

MULTI-STAKEHOLDER APPROACH TO WATERSHED MANAGEMENT: THE CASE OF THE SANREM CRSP/ SOUTHEAST ASIA

Romulo T. Aggangan, Rogelio C. Serrano, Vellorimo J. Suminguit, and Ma. Rowena M. Baltazar

ABSTRACT

The Sustainable Agriculture and Natural Resource Management Collaborative Research Support Program for Southeast Asia (SANREM CRSP/SEA) is a USAID funded project that aims to implement a comprehensive, farmer-participatory, interdisciplinary research, training, and information exchange program that will elucidate and establish the principles of SANREM on a landscape scale. The program used the Participatory Landscape-Lifescape Appraisal (PLLA) to understand the research priorities of different stakeholders in the Manupali Watershed. It is also a research method that allows interdisciplinary participation of physical and social scientists with farmers identifying social and environmental problems, thereby setting the agenda for research. The approaches employed in the program are focused on soils, water and biodiversity. Among the major impacts gained by SANREM since its implementation include the creation of the Lantapan Natural Resources Management and Development Plan (NRMDP), replication of the Lantapan NRMDP process, people mobilization, establishment of home gardens for biodiversity conservation, agroforestry and landcare approaches for soil and water conservation, and scaling up of activities to other Southeast Asian nations, specifically Vietnam, Thailand and China. Moreover, this paper discusses other impacts and insights of the program.

Keywords: Participatory Landscape-Lifescape Appraisal, Biodiversity Conservation Landcare Approach, Agroforestry Systems, Natural Vegetative Strips, Manupali Watershed, Lantapan, Bukidnon, Philippines

INTRODUCTION

Increased land use for residential and agricultural purposes made the uplands a vulnerable target of farmers for source of income and livelihood via agricultural production. This endangered the environment with forest degradation, soil erosion, water siltation and pollution, to name a few.

In response to this, the U.S. Congress created Collaborative Research Support Programs or CRSPs in 1975 under Title XII of the International Development and Food Assistance Act. The Act mandates, "improving the participation of the agriculturally related universities in the United States' governmental efforts internationally to increase world food production and provide support to the application of science to solving developing countries' food and nutrition problems." CRSPs are communities of U.S. Land Grant universities working with national agricultural research systems in developing countries, International Agriculture Research Centers, U.S. agribusinesses, private organizations, college and universities in developing countries, USAID and other federal agencies such as the United States Department of Agriculture (USDA).

In: Baumgartner, David M.; ed. Proceedings of Human Dimensions of Family, Farm, and Community Forestry International Symposium, March 29 – April 1, 2004. Washington State University, Pullman, WA, USA. Washington State University Extension MISC0526. ISBN Number 0-9721994-5-4

Policymakers and governments around the world have identified the interface between the growing demand for food and protection of the environment as the overarching challenge of the 21st century. The USAID recognized that the increased pressures on vulnerable soil, water, genetic, human and economic resources have affected food production and supply, sometimes resulting in famine and social and political unrest. The Brundtland Commission and the 1992 Earth Summit exemplified a growing awareness of these disturbing trends. In response to these compelling problems, the USAID asked the National Research Council's Board on Agriculture and the Board on Science and Technology for International Development for recommendations for action. A panel of representatives from these boards made suggestions that led to the creation of SANREM. USAID signed a cooperative agreement with a consortium of U.S. land-grant universities led by the University of Georgia in 1992 to establish a 10-year global program.

METHODOLOGY

Participatory Landscape-Lifescape Appraisal

The mission of SANREM CRSP is to implement a comprehensive, farmer-participatory, interdisciplinary research, training, and information exchange program that will elucidate and establish the principles of sustainable agriculture and natural resource management on a landscape scale.

During the early stage of the program, SANREM used Participatory Landscape-Lifescape Appraisal (PLLA) to understand the research priorities of different stakeholders in the Manupali Watershed. PLLA is a type of Rural Rapid Appraisal (RRA) that uses the landscape as a unit of analysis. It is a research method that allows interdisciplinary participation of physical and social scientists with farmers identifying social and environmental problems, thereby setting the agenda for research.

A farmer-participatory approach recognizes local knowledge of the community and facilitates the strengthening of local control over resources. The farmer participatory approach also redefines the relationship between the researcher and the farmer. Research conducted using the farmer-participatory approach accepts farmers as equal participants in the research process, as knowledgeable instructors of indigenous knowledge systems and conservative users of available resources.

The interdisciplinary approach acknowledges that the agricultural or natural resource management practices of the farm family are related not only to the natural resource base and access to technical knowledge but also to the ethnic group, class status, and gender of the resource user. Consequently, research designed to assess the impact of changes in resource management activities must recognize that complex interactions occurring at the biophysical, agronomic, economic, social, and policy levels often affect these changes.

A landscape approach acknowledges the importance of the ecological, social, economic, and political environment to the activities of the community and the farm family. It also recognizes the importance of resource flows through the landscape and between the landscape and the external environment.

The objectives of SANREM CRSP are as follows:

- Identify and describe the problems relating to sustainability using farmers' and community members' goals and perspectives;
- Identify and collate existing biophysical and socioeconomic baseline data including relevant indigenous knowledge, and determine the need for additional baseline data collection;
- Collect and integrate additional physical, biological and socioeconomic baseline data;
- Recognize and understand the cultural, socioeconomic, political and institutional framework;
- Improve understanding of important ecosystem processes and critical ecosystem linkages in a landscape setting;
- Develop and evaluate viable management strategies for achieving sustainability in agriculture and natural ecosystems;
- Promote education, training, and information exchange in sustainability issues; and
- Determine ways to influence decision-making processes.

R&D ACTIVITIES CONTRIBUTING TO WATERSHED PROTECTION AND MANAGEMENT

As mentioned earlier, researchers/research institutions in the two phases of the program have employed many different approaches. The projects or work plans being implemented in the program were generally categorized into three, 1) soils, 2) water and 3) biodiversity.

For soils, the work plans focused on sustaining commercial vegetable production, economics of sustainability and farming systems interactions in the Manupali watershed in Lantapan, Bukidnon that is the site of the SANREM CRSP SEA.

For water, the work plans focused on water resource management and education, development of sustainable production systems, optimization of land-use through water quantity and quality modeling, and automatic weather stations.

The biodiversity work plans focused on buffer zone resource management plan, ethnoecology of the Manupali watershed, community based pest management, and contribution of home gardening to biodiversity conservation and household nutrition.

The work plans were crosscutting in that they covered issues on development as well as gender, geographic information systems and data management, among others.

Major Impacts

The different SANREM work plans implemented in Phase I and are ongoing in Phase II yielded a variety of impacts as follows:

1. Creation of the Lantapan NRMDP

The development of the Lantapan Natural Resources Management and Development Plan (NRMDP) was a result of SANREM's intensive promotion for heightened awareness of local sustainability issues as well as development for new partnerships. It served as a highly effective catalyst for new partnerships among researchers, development professionals, community members and especially local leaders. Further, the NRM planning activity in Lantapan has altered governance in the municipality, with environmental concerns now high on the legislative agenda, and consultation with the community an accepted procedural mode, as demonstrated by the project-sponsored natural resource management and development (NRMD) planning process.

2. Replication of the Lantapan NRMDP Process

The Lantapan NRMDP was highly commended in that other local government units that became highly appreciative and supportive of the research validated this. The same process has since been implemented successfully in four more of the municipalities bordering the Mt. Kitanglad Range Nature Park. Thus resulting in the different municipalities' creation of their NRMDPs and municipal land use plans (MLUPs). These municipalities with their NRMDPs approved at the local and provincial levels include Manolo Fortich, Libona, Impasugong and Baungon. *Neighboring cities and municipalities are also drafting their own NRMDPs such as the City of Valencia and Municipality of Maramag.* (For verification at SCO)

Local governments have sustained NRM planning activities over a year after its initiation, even with no direct technical assistance from SANREM. A follow up survey conducted by project researchers in 2002 revealed five critical elements key to ensuring the NRM plans are put into action: the presence of local champions, continued budgetary allocations, a balance of power and responsibility, integration of the NRM plan with municipal environment and economic development plans, and a cohesive NRM council. The spread of NRMD planning has clearly led to immediate impacts in local governance. In the long-term, sustained NRM planning and implementation that will lead to a better managed natural resource base in Bukidnon province is expected.

3. Better Policy Environment

Increased capacity for policy analysis among municipal officials has improved the environment for local policy analysis, design and implementation. This is demonstrated by increased consultation and transparency in decision-making (especially as policy formulation depends increasingly on data from community-based research), adoption of consultative processes, and the increased reliance on relatively formal tools for evaluating and deciding on policy alternatives.

Policy advocacy at the national level is led by national level institutions such as the Institute for Strategic Planning and Policy Studies (ISPPS), the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD), and the Philippine Institute of Development Studies (PIDS)— each of which has its own established networks within the central government. Activities include dissemination of policy briefs to the executive and legislative branches, and presentation of research results in national level dialogues. To cite an example, a SANREM policy brief on water management was forwarded to the National Economic Development Authority (NEDA) to be used as an input for a national water summit. Recommendations presented in this policy brief were also used as input in a paper prepared by NEDA for the President of the Philippines. A more direct approach undertaken by the project through PIDS and ISPPS was the organization of a water policy forum, which brought together key policy research experts in water and watershed management. Participants to the forum included representatives from national line agencies and policymakers.

At the national level, inputs to policy debates by SANREM researchers through PIDS are paying early dividends. The SANREM policy briefs distributed through PIDS have been documented to be the catalysts for a review of policies and procedures at the National Water Resources Board. Also through PIDS, SANREM research is now reaching legislators in the national parliament through the PIDS' legislative monitoring data base, which provides lawmakers and their staff with information (including background research) pertaining to current legislative initiatives.

Finally, SANREM has also helped national researchers to package and present research results for policymakers. In the Philippines, this has been an important impact of SANREM partnership with PIDS. In Vietnam, the same process has just begun, with two workshops in 2001-2002 bringing researchers together with communications experts and senior officials of the Ministry of Agriculture and Rural Development for the purpose of refining and targeting the policy implications of academic research.

4. People Mobilization

The SANREM CRSP Southeast Asia also contributed to watershed management and protection through local community development with its participatory research process via people mobilization, local capability building, and community organization coupled with heightened environmental awareness. The community groups that have become partners of the project have no less become advocates, trainers, and resource persons. The spread of their work is notable nationally and even internationally. Increased awareness and knowledge of local environmental issues have inspired these community groups to advocate for sound environmental projects and to participate in local policy dialogues. This also comes with their ability and ease to use information based on research. The Tigbantay Wahig members, for example, used data that they themselves collected to warn municipal officials of the gradual degradation of the river systems.

Improved human capacity has led to the creation or strengthening of local organizations and institutions. In the case of Lantapan and other municipalities in the country, members involved in water quality monitoring, agroforestry research and other NRM related activities have organized themselves as formal groups.

The promotion of agroforestry systems technology as part of SANREM work plan as implemented by the International Centre for Research in Agroforestry (ICRAF) gave birth to the Agroforestry Trees Seeds Association of Lantapan (ATSAL). Agroforestry refers to the harmonious combined culture of agricultural crops with woody perennials over a given area to meet the socioeconomic and ecological needs of the community.

Local farmers were inspired to organize themselves into a seed production association following their participation in a SANREM-facilitated workshop on tree seed collection, handling and diffusion practices. Starting with only nine members in 1998, ATSAAL now boasts of more than 65 members. In addition, it has women groups that are active in the association's undertakings such as tree seed collection and nursery management, among others.

SANREM's training initiatives on conservation farming and multiple cropping practices, identification, collection and processing methods and techniques of quality tree seeds, and decentralized nursery establishment and management benefited the ATSAAL members. They now earn more in cash and conserve genetic resources compared to the past when they solely depended on corn farming without taking any measures to check soil erosion. Applying what they learned, the association so far earned about P2 M with 70% of the income going back to the members, 10% as a revolving fund for the association, and 20% for marketing expenses.

From its establishment, ATSAAL has scaled up its activities in less than a year to the municipal, provincial, national and even international levels. Hence, farmers' lives were improved while the environment is being conserved and protected.

Likewise, a SANREM trained water quality monitoring teams created a community water watch group mentioned earlier, the Tigbantay Wahig (Water Watchers). Their goal is to improve their ability to inform the community and influence local policy on matters of water quality. To date, the Tigbantay Wahig continues to

monitor and evaluate water quantity and quality in the Manupali and even to other provinces. Their membership also continues to increase. Another group inspired by the Tigbantay Wahig was formed, the Maitum Munong El in Sarangani Province. Results of their environmental monitoring are inputted to local policy development and action oriented programs.

The Tigbantay Wahig's efforts, which are all voluntary, were rewarded when the Municipal Government of Lantapan, having heard the group's presentation on their accumulated data, considered it for high priority action.

The SANREM program also concentrates on contributing to the education of the next generation of scientists, planners and policy makers. These are being achieved through the implementation strategy and specific activities undertaken by the program such as sustainable agriculture and natural resource management research, capacity building and training, and regional networking and information management.

5. Home Gardens for Biodiversity Conservation

The introduction, through the project, of alternative land management practices in Lantapan, including low-cost conservation structures and integrated vegetable and agroforestry systems, has resulted in agricultural diversification and the conservation of soil resources. In Lantapan, for example, one can now observe greater diversity of tree species and vegetable farms across the landscape than a decade ago.

In situ collection of culturally significant plants was established in three public schools with the collaboration of administrators, teachers, pupils, and parents. Communal gardens of food, medicinal fiber, and ritual plants were established in the Tulogan (the Talaandig sacred grounds) around the School of Living Traditions.

6. Dissemination

SANREM is first and foremost a research project, and the primary means for dissemination of findings are the standard outlets for such research: peer-reviewed journal articles, books, acceptance of papers for presentation at national and international conferences, and publication of findings in numerous less formal and more popular outlets. SANREM has organized and gathered international scientists and researchers, including its own pool of scientists, through the conduct of international conferences: one in May 28-30, 2001 and one just this year, January 13-14. Its achievements in these areas are documented in annual reports and on the project web site.

The project has also made good on its promise to feed back research results to the Lantapan community. A SANREM coordinated Lantapan Farmers' Technology Forum has been conducted twice in Lantapan – February 2002 and January 2004. The activity has successfully disseminated mature technologies and research results from various projects in Lantapan to the farmers and community, as a whole. Numerous informal gatherings, called *kapihan* ("coffee meetings") and *pulong-pulong* (dialogues), have also been organized to facilitate local level reporting and sharing of research results and to provide a venue for researchers to interact with a municipal level audience, including many participants not directly involved in project activities. The *kapihan* were also held at the provincial level, bringing in a geographically and politically broader audience, such as municipal planners and other provincial and in some cases regional (sub-national) level policymakers. SANREM researchers, including community members, have also participated in government-sponsored conferences and technical working groups addressing provincial environmental issues. These face-to-face strategies for information dissemination and exchange

not only facilitated understanding on the project's mission, but more importantly have helped create awareness on pressing local environmental issues.

7. Landcare

Landcare approach is a growing movement in soil and water conservation for improved crop productivity in Mindanao, Southern Philippines as promoted by the International Centre for Research in Agroforestry (ICRAF) under SANREM CRSP/SEA. The approach originated in Australia and involves aggressive community organizing and networking coupled with strong information, education and communication (IEC) campaign and technology transfer. This approach promotes love and care for the land both as a personal conviction and lifestyle. It links and rallies different local groups and sectors for the cause of sustainable productivity of agriculture and natural resources.

Aside from strategic skills development, Landcare promotes practical technologies like the natural vegetative strips (NVS), agroforestry and tree farming. Natural vegetative strips consist of naturally growing grasses like *Imperata cylindrica* and *Saccharum spontaneum*. NVS functions like the double hedgerows in sloping agricultural land technology (SALT). It arrests eroding soil and through time causes the formation of terraces, which make crop production more suitable with better yield.

The Landcare approach was initiated in Mindanao in 1998 and today there are over three thousand community organizations involved with it and who are employing soil and water conservation practices for sustained agricultural productivity in the Manupali watershed, in particular and in the Mt. Kitanglad Range.

8. Complementarity with bilateral programs, and benefits to the U.S.

SANREM's work in Southeast Asia also continues to strengthen links between U.S. research institutions and their counterparts and clients in the region. This benefits the U.S. institutions through student training, faculty involvement in international experiences and opportunities for policy-relevant applied research. The research site serves as a research laboratory for U.S.-based graduate students to gain experience in environment and natural resource management. Graduate students conduct on-site research or work on research activities led by U.S. and Philippine-based researchers affiliated with the project. They gain valuable knowledge and skills in addressing environmental issues in the U.S. and abroad through the development of innovative research methodologies.

In addition to graduate training, the program has enhanced capacity for conducting multidisciplinary research using the landscape as a unit of analysis. The dynamic simulation modeling method, for example, is applicable to a wide range of topics.

U.S.-based project researchers have also served as resource persons in various international research and development courses and programs.

Impacts and Insights

SANREM CRSP Southeast Asia had its Phase I implementation from 1993 to 1997 and is currently in its sixth-year extension under Phase II implementation. The lessons gained from SANREM CRSP Southeast Asia implementation particularly to watershed management and protection include the following:

1. Participatory approach to research design and implementation is an effective means to transfer information and technology to and among farmers.

2. Solutions to agricultural and NRM problems are not necessarily confined among scientists. These could come out from the farmers themselves given the proper venue and atmosphere.
3. Landscape-lifescape approach to R&D humanizes the technology generation and transfer process while enhancing friendliness to the watershed environment.
4. Interdisciplinary and intersectoral teamwork is rather difficult, time consuming and costlier, but the result is holistic and more long lasting.
5. The local government unit can be effective in NRM so long as they are properly motivated, trained and technically assisted.

REFERENCES

- Coxhead, I. and G. Buenavista, (Eds.). 2001. Seeking sustainability: Challenges of agricultural development and environmental management in a Philippine watershed. Los Baños, Laguna, Philippines: PCARRD. Pp. 258-262, 265-267.
- Fact Sheet. SANREM CRSP. Watkinsville, Georgia, USA.
- Nazarea, V.D., R. Rhoades and L.E. Burton. 1997. Ethnoecology of the Manupali Watershed: Phase I Report. SANREM CRSP/ Southeast Asia.
- Neely, C., G. Buenavista and J. Earl. (Eds.) 1998. Looking back on the landscape: Impacts and lessons from the SANREM CRSP. Watkinsville, Georgia, USA: SANREM CRSP.
- SANREM CRSP/SEA Update. ATSal-Uplifting Lives While Protecting the Environment. Vol.1 No.2, Oct 2000-Jan 2001, p.1&4.
- SANREM CRSP/SEA. 2003. Five Year Report. pp. 5-14.
- Serrano, R.C. Sustaining Productivity of Upland Agriculture in the Philippines: Experiences, Policy Linkages, Impacts and Lessons Learned. Paper delivered at the International Seminar on Integration of Agricultural and Environmental Policies in an Environmental Age held in Seoul, Korea on August 20-25, 2001.

AUTHORS

Romulo T. Aggangan
Forestry and Environment Research Division
PCARRD
Los Baños, Laguna
Philippines
Phone: 63 49 536 0014 to 536 0020;
Fax: 63 49 536 0016 or 536 0132
raggangan@yahoo.com or r.aggangan@pcarrd.dost.gov.ph,
pcarrd_sanrem@yahoo.com, rowillennium@yahoo.com

Rogelio C. Serrano
Eco-Governance Project
2nd F, Zuraek Bldg.
Little Pillars Child Formation School
Cor. Manzano and Bonifacio Sts.
Solano, Nueva Vizcaya,
Fax: 63 78 326-5878
roger_serrano@dai.com

Vellorimo J. Suminguit
SANREM CRSP/SEA Site Coordination Office
1F Caracol Bldg., Capitol Road
8700 City of Malaybalay, Bukidnon,
Philippines
Phone: 63 88 813-3229; Fax 63 88 813-4462.
sanrem@philcom.ph

Ma. Rowena M. Baltazar
Forestry and Environment Research Division
PCARRD
Los Baños, Laguna
Philippines