From Soil to Land and Water Resources Research: A Step Towards Integrated Watershed Management

D.J. Bandaragoda[1]

Watershed Management and Development

Watershed management has been invariably defined as "the approach or process of establishing an enabling environment for the sustainable use of natural resources, especially land and water resources, to address the twin objectives of resource conservation and food security". With the ultimate goal of sustaining the development of watersheds, the strategy has undergone changes through time.

In the past, watershed management had been strongly identified with forest management and rehabilitation, and the planners were preoccupied primarily with securing water supplies and/or minimizing downstream damage by sedimentation and flooding. Integrated watershed management and development has now evolved as a development intervention framework facilitating the sustainable utilization of natural resources and producing various services as required by the policies and priorities of the countries and the local population.

The International Water Management Institute (IWMI) has been implementing soil erosion management research and extension projects on sloping lands in Asia. The activities have evolved from a simple evaluation of soil conservation technologies to managing soil erosion at the catchment scale and the promotion of the technologies at the community level. It is believed that this direction is a step towards integrated land and water management and ultimately to a holistic approach to watershed development.

MSEC as a Catchment Research Project

Soil erosion is considered a major cause of land degradation and quite a few studies have been conducted to address the problem. The challenge for catchment research is to generate technologies and management systems that are widely accepted and sustainable over time. This has been the major task of the Management of Soil Erosion Consortium (MSEC) project with major funding support from the Asian Development Bank (ADB).

MSEC uses a network approach for the organization and implementation of soil erosion management research at the catchment level. The approach provides a mechanism for different scientists and research institutions to work together in a coordinated and participatory mode. As mentioned, the unit of analysis is the catchment level, to be able to capture both the on- and off-site effects of erosion. Research planning and implementation is undertaken through consultation among concerned NARES, IARCs, ARIs, NGOs, and farmers.

---

[1] Director, International Water Management Institute (IWMI), Southeast Asia Regional Office, Bangkok, Thailand

The NARES play the central role in the consortium, particularly in the participatory research, but with a broad responsibility for underpinning applied and strategic research as well. Typically in catchment research, partnerships play a vital role, and the efforts made so far in the MSEC project have shown their positive impact.

The Role of IWMI

In April 2001, the International Board for Soil Research and Management (IBSRAM) ceased to exist but its projects continue as part of IWMI's science program. The IBSRAM staff have become part of IWMI's new Southeast Asia Regional Office based at Kasetsart University in Bangkok, Thailand. This work includes the supervision of MSEC and serving as the executing agency for the ADB-RETA 5803 (Catchment Approach to Managing Soil Erosion in Asia).

IWMI greatly values the network tradition inherited from IBSRAM, and the opportunity of being able to collaborate with such experienced research partners. While IWMI serves as the consortium secretariat and facilitator, IWMI also has an important responsibility to ensure good quality research in MSEC's activities. To strengthen this relationship, IWMI has embarked on establishing appropriate institutional linkages with the partner countries, other international centers and advanced research institutions. At this point, I would like to mention the close partnership that we are further strengthening with IRD, the French Institute of Research for Development. IWMI is committed to supporting their work and anticipates a stronger synergism and complementation. In fact, we look forward to establishing sub-regional offices in Laos and Vietnam where the group is mainly concentrated, in addition to Thailand.

IWMI, being one of the 16 centers of the Consultative Group on International Agricultural Research (CGIAR), is basically a research organization. IWMI's mission is to improve water and land resources management for food, livelihoods and nature, and in this respect, IWMI conducts a worldwide research and capacity-building program to improve water and land resources through better technologies, policies, institutions, and management.

IWMI has chosen five research themes as its key instruments to address the need for strategic priority setting in the institute and to assure thematic integration of the research agenda across physical locations. The five themes are:

1. Integrated Water Resource Management for Agriculture;
2. Sustainable Smallholder Land and Water Management Systems;
3. Sustainable Groundwater Management;
4. Water Resource Institutions and Policies; and
5. Water, Health and Environment

The MSEC activities are mainly associated with Theme 2. Research under this theme concentrates on identifying the promising smallholder innovations and evaluating them together with partners to understand how they work and what their impacts are. It seeks to understand the conditions under which the high potential smallholder practices are viable, and then support their uptake in developing countries and regions.

Looking Forward

The first phase of the ADB-supported MSEC project has ended. Under IWMI's management, the work on catchment management will remain as a major research concern, particularly in

Southeast Asia. And, as we envision a much bigger umbrella program on catchment research, we anticipate a much strengthened program with the integration of land and water management concerns. This integration is the very essence of IWMI's proposal for a second phase of MSEC submitted to ADB and other donors for funding consideration.

Notably, most CG centers like, CIAT, CIFOR, ICRAF, ICRISAT, IFPRI, IRRI, and IWMI have recognized the value of carrying out research on and in catchments. IWMI expects that the outputs of the present catchment research will provide valuable inputs to scale up the application of research results and technology options to much larger catchments and to the bigger river basins that we are involved in.

Very recently, the CGIAR approved the proposal on the Global Challenge Program on Water and Food which IWMI leads. The Global Challenge Program is a new initiative of the CG system that aims to catalyze effective and efficient improvements of water productivity in food production in a way that favors the poor and is gender-equitable and environmentally sustainable. At the basin level, water productivity needs to be understood in the widest possible sense – including crop, livestock, and fishery yields, wider ecosystem services and social impacts such as health, together with the systems of resource governance that ensure equitable distribution of these benefits. The program is structured according to a number of interacting modules, which are:

- Improving the efficiency of water use in agriculture, via increased crop water productivity;
- Management of upland watersheds for multiple functions;
- Management of aquatic ecosystems and wetlands;
- Policy and institutional aspects;
- Interaction among the four themes.

The second module bears the greatest relevance to watershed management. Upper catchments present a diffuse spectrum of challenges to improving the management and use of water. The complexity of the challenges can be summarized in three phrases that represent different facets of the problem, namely: water and livelihoods, catchment hydrology, and social organization. The major focus of the research will be on: 1) water and poverty in upland watersheds, 2) identifying the hydrological basis for improvement, 3) realizing the increased hydrological potential in upland watersheds, and 4) extrapolation and generalization.

We therefore expect that conducting research on and in a much larger catchment than we do currently will fully capture the interactions among the on- and off-site users of land and water resources and provide a more comprehensive basis to resolve the competing demands of these users. This supports IWMI's vision of *Improving Water and Land Resources Management for Food, Livelihoods and Nature.* We hope to have a very productive collaborative program with all of MSEC's partners in the years to come.

My strong wish is that this week-long activity will be able to generate valuable information and further interest in this aspect. I take this opportunity to thank the government of the Lao People's Democratic Republic and the Asian Development Bank for supporting this event and the MSEC program in general.

Thank you.