Implications of climate change on watershed management in the Mekong basin

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Key take-home messages

1. **Address short term needs with long-term vision**: Local needs/impacts are short-term (poverty reduction, devt., DRR) while significant long term changes require adaptation planning.

2. In watershed (WS) management we can address both mitigation and adaptation to climate change (CC), both DRR (resilience) and development at different levels.

3. Revisit and rethink local wisdoms, indigenous knowledge, existing approaches and methods, on-going policies & practices: Will they work? Can we bridge scientist to them?

4. Considering and proper dealing with uncertainties is crucial (Prepare to “surprises” and “the unknown”)

5. What can we do to make concrete actions, bring benefits NOW? (non-regret or low-regret measures/policies)
WS & River Basin

- Watershed is a living organism, with a “human face”, it’s the lungs and heart of the river basin
- Upstream – Downstream Linkage: all are linked together
- People do live in the WS & development activities do change the conditions
- Ecosystems & People already & always adapting to changes
CC projection: temperature (°C) & precipitation(%) during 2010–2050 compared to 1985–2000
Impact on flows

Increase flows both wet and dry season by 5% in next 20 years and by 10% in longer term.

Frequency and intensity of flood and drought might increase.

Yellow bars show impact of climate change.

Average dry season flow (m³/s)

Average wet season flow (m³/s)
What are the impacts on WS?

- **Short term** impacts: climate variability & extremes (storms & heavy rainfall, floods and flash floods; heat waves, droughts & forest fires)
- **Long term**: shifted weather pattern and seasonality, altered structure, function & capacity of ecosystems to provide ecological services.
- **Development impacts & human activities**: will add more pressure to the already threatened systems
- **Un-forseen “surprises”**: emerging diseases of plants, animals or human, invasion of alien species, loss of biodiversity in the watershed, adding to the uncertainty of CC impacts (so *many things we still don’t know and not prepared for*).
What are the CC impacts?

It’s not only about CC, it’s the whole ecosystem and socio-economical changes, but CC will mainly get it worse:

- **Warming**: Temperature raise may lead to significant changes and shift of WS ecosystems
- **Rainfall**: erratic rainfall, extreme floods and droughts
- Human-induced and climate-induced changes in hydrology & flow
- Changes in surface water body and water storage capacity of WS; Changes in ground water level & quality
- Changes in sediment flow and nutrient load due to land-use changes and deforestation
- Development & human activities sometime have stronger short term impacts: adaptation or maladaptation; sustainable or mismanagement?
WS is where people live/fight with nature

• High poverty and heavy dependence of local livelihoods on ecosystem services and water
• Poor ethnic minorities, many children in a family, full burden to women, aging of population in WS
• Poor management / governance, less support from government; External support may not always help
• Poor education and less access to information, knowledge and other resources
• Local customs and culture, possible conflicts with government or between different groups
So what we can do now?

- Participatory learning: local wisdoms is good but do they sustain?
- Information & lessons sharing and exchange
- Capacity building for target groups
- Bridging scientists and community and policy makers
- Combine mitigation & adaptation: REDD Carbon storage, Community Forestry
- Research and study
What is CCAI, what its role in WSM?

CCAI is: 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.

What CCAI can do for / with WSMP:

- Technical service exchange (modeling, GIS, mapping, assessment etc.)
- Link the network of CCAI demonstration projects with local activities in WSM
- Capacity building and Learning from each other
The Mekong CCAI is a cross-cutting initiative under IWRM umbrella in Mekong context.
CCA 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
CCAI current Demo Activities

1/ Basin-wide study on CC impacts to Mekong wetland & biodiversity

2/ Local demo-sites:
- Cambodia: Prey Veng
- Lao PDR: Savannakhet
- Thailand
  - Nam Yang Basin
- Vietnam
  - Kien Giang province
WSM and CC Adaptation

- Community resilience & adaptation: with current variability and future CC, some of the existing / on-going successful policies, practices and local wisdoms might not be effective any more.

- Revisiting the lessons learnt and good practices from WSM projects, Community Based Adaptation (CBA) and community forestry at local level.

- Find more entry points for implication of CC modeling and projection, CBA and Disaster Risk Reduction (DRR) in WSM.

- Watersheds are place where we can successfully combine both CC adaptation and mitigation efforts.
WSM and CC Adaptation

At policy level:
- Recognize the important role of sustainable WSM and the upstream-downstream and transboundary linkages in integrated river-basin management.
- Integrate CC mitigation & adaptation and DRR in the agenda of water and land management at all levels

At local level:
- Constant & continuing LEARNING: rethink the existing approaches and policies, share knowledge and information
- Full participation and active involvement of community
- Find opportunities – it's everywhere, just be pro-active
- Considering and proper dealing with uncertainties is very important
Key take-home messages

1. **Address short term needs with long-term vision:** Combining poverty reduction, development DRR with adaptation planning

2. Do need **both mitigation and adaptation**, both DRR and development in WSM at different levels

3. Revisit and **rethink local wisdoms & existing approaches, methods and policies**

4. Considering & addressing uncertainties

5. **What concrete actions** we can make now? **What and how** we can **learn and share experiences**?
Global Phenomenon
Regional Collaboration
Local Action

Thank you!

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