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Strategies for Attaining Sustainability and Resilience in Watersheds

Rex Victor O. Cruz[1]

Any system that is robust or healthy can adapt to climate change. For a watershed to be resilient to climate change, it should thus be properly managed. The ecosystems and resources in the watershed must be conserved, the forests restored, and proper land uses implemented.

Hence, attaining sustainability and resilience in a watershed requires effective governance. Decision support systems should be in place, and policies should be effective. Moreover, there should be capable actors and players. Planning, implementation, and monitoring must likewise be improved.

Strategies toward Sustainability and Resilience

1. ***Promote science-based management of watersheds and science-informed policies and programs.*** All management and policy decisions must consider sustainability and resiliency of water as primary decision parameter. Interventions, in this respect, can include:

   - Supporting long term research, development, and technology transfer programs to strengthen the foundation for better decisions;
   - Establishing a network of learning watersheds in strategic locations as regional focal avenues for research and capability building programs;
   - Developing decision support system including long-term monitoring, accounting, and valuation of watershed resources and services;
   - Engaging local government units (LGU) in environmental monitoring;
   - Implementing policy studies and development in the areas of rules governing the roles of various stakeholders, state and non-state-driven governance, and decentralization; and
   - Implementing a communication program to bring research outputs to policy makers and managers using multimedia with the aim of informing, educating, and transforming mindsets and values of stakeholders, thereby provoking them to take appropriate action.

2. ***Enhance the ability and transform the mindsets of watershed managers and planners.*** This could be done through the following:

   - Enhancing information, education, and communication directed to multiple audiences;
   - Strengthening formal education (i.e., institutions and programs) to produce more specialists;
   - Enhancing the capability and transforming the mindset of LGUs as providers of basic services and technical

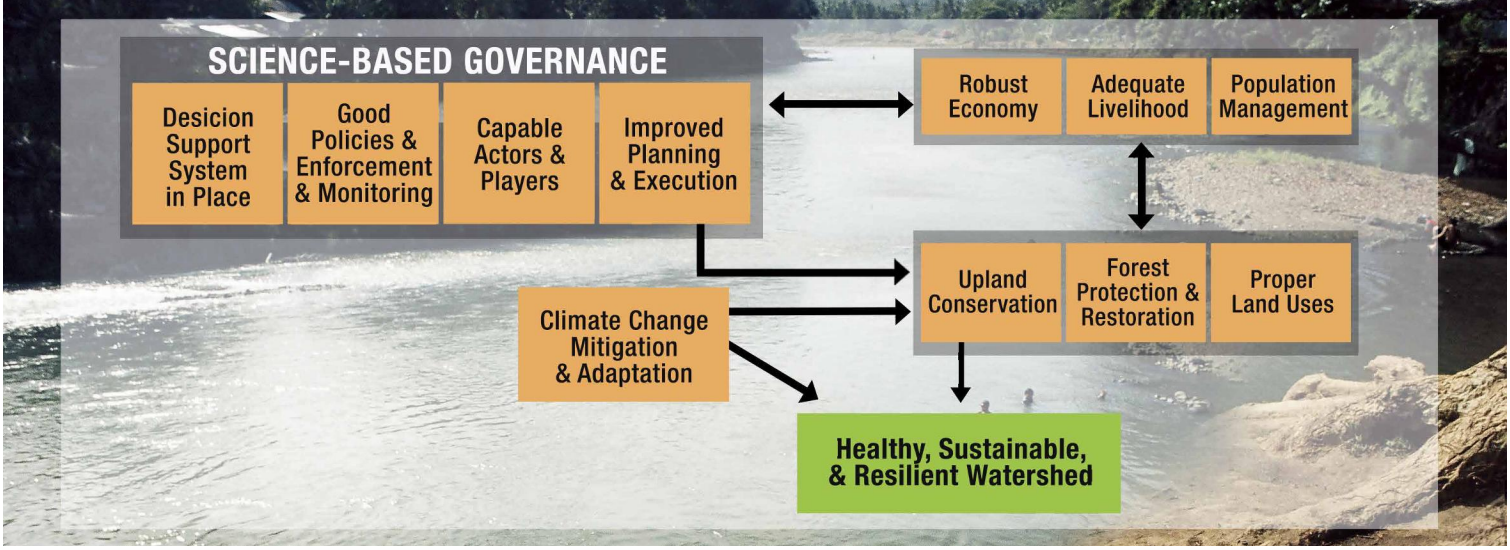

Figure 1. Framework for attaining sustainability and resilience through improved management and climate change adaptation

assistance to watershed dependent communities, comprehensive planners, local watershed law makers, and law enforcers and monitors;

- Improving the capability and transforming the mindsets of local communities as responsible watershed managers in the production/plantation and protection of forests, planners and implementors, and entrepreneurs;
- Enhancing the capability and transforming the mindsets of the private sector as responsible watershed managers in the production/plantation and protection of forests, comprehensive planners and implementors, and co-managers with the local communities and other stakeholders; and
- Enhancing the capability and transforming the mindsets of policy makers as science-based policy makers, science-based program advocates who believe it is good politics, and policy makers who understand the value of investing in projects that yield outputs beyond their term.

3. ***Develop and implement an integrated watershed management plan.*** This entails unifying the stakeholders such as the LGU, farmers, the academe, researchers, fisherfolk, and private sectors; implementing the landscape approach in watershed management; harmonizing the functions of various agencies; integrating and synchronizing the plans and programs in watershed management; and unifying all local land use and management plans.

4. ***Restore degraded forests.*** Restoration should be science-based (i.e., initiatives should be suitable with the species within the site) and with multiple outcomes (e.g., resilient water, poverty eradication, biodiversity conservation, climate change adaptation, and disaster risk reduction). This is made possible through the classification of degraded forests for restoration and the production of adequate quality planting materials.

   The production of adequate quality planting materials is done by: (1) assessing ecophysiological and silvical behaviors of indigenous and exotic species to facilitate the selection of species suitable to specific areas and restoration activities, (2) establishing a tree selection program, (3) and implementing a system for inspection and certification of quality seeds and other planting materials.

5. ***Adopt LGU-led upland conservation.*** This can be done through conservation farming and by strictly enforcing and monitoring compliance to environmental laws.

6. ***Implement climate change adaptation.*** This can be done by assessing watershed vulnerabilities and adaptation to climate change as influenced by other natural and human stressors.

Figure 1 shows how the abovementioned strategies could lead to healthy, sustainable, and resilient watersheds.

Making watersheds sustainable and resilient to climate change is not an easy task. However, with appropriate decision systems, good policies, effective enforcement and monitoring, capable actors and players, and improved planning and execution, it is possible. To ensure the sustainability of watersheds and their resilience to climate change, it is important that all systems are in place and appropriate interventions are implemented.

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[1] *Dr. Rex Victor O. Cruz is Professor at the College of Forestry and Natural Resources, University of the Philippines Los Baños.*

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SOUTHEAST ASIAN REGIONAL CENTER
FOR GRADUATE STUDY AND RESEARCH
IN AGRICULTURE
College, Laguna 4031, PHILIPPINES
Tel +63 49 5362287; 5363459 | Fax +63 49 5367097
www.searca.org | post@agri.searca.org