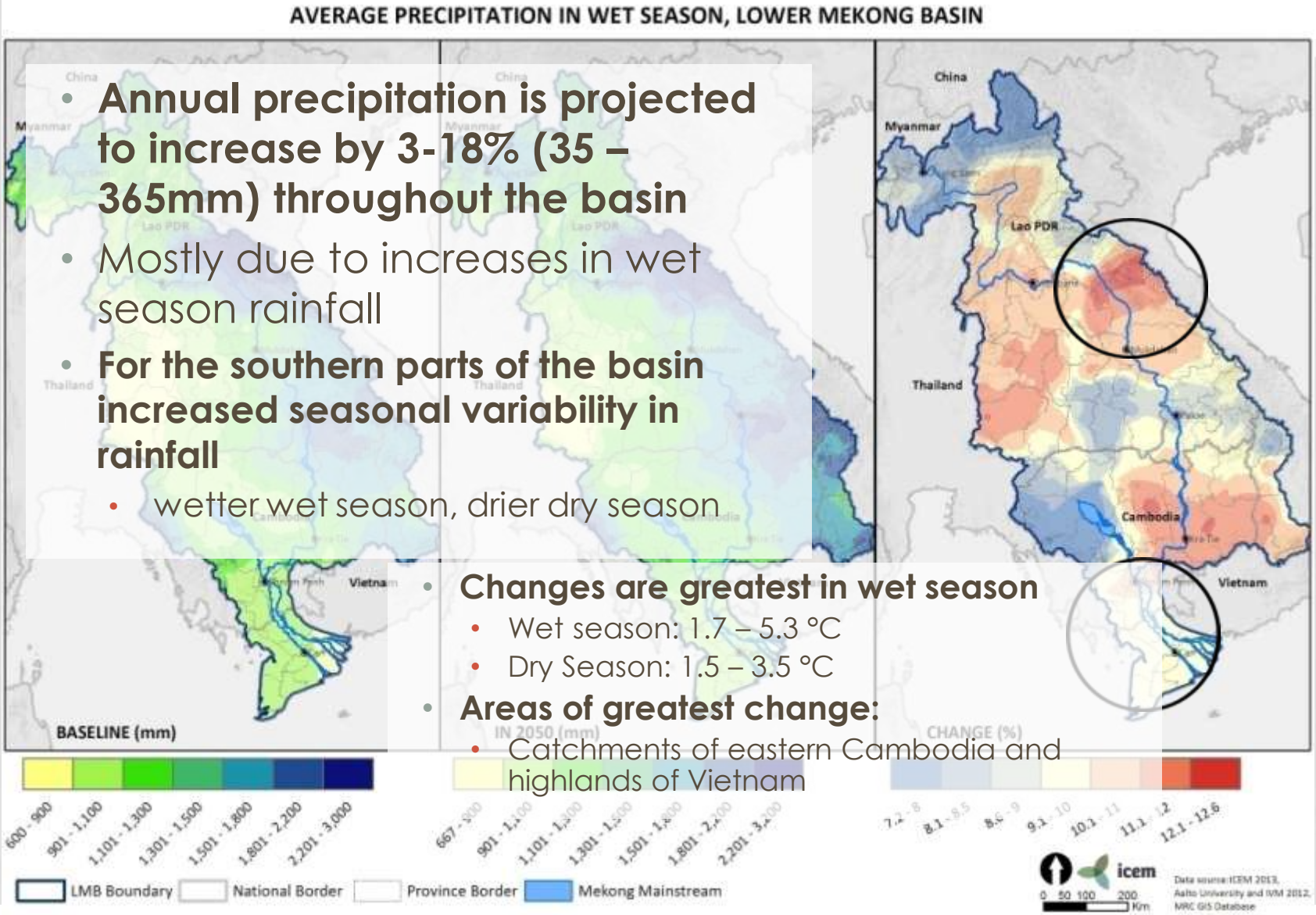
Example of Coastal Vulnerability (InVEST)







AVERAGE PRECIPITATION CHANGE BY 2050



- **Annual precipitation is projected to increase by 3-18% (35 – 365mm) throughout the basin**
- Mostly due to increases in wet season rainfall
- **For the southern parts of the basin increased seasonal variability in rainfall**
  - wetter wet season, drier dry season

- **Changes are greatest in wet season**
  - Wet season: 1.7 – 5.3 °C
  - Dry Season: 1.5 – 3.5 °C
- **Areas of greatest change:**
  - Catchments of eastern Cambodia and highlands of Vietnam

IDENTIFYING AND PRIORITIZING ADAPTATION OPTIONS (LAO)

ADAPTATION OBJECTIVE	Total score	Weighting
Minimize impact on Livelihood of Villagers from climate related events	66	0.24
Minimize impact on achievement of Provincial socio economic development plans	43	0.16
Minimizing impacts on stability, security & social order from CREs	29	0.11
Ensure maintenance of food supply	28	0.10
Minimize impact on achieving the millennium Development Goals from CREs	27	0.10
Ensure maintenance of access to clean water	22	0.08
Enhance Resilience (Reduce Vulnerability) of Ecosystems	19	0.07
Poverty Reduction amongst most vulnerable groups	19	0.07
Minimize loss of life from Climate Related Events	18	0.07
Total	271	1.00

MULTI-CRITERIA ANALYSIS

CRITERIA

- **Effectiveness**: Will it achieve the adaptation objective/s identified?
- **Cost**: How cost effective will it be?
- **Feasibility**: How realistic will it be to carry out?
- **Attractiveness:** How attractive is it for public and private funding?
- **Capacity:** How well does it fit with current capacity?

ADAPTATION OPTIONS

Improved Wetland Management (26.32)

Improved Forest Management (25.42)

Raising Awareness of CC impacts (24.86)

Enhanced Agricultural Extension (24.74)

Improved Integrated Socio-economic Development Planning (24.46)

Improved NTFP Management (23.54)

……. etc.

CEA – EXAMPLE FROM VIETNAM

Hard or engineered solution: Construction and upgrade of sea dikes in Thanh Phu, Ba Tri, and Binh Đai district..

Ecosystem-based adaptation (EbA): Reforestation and conservation of coastal forests with a total forest area of 5.100 ha (existing forest: 3897 ha and planting of new forest: 1.203 ha).

Effectiveness: number of people saved from floods

Low Risk Scenario:

Average cost per person saved from flood:
Sea dike systems :138.8 mill VND/person.

Ecosystem based adaptation with coastal forest ecosystems : 1.7 mill VND/person.
More than 100% cost saving

High risk scenario

55%, 17%, and 5% cost saving by using EbA with sea dyke for Ba Tri, Binh Dai and Thanh Phu district.

IMPLEMENTATION

- Design an Outcome-Based or Results Based Management (RBM) Framework
  - Identifying indicators and baselines are problematic for EbA- Uncertainty, time-frame, moving baselines, Attribution
  - UNEP and the Pilot Program for Climate Resilience (PPCR) Strategic Climate fund (SCF) have developed some indicators for resilience
- Adaptive Implementation through Monitoring and Evaluation (M&E)
  - M&E – addressed in design and a continuous process
  - Reflection, Adaptation and collection evidences necessary

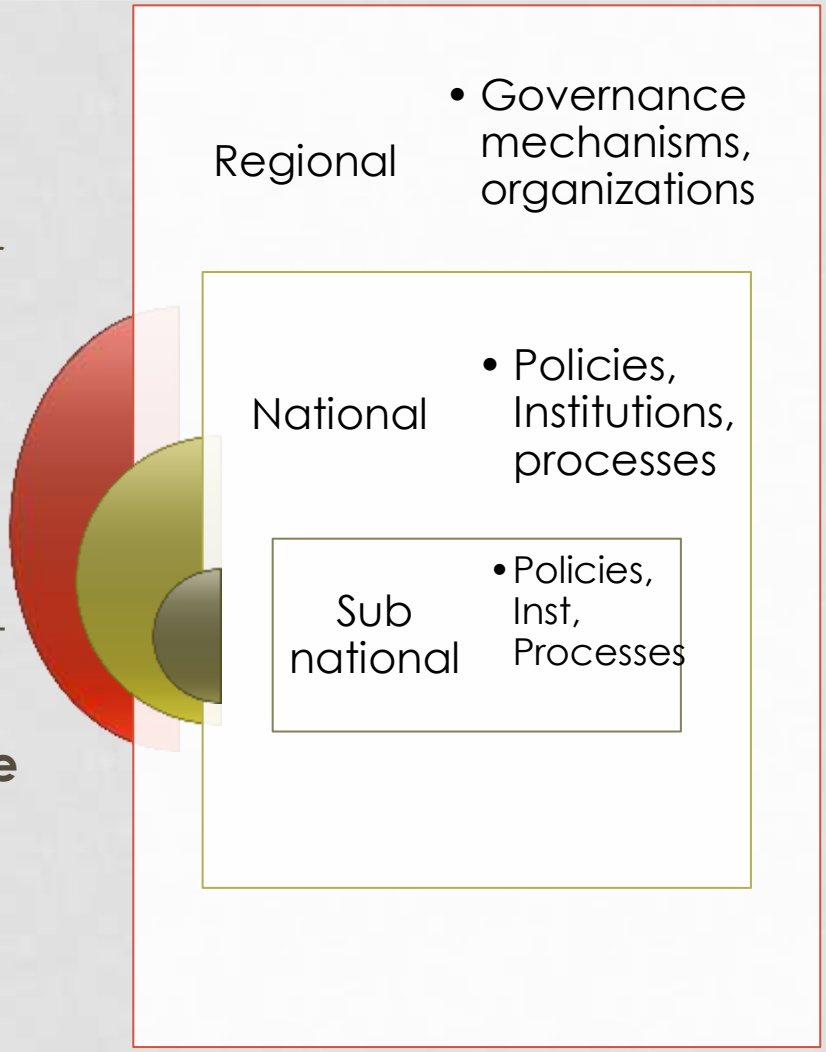
MAINSTREAMING EBA STRATEGIES IN POLICY AND PLANNING

Mainstreaming EbA in Policies and Plans

- Analysis of policies and planning processes to identify and agree upon policy and institutional entry points for mainstreaming
- Raise awareness, capacity and build partnership
- Influencing policy and planning processes
- Use Strategic Environment Assessment to mainstream EbA

Incorporating EbA in the existing and future investments

- Influencing current and pipeline investments for development and conservation



MAINSTREAMING EBA IN THE GMS

- Climate change and green growth strategies- being developed and implemented
- **National policies and plans** -socio economic development plans, natural resource management plans, landuse plans and sectoral plans such as agriculture, water, infrastructure, energy etc.
- **Institutional changes** to include specific climate change governance structures is taking place in most GMS countries, which will assist with cross sectoral coordination and mainstreaming.
- Has important ongoing **regional, national and sub national processes**

CHALLENGES

Policy, investment, capacity and resources

- Integration of EbA inadequate in development planning and allocation of land-use compromising ecosystem services in the long run.
- Public sector funding, especially in the high risk country like Vietnam still tends to focus on large-infrastructure based solutions.
- Lack of financial resources and institutional capacity is still a problem in the GMS countries.
- Institutional and technical capacity at the sub-national and local levels is especially low
- Capacity development and sub national level needs to be prioritized and ecosystem based adaptation measures need to be included at the lowest level of land-use planning

OPPORTUNITIES-EXAMPLES OF REGIONAL MECHAMISMS AND PROCESSES IN THE GMS

- ASEAN blueprints and agreement of Disaster Management
- Mekong River Commission (MRC)addresses adaptation issues for the river basin
- The GMS countries have an active working group on Environment (WGE) that is lead by the environmental ministers of the six GMS countries (Cambodia, China, Lao PDR, Thailand, and Vietnam).
- However. a substantial effort is needed to ensure there is a sub-regional commitment on EbA.
- Engagement of various international agencies:
  - Multilateral Banks like; Bilateral donors, UN entities; Various NGPS

COUNTRY EXPERIENCES

Countries experience in the fields of conservation and natural resource management, and some EbA initiatives are being applied

- According to a recent study conducted by the Asia Pacific Adaptation Network, 13 EbA related initiatives have been implemented in the GMS.
- Some examples of already applied EbA measures include:
  - Agroforestry techniques
  - Mangrove and other forest restoration efforts;
  - Income/livelihood diversification projects;
  - Water and watershed management efforts aimed at ensuring sufficient and consistent flows from watersheds.

NATIONAL ENTRY POINTS : EXAMPLE FROM VIETNAM

Relevant Sectors	Relevant Policies	Relevant Agencies
Natural resource and environment management	Provincial Climate change Action Plan	Department of Natural resources and Environment (DONRE)
Biodiversity Conservation	Provincial Biodiversity Conservation planning	DONRE
Land Use	Provincial Land use plan	DONRE
Planning and Investment	Provincial Socioeconomic Development Plan	Department of Planning and Investment (DPI)
Agriculture	Climate change action plan for agriculture sector	Department of Agriculture and Rural Development (DARD)
	Aquaculture and fishery development plan	DARD
	Forestry development plan	DARD
	Irrigation development plan	DARD

EVIDENCE AND LESSONS FOR PLANNERS

- EbA provides nature-based solutions to reduce vulnerability even under high climate risks.
- EbA can indeed be cost effective.
- EbA provide multiple benefits to communities
- EbA can NOT be excluded from overall strategy to address the future risks, even though it may have to be supplemented by other measures.
- Mainstream and act at different scales- but ensure local levels are prioritized first.