

Chapter 8: Implementing a Participatory Natural Resources Research Program

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Implementing a participatory natural resources research program proved to be a great challenge for the SANREM CRSP. At the time the program was initiated, no established model existed that researchers could use to successfully carry out an integrated, interdisciplinary research in agriculture and natural resource management. “This was the beauty and challenge of implementing SANREM,” the program administrators confidently declared. SANREM had the flexibility to be self-correcting and to consistently tune in to the processes developed in the field.

In the absence of a model, SANREM adopted a set of cornerstones or guiding principles, which elucidated and established the approach that would be taken to conduct research on sustainable agriculture and natural resource management at a landscape scale (SANREM CRSP n.d.: 3).

In the first section of this chapter, we show that these cornerstones provided the practical approach for guiding SANREM’s research in the Southeast Asian region during Phase I. In the second section, we present a brief discussion of the other issues that further shaped research activities and direction. We will address the following questions: How did the cornerstones shape the research process? Did these cornerstones lead to the generation of methodologies to better understand landscape interactions?

Foundations: Defining and Implementing the Cornerstones

As mentioned in Chapter 1, the SANREM program is built on principles of participation, inter-institutional collaboration, landscape/lifescape focus, and interdisciplinary research. The initiation of SANREM research and other activities was preceded by efforts to define these cornerstones

in ways that had meaning in the Philippine context. Discussions on this point helped to define SANREM's overall approach as well as to generate a broad set of guidelines for the design and implementation of research. In the rest of this chapter, we summarize the product of those discussions. Rather than presenting a comprehensive review we focus on areas in which insights with potential value to other projects emerge.

Participation

Participation has become a key concept in developing country research and development programs. Although participation is sometimes dismissed as merely a buzzword to legitimize programs involving local communities, when it provides meaningful partnerships in research, it is a very valuable concept. In agriculture, farmer participation is perceived as the key to improved research effectiveness in the developing world (Okali *et al.* 1994). The implementation of farming systems research (FSR) projects in the 1970s popularized participatory on-farm research. Despite numerous reports and anecdotal success stories, the early FSR approach was criticized for being technology-focused and commodity-oriented, for its lack of attention to policy issues and socioeconomic differentiation within communities, and extractive and disempowering (Farrington and Martin 1988; Biggs and Farrington 1991; Jiggins 1984; Okali *et al.* 1994; Chambers 1992). Dissatisfaction with the level of farmer participation in farming systems research inspired the creation of alternative approaches such as “farmer participatory research” (Okali *et al.* 1994), “farmer-back-to-farmer model” (Rhoades and Booth 1982), “farmer first and last” (Chambers and Ghildyal 1985), and “beyond farmer first” (Scoones and Thompson 1992). All of these approaches promised a deeper involvement of farmers and other participants in the research process, transforming them from information providers to collegial partners.

Participatory Research in Action

SANREM designers appropriated the idea of a participatory research approach that places the farmer at the center of the research process. The program's original proposal to USAID acknowledged the challenge posed by Chambers (1983) to put the people who are traditionally last first (SANREM n.d.). SANREM adopted the “farmer-back-to-farmer” model (Rhoades and Booth 1982) as the template for implementing a participatory research program. To accommodate a diverse range of participants, “farmer” was replaced by a more inclusive term, “end-users”. This

semantic shift acknowledged that other actors from the project site and beyond would be involved in research directly or indirectly as users of information and other outputs generated by scientific investigation. Such inclusive definition of participation also recognized that participants have different capacities and strategic roles critical in specific stages of implementation, from diagnosis to design of potential solutions, evaluation of the appropriateness of a technology and the application of research information within and outside the boundaries of the research site. The enormity of the task demanded building partnership with institutions that possess extensive experience in community organizing and facilitating participatory research.

Whose view of participation?

SANREM designers sought collaborative partnerships with universities, international agricultural research centers and, particularly, with private voluntary organizations (PVOs) and non-government organizations (NGOs), widely known for their expertise in grassroots mobilization. These partnerships greatly influenced the manner by which participatory research was realized at the field level. While researchers from academic and research institutions and representatives from development NGOs generally agreed on the principle of involving community members in the research process, they diverged in their definitions of participatory research. Debate centered on the question: *should participatory research seek to address a broader development agenda or should it strictly focus on addressing a defined research question?* The NGOs were committed to community organizing, empowerment, and building strong community-based institutions as the foundation for participatory research. However, the level of commitment regarded as appropriate by the NGOs was perceived by some scientists to come with high transaction costs and to be potentially counter-productive in a scientific exercise. These differences in perspective became apparent in the research activities conducted in the Manupali Watershed. We now turn to analyzing the characteristics of participation in SANREM research projects.

How participatory were SANREM research projects?

Analytical frameworks have been developed to examine the content of participation in research and development (Pretty 1995; Biggs 1989; Deshler and Sock 1985; White 1996; Cohen and Uphoff 1980; Farrington and Bebbington 1993; MacAllister and Vernooy 1999). A representative

analysis distinguishes the different levels of participation in a project such as the framework developed by Pretty (1995:1252), which identified seven scales of participation in a development project (Table 8.1).

We adapted these frameworks to analyze the types of participation in a natural resource management research project (Table 8.2). While we use a similar set of typologies, the current framework explicitly differentiates participation by level and perception. The *level* of participation can be differentiated into two categories: passive inclusion and active inclusion. In passive inclusion, the end-users are not effectively given the opportunity to participate in research or to influence its outcome. Participation is functional, serving to achieve mainly the researchers' goals. Active inclusion, on the other hand, allows for some degree of end-user participation in the decision-making process and the attainment of both researchers' and end-users' goals. Participation is viewed as a mechanism to empower end-users. *Perceptions* of participation describe the participants' interests for participating in research. These include their motivation, roles, responsibilities and expected benefits.

The six levels of participation presented in Table 8.2 are not mutually exclusive. We introduce the category, "devolved", to stand for the highest level of participation, characterized as being group or community-based. Devolved participation involves local groups mobilizing to attain locally defined goals. This is distinctively different from contractual participation, which is focused on the individual participant or group of participants who receive remuneration in exchange for the resources that they provide to the project. As the level of participation graduates from contractual to devolved, the nature of involvement moves from being individualistic to group-oriented or community-based. Benefits from participating in a research project also shifts from one that is enjoyed individually to one that is shared by group members or across the community.

When we used this framework to analyze participation in SANREM research activities, we found that classifying projects solely by level of participation limited the depth of our analysis. For a program as complex as SANREM, one would expect to find diverse research projects led by individuals with divergent appreciation for participatory research. Some research methodologies may encourage participation while others may be restrictive. Taking these into consideration, we identified four types of research that represented our projects in the Manupali watershed. These are developmental,

Table 8.1. A typology of participation; how people participate in development programs and projects.

Typology	Characteristics of Each Type
Manipulative participation	Participation is simply a pretence, with “people’s” representatives on official boards but are not elected and have no power.
Passive participation	People participate by being told what has been decided or has already happened. It involves unilateral announcements by an administration by project management without any listening to people’s responses. The information being shared belongs only to external professionals.
Participation by consultation	People participate by being consulted or by answering questions. External agents define problems and information gathering processes, and so control analysis. Such a consultative process does not concede any share in decision-making, and professionals are under no obligation to consider people’s views.
Participation for material incentives	People participate by contributing resources, for example, labor, in return for food, cash or other material incentives. Farmers may provide the fields and labor, but are involved in neither experimentation nor the process of learning. It is very common to see this called participation, yet people have no stake in prolonging technologies or practices when the incentives end.
Functional participation	Participation seen by external agencies as a means to achieve project goals, especially reduced costs. People may participate by forming groups to meet predetermined objectives related to the project. Such involvement may be interactive and involve shared decision-making, but tends to arise only after major decisions have already been made by external agents. At worst, local people may still only be co-opted to serve external goals.
Interactive participation	People participate in joint analysis, development of action plans and formation or strengthening of local institutions. Participation is seen as a right, not just the means to achieve project goals. The process involves interdisciplinary methodologies that seek multiple perspectives and make use of systematic and structured learning processes. As groups take control over local decisions and determine how available resources are used, they have a stake in maintaining structures or practices.
Self mobilization	People participate by taking initiatives independently of external institutions to change systems. They develop contacts with external institutions for the resources and technical advice they need, but retain control over how resources are used. Self-mobilization can spread if governments and NGOs provide an enabling framework of support. Such self-initiated mobilization may or may not challenge existing distributions of wealth and power.

Source: Adapted from Pretty (1994), Satterthwaite *et al.* (1995), Adnan *et al.* 1992, and Hart (1992).

Table 8.2. Typologies of participation in natural resource management research.

Levels	Perception of Participation	
	End-Users	Researchers
Contractual	<p>End-users have no stake in the research process and output. Provide resources such as labor or land in exchange for cash or other forms of remuneration. Participation ends when their services or resources are no longer needed by the project. Example: participant rents out land to be used in research.</p>	<p>View research as purely technical. Obtain right to conduct research by renting resources owned by the end-users or by hiring their labor.</p>
Nominal	<p>Participation is characterized by simple appearance in public meetings. Individual participants do not have a stake in the research process and output. They have no specific role and are not given the basic opportunity to participate. Expected benefits are immediate resulting from being present in meetings.</p>	<p>Use people's presence to legitimize the project. Research is mainly researcher-driven and perceived as technical. Researchers are the experts. They involve the people at the beginning of the project to gain passage to the community. Research output is much more important than impact.</p>
Resource	<p>Individual participation. They provide information with or without receiving compensation for the time. No stake in research process and output. Example: surveys</p>	<p>Define research process. They treat participants as sources of information or to get free access to local knowledge systems and other resources. Information they generate may or may not be useful to the research participants.</p>

Table 8.2. (Continued).

	Perceptions of Participation	
	End-Users	Researchers
Levels		
Consultative	Individual or group-based participation. End users provide information or contribute other resources as their ticket to participation. Although they take part in implementing and monitoring research activities, they do not fully participate in the decision-making process. They benefit from participating in the research process. Benefits are enjoyed by individual or shared by group members.	Setting of research priorities, planning, and analysis are done by the researchers in consultation with the end users. Researchers view participation as a means to achieve research goals while providing some benefits to the research participants.
Interactive	Group-focused. People participate in defining the problem, setting research priorities, designing solutions, implementation of activities, monitoring progress and analyzing data, and in reviewing results. They view their participation as a way to ensure that they have a stake in the research process and outputs. Group members and other members of the community share benefits.	Researchers recognize the important role of community-based groups in the research process and in sustaining the activities. They facilitate activities leading to the empowerment of local partners. Generally, researchers develop the research methodology with input from end-users. They facilitate the research process.
Devolved	Group-focused or community-based. Presence of strong locally led organization. Research is driven by end-users' goals. They assume responsibility in conducting informal research and recognize its value in the generation of knowledge and improving community well-being. Participation is a means to empower the group members. The community benefits from the research process.	Recognize and support informal research by capacity building or providing technical assistance. Actively integrate formal agricultural research and informal research led by end-users. They serve as resource persons in the research process.

Source: Adapted from Pretty (1995), Biggs (1989), White (1996), and McAllister and Vernooy (1999).

descriptive, analytic, and resource- focused.¹ We then grouped the projects by type of research and level of participation (Table 8.3).

Our analysis reveals that despite the emphasis on end-user participation or “putting the last first” in early SANREM documents, there were differing levels of participation in the actual implementation of the research projects. Activities displaying low levels of participation involved conventional data gathering and analysis. As we moved to higher levels of participation, in other words from consultative to devolved, we observed a mix of NGO-led development-oriented projects and a few projects with strong research orientation. Projects led by the NGOs embodied a strong community-organizing component that included activities such as awareness raising, empowerment, and institutionalization, similar to the strategy that they employed in the Priming Program (Orprecio *et al.* n.d.; Network for Environmental Concerns, Inc. *et al.* 1994). The NGOs worked with existing sub-community household social networks, which they called “hugpong” or “pundok”, to identify and address farm-related problems — commonly through capacity building (*e.g.* training) and technology transfer.

The only project that seemed to have the potential for attaining the highest level of participation, devolved, is the local government-led natural resource management and development planning project. The local government mobilized human resources as well as forming a multi-sectoral natural resource management council, which undertook the responsibility of developing the municipality’s natural resource management and development plan. The planning process also involved all the villages in the municipality.

The local government also invited other institutions, outside of the municipality, which had a stake on the conservation and management of the natural resources in the Manupali and the Mt. Kitanglad Range Nature Park, to take part in the council. Because of the project’s inclusiveness and potential for widespread impacts, the scale of participation surpassed that of the other SANREM-funded research

¹ Developmental activities aimed to promote broad social and political development in the community. Such activities have a strong organizational development component. Descriptive activities consisted of research activities conducted to provide a detailed characterization of the Manupali watershed’s landscape and lifescape. Analytic research activities sought to explain the biophysical and social interactions within the landscape as well as establish connections between endogenous factors and local decisions. Resource-focused research aimed at providing solutions (usually in the form of intervention) to resource-related problems such as soil erosion and loss of biodiversity.

Table 8.3. Analysis of level of participation by type of research project.

Types of SANREM Research Projects Implemented at the Manupali Watershed				
	Developmental	Descriptive	Analytic	Resource Problem-focused
Levels of End-User Participation	Contractual	Weather monitoring		
	Nominal	Soil characterization GIS Forest resources		
	Resource	Development of sustainable production systems Gender Demographic characterization Flora & fauna characterization	Water quality & quantity modeling Economics of sustainability	Farming systems interactions (maize)
Consultative	Environmental Education Priming Program	Ethnoecology		Enhancing biodiversity conservation Sustaining vegetable production systems
Interactive	Environmental awareness & local empowerment Users-first research			Bufferzone resource management Water resource management & education
Devolved	Natural resource management & development planning			

activities. It offered a new dimension to facilitating participatory natural resource management research in which sustainability does not depend much on the adaptability of technologies, but on building partnerships and resilience to political transitions.

We now turn our attention on the resource-focused projects that displayed high levels of participation. Among these projects, only the water resource management and education project and the buffer zone resource management project used continuous NGO facilitation and coordination. The other resource-focused projects did not include active NGO facilitation as part of the research process. Other than this difference, the projects share common attributes. First, they intimately involved the participation of individuals, households, and groups in action-oriented activities such as monitoring resource conditions and designing technological and institutional innovations to better manage the natural resource base. Second, these projects invested in capacity building activities for the participants, which provided new skills or enhancement of existing skills in natural resource management. Third, repeated interaction and building of social capital among participants facilitated the formation of community-based organizations or peoples' organizations that then took active roles in implementing the research projects (see Garrity *et al.*, Chapter 6; Deutsch *et al.*, Chapter 9 and Koffa and Garrity, Chapter 10 in this volume).

Constraints to Participation

Several constraints hindered end-users' participation in research. These included conflicting responsibilities within and outside of the household that made it difficult for some participants to participate in project-sponsored activities such as workshops, training activities and on-farm experiments. Another constraint to participation was related to lack of project funds. The downsizing of the weather monitoring research project's budget forced its implementers to terminate an activity involving villagers who were paid to record data from rainfall gauges across the watershed. Lack of access to and control over resources, land in particular, hindered farmers from fully participating in on-farm experiments. Some farmers anticipated the risks involved in trying out introduced technologies and, therefore, did not participate in the on-farm trials. Finally, miscommunication between the participants and researchers also hindered meaningful participation.

Participation is dynamic. It constantly evolves as a project progresses. A project may begin with a low level of participation, but as it progresses the level may shift from low to high. A high level of participation may not

be sustained if leadership and local support is absent. People participate in projects that are relevant to their goals as well as needs (Garrity *et al.* Chapter 6 in this volume). They may start as individual participants and later graduate into formal or informal groups. Group formation and the active involvement of groups in research indicate a high level of participation.

Inter-institutional/Inter-sectoral Collaboration

Sustainable agriculture and natural resource management deals with multiple crosscutting issues related to human well-being, agricultural productivity, environmental concerns, and development strategies. These make broad-based inter-institutional collaboration in research not merely possible, but highly desirable (NRC 1991: 59). The NRC panel explicitly instructed SANREM to

build on, work with, and work through established research institutions, which can provide, and in many cases have long provided, the professional, educational, and scientific leadership that meeting the challenge of sustainable agriculture will require.... [and] *organizations and institutions beyond those that have traditionally undertaken agricultural research* (NRC 1991: .48, italics added).

Instead of prescribing a procedure to facilitate collaborative research, the panel recommended a set of general strategies.

For the current SANREM program, the motivation for embracing inter-institutional collaboration was not only to comply with the NRC panel's recommendation. It arose from the program's commitment to depart from the traditional mode of diagnosis and intervention. SANREM advocated the creation of "unconventional" research partnerships among representatives from community-based groups, NGOs, and the local government with scientists from national and international research and academic institutions. Although there was some ambiguity about how the partnerships would be formed, this general approach resonated with all partners in the program as a means to avoid "top-down" research. To conventional minds, this approach mixed science with outreach and even activism, and thus placed undue stress on partnerships whose members neither shared a common paradigm of scientific method, nor a common set of criteria for

formulating and choosing research questions. From the scientists' point of view, adherence to the ideas of participation and inter-institutional partnership in the research design threatened to compromise the quality of the research as well as delay on-site activities because of the number of players and agendas involved. To the community, NGOs and other development-oriented partners, insistence on scientific method diminished the immediacy of the project, threatened its relevance, and even risked alienating many end-users, including community members hosting the research.

The SANREM management made inter-institutional collaboration a requirement for proposed projects in Phase I, in addition to being participatory, interdisciplinary and landscape-based. Research project proposals had to show partnerships among international, national, and local institutions, which included organizations and agencies based in Mindanao. In practice, this was a demanding requirement, since the program was not building on a long history of collaboration among its partners. It presented a major challenge to partner institutions because inter-institutional collaboration in natural resource management research involves a great intensity of linkages and prior networking. It is established based on shared vision, sharing of power and resources, and joint responsibility among collaborating institutions. It also demands an integrative approach to attaining research goals – one that recognizes and utilizes institutional capacities and ensures that benefits are shared by partner institutions.

We recognize that all of the above attributes could be used as indicators in conducting an in-depth analysis of inter-institutional collaboration. Our present analysis falls short of integrating these indicators. Instead we focus on examining institutional diversity within each type of research. By institutional diversity we mean the presence of NGOs, academic and research institutions, community-based organizations, and government agencies in a particular type of research. As shown in Table 8.4, we differentiate institutions based on four categories: (1) role as project leader or partner, (2) hierarchy, *i.e.* local, provincial/regional or international, (3) type, *i.e.* whether institutional partner is an NGO, university or research institution, government agency and so on, and (4) scale of research, *i.e.* whether research covers community, regional and national levels.

As observed earlier, NGOs were the natural leaders of development-oriented projects while research-oriented projects were led by

Table 8.4. Inter-institutional collaboration in SANREM/Philippines, Phase I.

	Developmental	Descriptive	Analytic	Resource-Focused
Lead Institutions				
Local	NGO Municipal gov't, ²	University		University
Provincial/ Regional		NGO		
National		University		
International	NGO University	University IARC ³	University	IARC University
Partner Institutions				
Local	Municipal gov't. University Community schools	Tribal association University	University	Community-based organizations University
Provincial/ Regional	Provincial gov't. Gov't. agency	University/ NGO	Gov't. agency	NGO Gov't. agency
National		Gov't. agency	University	University
International	University			NGO
Scale of Research	Community	Community	Community Regional National	Community

² All SANREM projects collaborated with the local government to develop the municipal natural resource management and development plan. The current table does not specify all the institutions involved.

³ IARC stands for International Agricultural Research Center.

university or research-based institutions⁴. There was a notable lack of national government agency involvement either as lead or partner institution.

Roadblocks to Collaboration

Inter-institutional collaboration in SANREM involves a diverse group of institutions. If inter-institutional partnerships succeed, it has the capacity to transform participating groups in ways leading to lasting outcomes and impacts. However reflecting on the SANREM experience, we identify some roadblocks in developing collaborative research partnerships. First, collaboration is bound to fail if roles of participating institutions are not clearly defined and if there is no regular interaction and equitable relationship among partners. The second roadblock is what we call episodic collaboration, a situation wherein collaboration focuses on the individual level rather than institutional. This means that the project is not recognized as a legitimate partner by a host institution. Such situation could stall strategies for long-term institutionalization of project processes, methodologies and outputs. The third roadblock is transition. Collaborative partnerships and institutions are constantly changing. Transitions within institutions could affect an existing collaboration. Local government units, for example, are strongly affected by change in political leadership, especially after elections. A change in political leadership could alter earlier collaborative agreements. In deciding to work closely with the local government, the project placed itself at some risk from the political cycle. Third, collaborative research involves high transaction costs. Opening the program to a variety of institutions meant dealing with various and sometimes divergent institutional agendas. Conflicting agendas among partner institutions could strain or break partnerships. Balancing institutional agendas with those of the program demanded scheduling activities to facilitate regular interactions among partners.

⁴ The Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD), which is the Philippines' national agricultural research system (NARS), was not included in this analysis because it did not undertake any research project. PCARRD's primary responsibility in Phase I was research management although it was also responsible for linking SANREM in national level dialogues.

Landscape Approach

Implementing a research program using a landscape approach distinguishes SANREM from other CRSPs and agricultural research and development projects, which mainly have a commodity orientation. The landscape approach provides an integrative framework for analyzing complex agroecological processes and properties. This includes showing how human activities and non-human factors directly or indirectly affect the way resources are managed and how systems function. By taking a landscape approach to research, SANREM places itself in the mainstream of sustainable development thinking, which focuses on analyzing issues or the various components of a system in an integrated fashion rather than in isolation. This is, therefore, a major departure from the classic reductionist analytical approach.

The Manupali watershed offered the ideal location to conduct research on a landscape scale. The Manupali site is comprised of diverse agroecosystems and provided SANREM researchers with the opportunity to study the factors that influence long-term productivity and sustainability of the system as a whole. The first on-site activity, the participatory landscape/lifescape appraisal (PLLA), laid the foundation for pursuing a landscape approach to natural resource management research (Bellows *et al.* 1995). Subsequent activities led to the assignment of research projects across the landscape. In Phase II, the SANREM Southeast Asia program has embarked on developing an integrated watershed model.

Interdisciplinary Research

In Phase I, SANREM attempted to promote interdisciplinary research by organizing the research agenda into three “biophysical” focal groups: soils, water, and biodiversity. Each focal group contained several research projects. Each project encouraged scientists from the natural, agricultural, and social sciences to work together. This strategy, however, succeeded only in constructing tentative bridges (in the form of consultations) across disciplines. The conduct of activities within research projects was generally multi-disciplinary, *i.e.* groups of researchers with each member working within his or her own discipline. This was understandable when in-depth characterization of the properties and processes of the landscape were perceived to be more efficient when conducted within disciplinary boundaries.

It is clear from the design and procedure of Phase II that the rather tentative bridges across disciplines constructed during Phase I will form

important links among researchers in a more confident, more focused Phase II effort. Moreover, site research activities are beginning to yield results that are of great value to other projects. As Phase II progresses, a demand for cross-disciplinary projects has taken place with the development of analytical tools that are able to integrate disciplinary explanations of how various components within and outside the watershed interact. SANREM's research project on integrated watershed modeling, which is implemented in Phase II, provides a mechanism for integrating these disciplinary explanations. Unlike most watershed models, it incorporates socio-economic and political dimensions as well as biophysical data to explain how watersheds function.

Other Issues

The previous sections laid out the guiding principles of SANREM research. While knowledge of these is essential to obtain a broad appreciation of SANREM's approach, other issues emerged that shaped the program's direction. These were decentralization in Philippine governance, and scaling-up natural resource management research.

Conducting Natural Resource Management Research in the Context of Government Decentralization

As mentioned in Chapter 1, the implementation of SANREM in the Philippines took place just as significant reforms were introduced in Philippine governance, *i.e.* the selective decentralization of authority and resources from central to local government. Among the basic services devolved to the local governments were services that affected the environment and agriculture sectors. While decentralization was underway, on-site research activities focused on developing a comprehensive description of the landscape and lifestage as well as analyzing the impact of agricultural production systems on the environment. Other research activities attempted to generate field-tested methodologies and technologies to manage a fragile natural resource base for long-term agricultural production. The initial perception within the program (and even among related programs in the country) was that SANREM's research strategy was appropriate and relevant. Linking natural resources management research and sustainable agriculture made sense, because both depend on each other.

However, as the process of decentralization gained momentum in the municipalities, it became evident that public policy, now partially entrusted

to local governments, was an area that demanded attention. Under the 1991 Local Government Code, Philippine local governments are to exercise authority as comprehensive land use managements, lead in policy formulation in addition to promoting economic growth. (PCARRD-DOST-DENR-DA-UPLB-CFNR/ENFOR 1999; Brillantes 1997). Sustainable agriculture and natural resource management, thus, depend on sound government policies that provide incentives to farmers and/or natural resource managers to adopt technologies that reduce environmental degradation and opportunity for local organizations to participate in the decision-making process. Yet a majority of the local government units were inadequately prepared to carry out this role nor did SANREM initially articulate a strategy as to how gains in research with obvious policy application would be translated at the local level. Thus, it became necessary, with some pressure from the local government, for SANREM and the local government to come up with a thrust that not only would enhance the program's overall research strategy but also support the local government in carrying out its devolved responsibilities. The search for a mutually beneficial strategy culminated with the formal agreement between the Lantapan municipal government and SANREM to collaborate in developing the municipality's natural resource management and development plan (NRMDP). The process mirrored SANREM's cornerstones, particularly inter-institutional collaboration and participation. In the spirit of decentralization, the local government organized a natural resource management council, which was comprised of sectoral representatives from the community and the province, to lead in the formulation of the natural resource management plan. The council members received training in participatory planning. The plan's formulation facilitated the integration of SANREM's research results into the local government's agriculture and natural resource management research and development agenda. It laid out the municipality's five-year research and development agenda on agriculture and natural resource management (NRMDP 1998). It also partially served as the local government's compliance with the national mandate requiring municipalities to formulate a municipal comprehensive development plan. The plan was a tangible output that cemented local government and SANREM collaboration while providing a base to anchor research activities in the first and second phase of program implementation.

SANREM's experience in reorienting research within the context of decentralization suggests the following lessons. First, it enabled SANREM to bridge natural resource management research and public policy, which would have been less possible in commodity-oriented research. However, though we remain optimistic, this bridge could be best described as

incipient because of its dependence on political structures whose resilience over the electoral cycle is as yet unproven. The full implementation of the plan and the continuity of the council remain subject to the vagaries of Philippine politics. Only when the plan becomes institutionalized within the local government with strong commitment from the community will it be able to withstand political transitions. Second, the research and decentralization link legitimizes the importance of multi-stakeholder or multi-sectoral participation and the need for a clear articulation of roles as well as interests in the planning and research processes. Third, there is a need for experts in policy analysis and governance who can assist local policy-makers use research results and other outputs to formulate sound policies. Fourth, multi-stakeholder support for research and decentralization will sustain if gains are not only translated through conservation and management of the natural resource base but also through improved quality of life, strengthened social capital, and increased household incomes and local government revenues. Finally, successful decentralized natural resource management and planning techniques could be used as models for scaling-up outcomes, outputs, and impacts outside the Manupali watershed.

Scaling- up Natural Resource Management Research and Planning

Numerous definitions and typologies of scaling-up have been used in research and development (Korten 1990; Clark, 1991; Fisher 1993; Uvin 1995; Gaventa 1998; Blackburn and Holland 1998; Pretty and Chambers 1994). A number have evolved from the desire to multiply the impacts made by non-governmental organizations working in communities in the developing countries. We will borrow key elements from existing definitions to define scaling-up in natural resource management research and planning as a set of activities intended to increase community level impacts to other similar communities or to higher levels of policy making. There are four strategies to scaling-up. The first is information dissemination. This strategy could potentially cover a wide geographic area compared to the other strategies. It assumes that impact is made when recipients apply information generated by the core program. The second strategy involves replicating activities from a specific study community to other communities facing similar NRM-related issues. Capacity building is an important component in replicating activities to other sites. The third strategy is policy advocacy. Institutions engaged in natural resource management research and planning in a core community move towards influencing higher levels of decision making, for example

from community to provincial/regional and national level. The fourth strategy contains a strong research orientation. It involves increasing the scale of analysis and impact by starting, for example, at a watershed scale and going up to an eco-regional scale, using sophisticated analytical tools.

Among the strategies described above, the Philippine program undertook information dissemination and (to some extent) policy advocacy in Phase I through informal and formal channels. SANREM co-organized with the municipal and provincial governments a series of *Kapihans* (literally means coffee meetings) to share research results with policy makers, development practitioners, planning officers, and students. Project researchers also gave presentations at national and international meetings. PCARRD undertook policy advocacy at the national level by providing assistance in drafting a congressional bill to promote sustainable sloping agricultural land technologies. It introduced some of the research results and approaches generated from SANREM's work in the Manupali Watershed into the bill.

In Phase II, replication activities are under way. These activities include capacity building for water quality monitoring, agroforestry, and natural resource management planning. Local organizations, namely the Tigbantay Wahig and the Agroforestry Trees Seeds Association of Lantapan, play a key role in providing hands on training to participants from municipalities/provinces in Mindanao and neighboring islands. Capitalizing on local organizations legitimizes SANREM's commitment to participatory research and strengthens community organizations, which is consistent with the goals of decentralization.

Scoones and Thompson (1992: 8) raised the questions, "How can local-level insights derived from participatory investigations articulate larger-scale policy formulation and planning approaches at regional or even national levels? What methodological approaches are needed to allow the range of interest groups to be heard in the process?" Answers to these questions could guide SANREM managers in developing a strategic approach to scaling-up at the national level. The lack of diverse institutional partners involved in SANREM research poses a challenge to expand impacts at the national level. Intermediary organizations such as PCARRD and NGOs could play an important role in policy advocacy. Local organizations, too, could be part of the process.

The SANREM program in the Philippines gained valuable insights as it encountered the realities of implementing an ambitious program of participatory research and outreach in the Manupali watershed. First, it was not enough to ensure that there is a semblance of each cornerstone in the research activities. Some cornerstones required a lot more time to cultivate than others. Obviously, during the first two years of

implementation, SANREM focused on process in the hope that the benefits would be long lasting. The program invested substantial time and resources to ensure community awareness, acceptance, and participation and to facilitate smooth inter-institutional relationships. However, the process-oriented cornerstones required a high transaction cost, and the value of participatory process may not be immediately appreciated in a program that is focused solely on research. Second, the complexity involved in ensuring that the cornerstones are integrated into the research process requires flexibility in all levels of project management. Flexibility, however, should not sacrifice efficiency and effectiveness. Third, the cornerstones could not be treated individually. They were in various ways interrelated. Establishing a balance between the cornerstones, achieving scientific rigor, and producing long-term impacts within a five-year time frame was unrealistic. In assessing the SANREM experience in Phase I, the extent to which the commitment to the cornerstones assisted or hindered the project remains an important question.

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