Key Challenges and Best Practices in Watershed Management In Indonesia (Citarum River Watershed)

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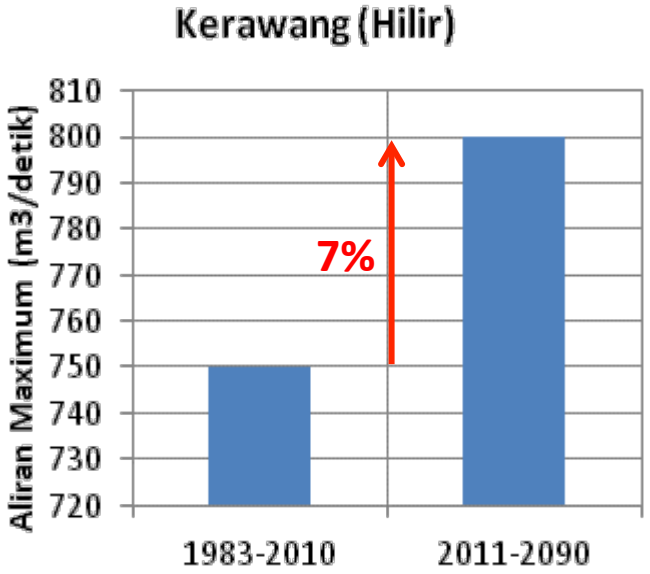
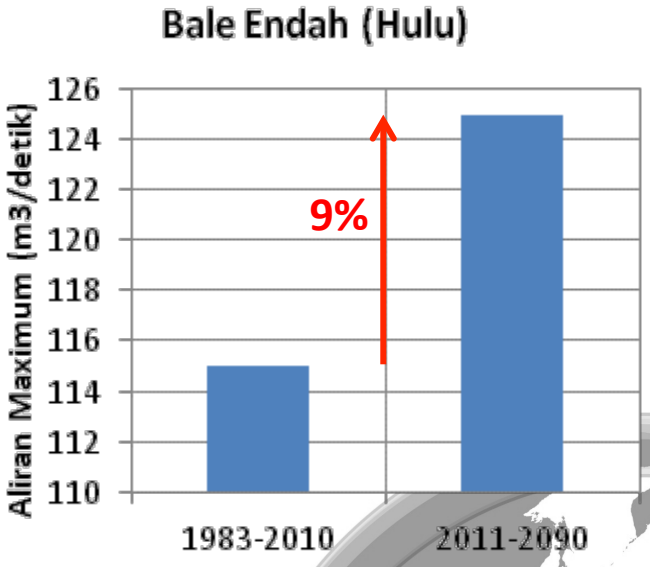
CITARUM AS NATIONAL PRIORITY RIVER

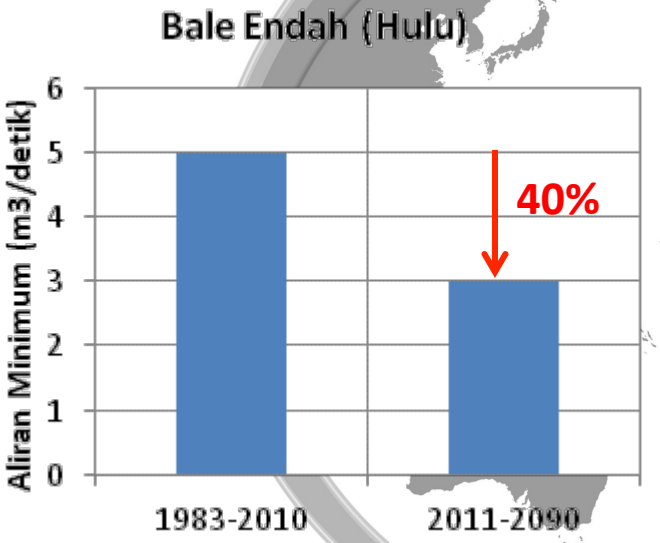
- Biggest and longest river in West Java: 269 km^2, covering 11 administrative areas
- 3 Cascade Reservoirs: Total vol. 7,650 Mil m^{3}y^{-1}
- Electricity Output: 1,400 MW
- Irrigation Source: 420,000 ha
- 80% Source of Water Supply for Capital City (Jakarta)
- The CRB is now already exposed to multiple hazards such as floods, drought/water shortage, land slide, high sedimentation, water pollution etc.
- Climate change and uncontrolled land uses will exaggerates these problems

Change of maximum and minimum flows in upstream and downstream of CRB





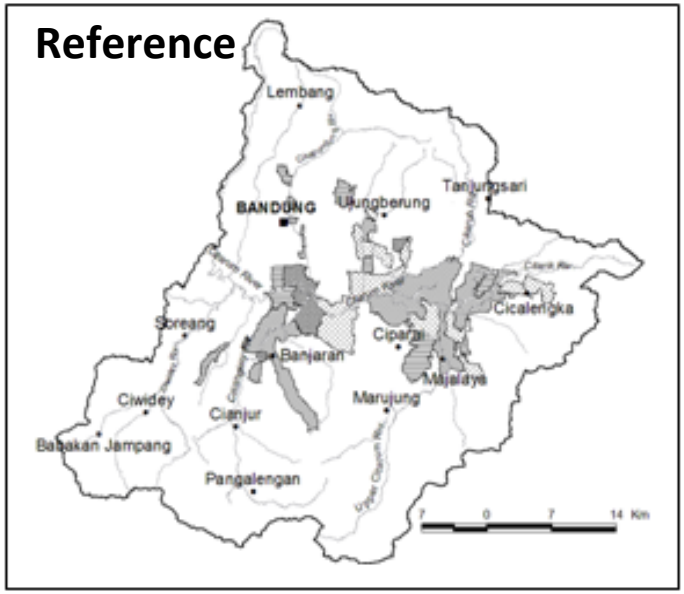
Climate change will increase maximum flow in the upstream and downstream by about 9% and 7% resp. and reduce minimum flow by about 40%, exaggerating flood and drought problems

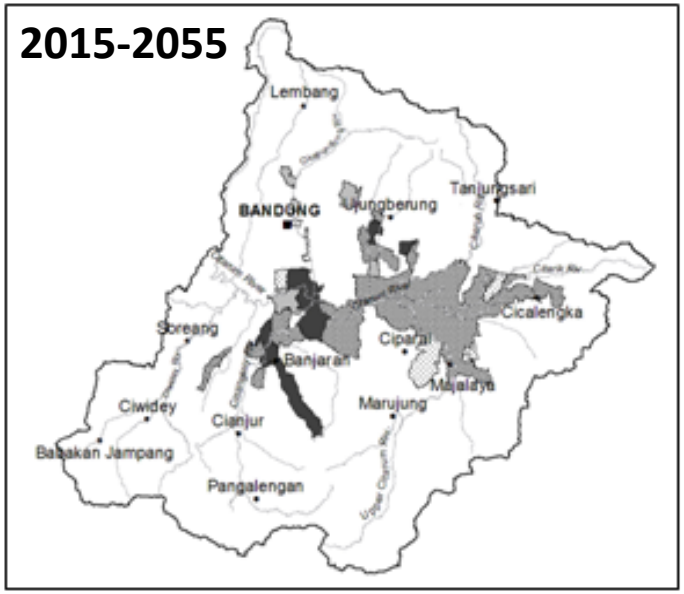


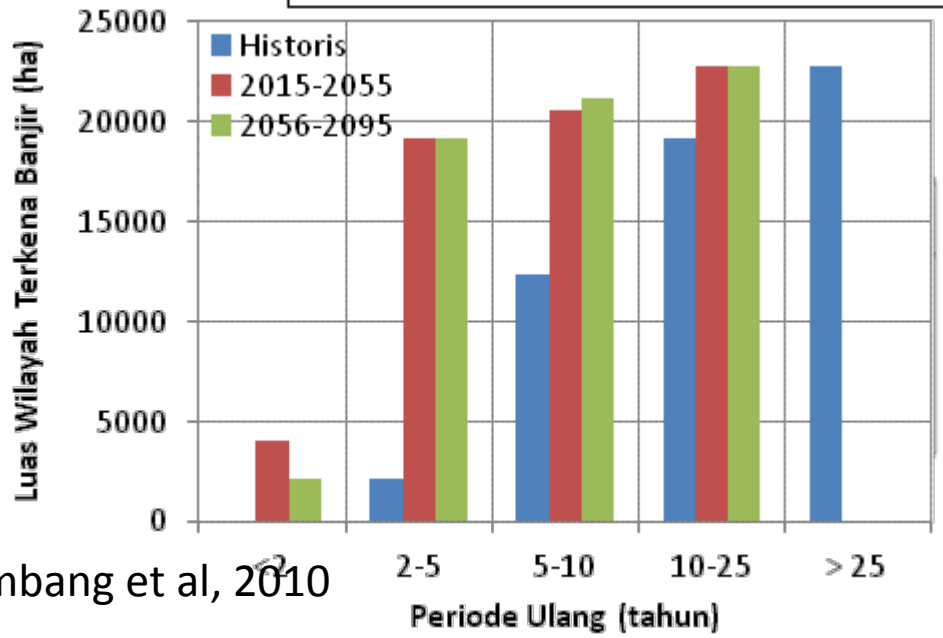
Suharnoto et al, 2012

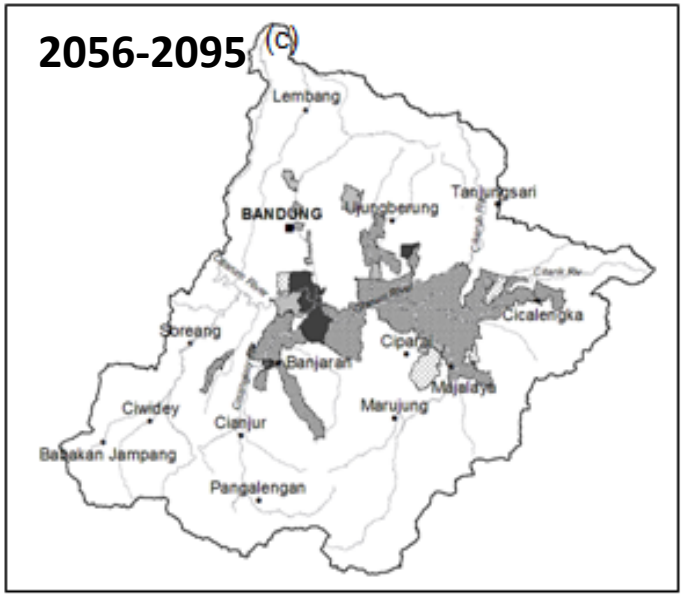
Impact of Climate Change to Flood Frequency in Upper Citarum

Return period of the flood inundated an area of 22.725 hectares covering 79 villages on around Upper Citarum will be increased



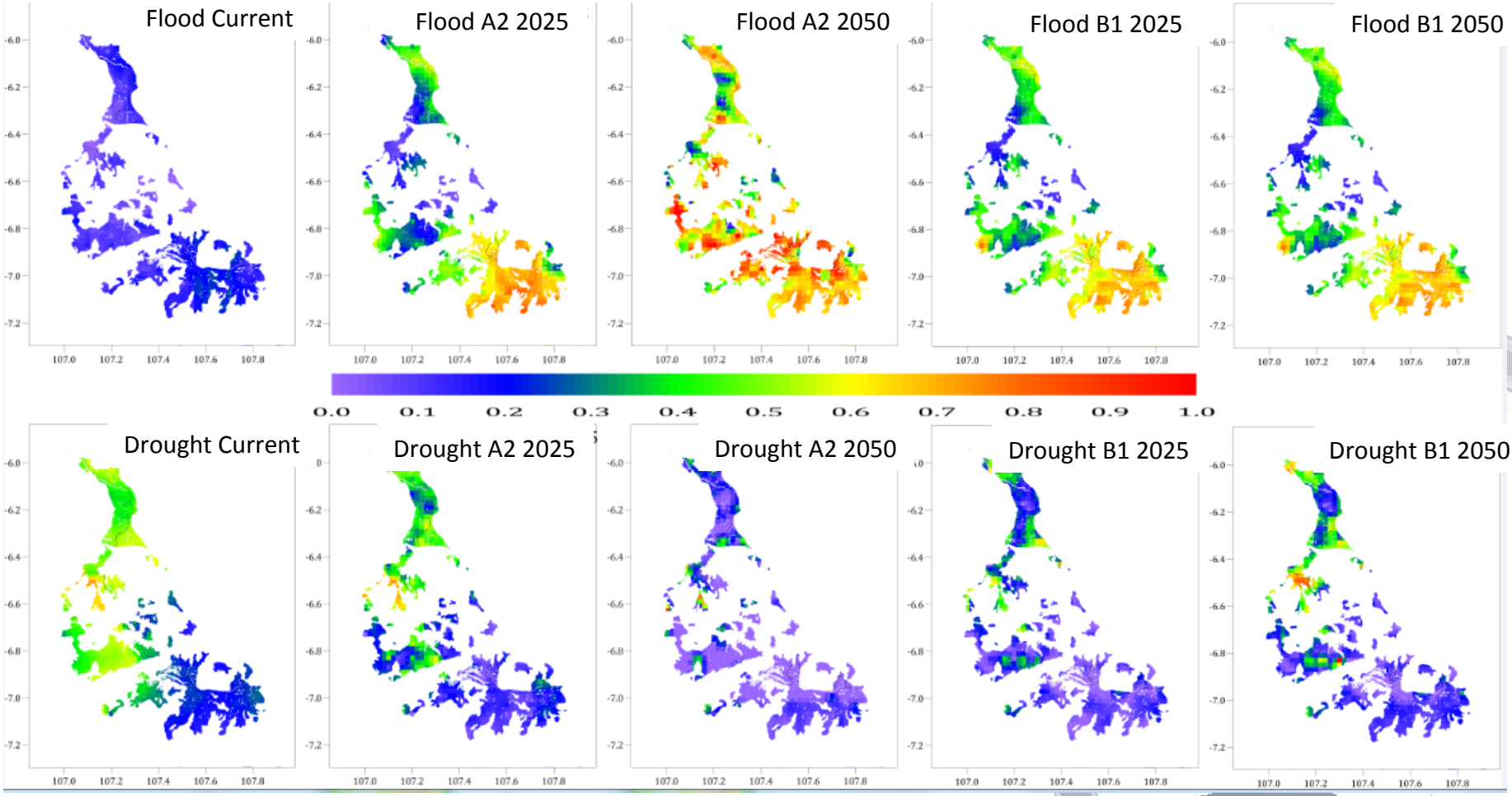






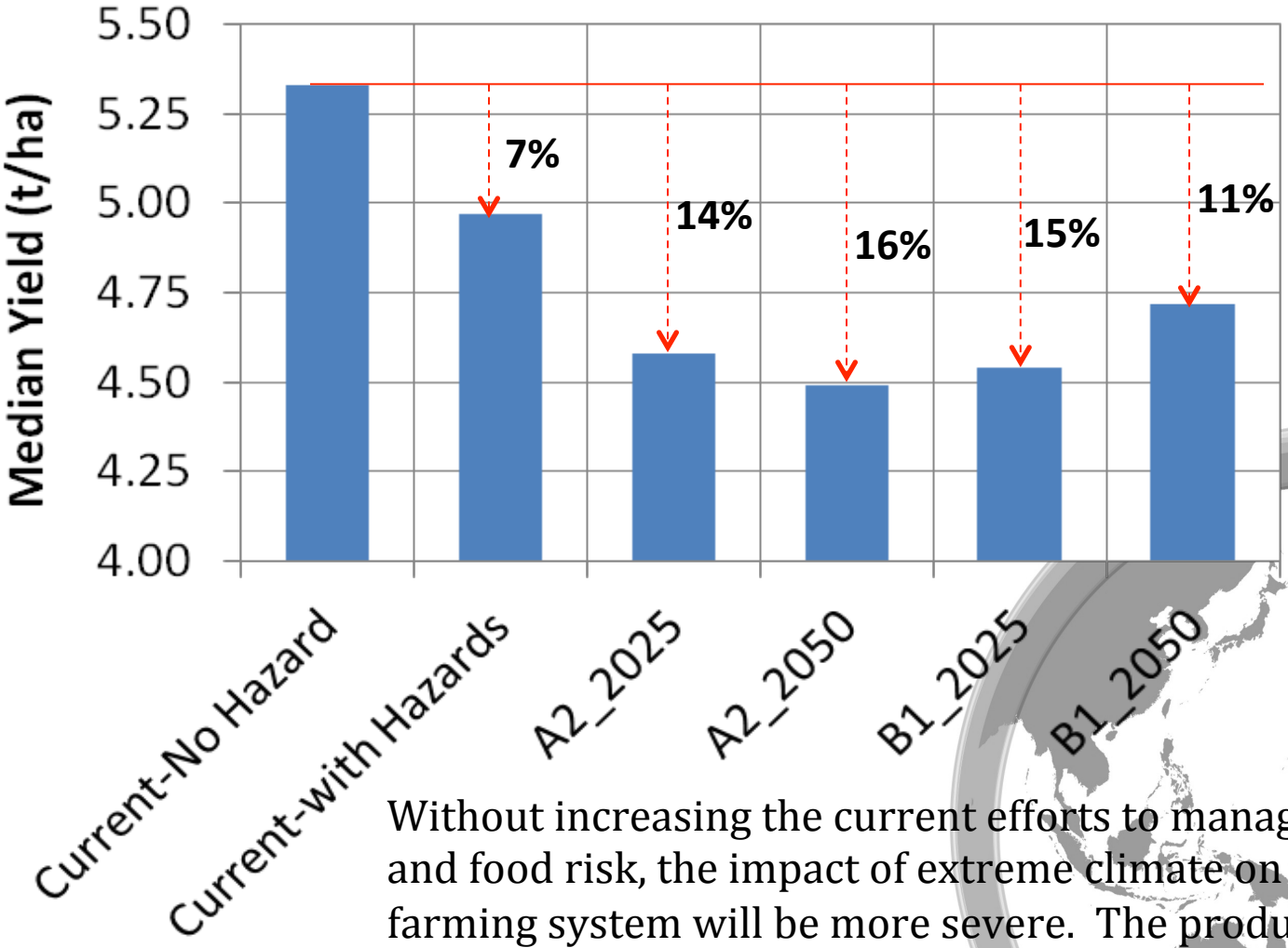
Bambang et al, 2010

Changes of Flood and Drought Risks in Rice Paddy Area due to Climate Change (No Change in Land Use)



Boer et al, 2012

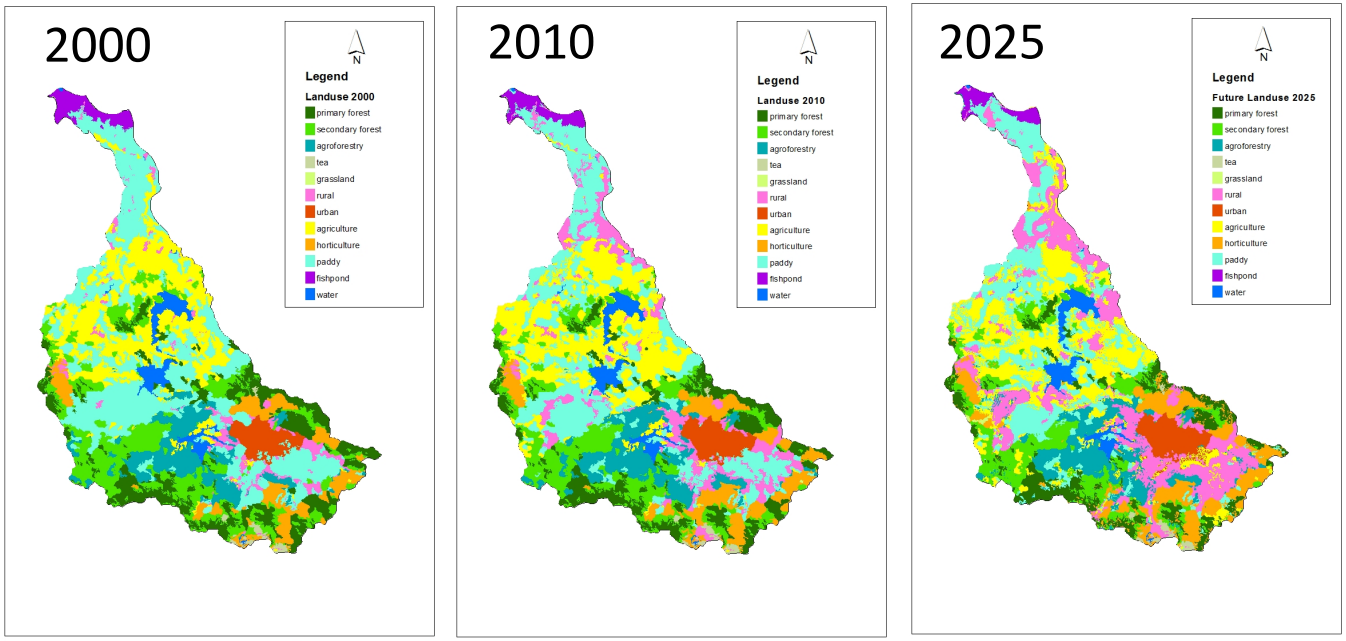
Implication of Changes in Flood and Drought Probability on Rice Yield at CRB



Without increasing the current efforts to manage drought and food risk, the impact of extreme climate on rice farming system will be more severe. The production loss will be doubled. Need to increase financial sources and efficient use of fund (right location, timely etc), to optimize the use of available financial resources

Boer et al, 2012

Land Use 2000 & 2010 and Projected Land Use 2025



secondary forest
agroforestry
tea
grassland
rural
urban
agriculture
horticulture
paddy
fishpond
water

Changes between 2000 and 2025:

- Settlement: increase 4000 ha/year.
- The forest cover lost: ~2500 ha/year
- Conversion of rice paddy area: ~2600 ha/year (Note: agriculture area (non-rice) increased

- INCONSISTENCY BETWEEN **CURRENT LAND USE** AND **GREEN WEST JAVA PROVINCE POLICY**: **32%** (MOSTLY IN CROP LAND)
- INCONSISTENCY BETWEEN **PROJECTED LAND USED (2025)** AND **GREEN WEST JAVA PROVINCE POLICY**: **57%** (MOSTLY IN CROP LAND & SETTLEMENT)

Ardiasyah et al, 2012

Best Practices

- Government and stakeholder in CRB has set up institutional mechanism facilitating various stakeholders in the CRB to improve coordination and synergism in implementation of program called SPOKI (Synchronization and Optimization of Collaboration across Institutions)
- Multi stakeholder collaboration for supporting community in improving watershed condition through the development of green productive area (effective in reducing inconsistency of land use and land use plan) – still needs enhancement

INSTITUTIONAL DEVELOPMENT STEP AS SYSTEM TO BUILD SOCIAL RESILIENCE

SUSTAINABLE OF GREEN PRODUCTIVE AREA

INFRASTRUCTURE / TECHNOLOGY

FINANCING

PARTCIPATORY DIALOG FOR LAND USE PLANNING

COLABORATIVE MULTI STAKEHOLDERS FOR AREA DEVELOPMENT

FACILITATING/ EXTENSION

CAPACITY BUILDING

COMMON UNDERSTANDING

Epilogue: Lesson Learnt

- Climate risk and vulnerability assessment have been considered critical
  - to assist local governments to better understand potential impact of climate change and land use change on the sustainability of the watershed in proving environmental services
  - to assist local stakeholders in defining prioritized actions toward climate resilience watershed system.
- The presence of an institution that can facilitate and coordinate all stake-holders (Governments, private, NGOs) in CRB to synergize and/or integrate the implementation of climate change action plan is importance
- System for monitoring and evaluating (**MONEV**) the effectiveness of climate change action plans to bring watershed to be more climate resilience is also required.

Thank You