

# Cultivating Community Capital for Sustainable Natural Resource Management

*Experiences from the SANREM CRSP*

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*This book is dedicated to the memory of Robert D. Hart.*



**The University of Georgia**



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Cultivating community capital for sustainable natural resource management:  
Experiences from the SANREM CRSP / Kathleen Cason, editor.

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## Table of Contents

Dedication to Robert D. Hart.....	7
Foreword .....	9
Abstract/Resumen .....	11
Formation, Potential and Challenges of a Citizen Volunteer Water Quality Monitoring Group in Mindanao, Philippines <i>William G. Deutsch and Jim L. Orprecio</i> .....	13
The Landcare Approach: Enhancing Community Participation in Sustainable Agriculture and Natural Resource Management in the Uplands <i>Agustin R. Mercado, Jr. and Dennis P. Garrity</i> .....	21
Holistic Management in West Africa: A New Approach to Commu- nity-Based Natural Resource Management Decision Making and Institutional Development at the Decentralized Commune Level <i>Michael K. Bertelsen</i> .....	29
Sustainable Futures: Contrasting Local Visions and Scientific Scenarios for Sound Community-Based Decision Making <i>Robert E. Rhoades</i> .....	39
The Advocacy Coalition Framework: A Theoretical Frame for SANREM to Address Policy Change and Learning <i>Cornelia Butler Flora, Jan L. Flora, Florencia Campana and Edith Fernández-Baca</i> .....	47
Social Capital and Advocacy Coalitions: Examples from Ecuador <i>Jan L. Flora, Cornelia B. Flora, Florencia Campana, Mary Garcia Bravo and Edith Fernández-Baca</i> .....	53



## Robert D. "Bob" Hart (1946-1999)

Bob Hart was a friend, colleague and mentor to many individuals and groups around the world. His contributions to sustainable agriculture and solving global problems were many.

He was an original and visionary thinker and a person who had a passion for social justice. It was this passion that shaped his distinguished professional career in international agricultural systems research – a career characterized by innovation and concern for the rural poor. He wanted local farmers to have options in their lives.

Bob is remembered as "a marvelous human being;" as creative, kind and humble; and as a man who loved the joys that life could offer – a good glass of wine, a delightful meal and the company of those close to him. He loved his family deeply – his wife, Joan and daughter, Sarah.

Bob was born in Michigan and spent most of his childhood in Ecuador. He earned his Ph.D. in Agronomy from the University of Florida and dedicated his career to research on sustainable farming systems in both the developing countries and the United States. He

traveled far and wide through his work with CATIE, Winrock and as Director of the Rodale Research Center.

In the late 1980's, Bob started a non-governmental organization called INFORUM that supported global research partnerships. He felt that information should be available to everyone because solving global problems requires that as many voices as possible be heard. This prompted his "fathering" the use of electronic conferences in international agricultural information exchange.

Bob Hart became the program director of the Sustainable Agriculture and Natural Resource Management Collaborative Research Support Program (SANREM CRSP) in 1997. He provided its current vision – providing information for decision making from the farming system to the global level.

Those of us who worked with him were truly blessed by his life. We will miss him tremendously.

## Foreword

The Sustainable Agriculture and Natural Resource Management Collaborative Research Support Program (SANREM CRSP) is a research, training, and information exchange program funded by the U.S. Agency for International Development. SANREM is a partnership of universities, research institutions, development organizations and rural communities that explores ways to address natural resource issues.

Using a participatory, interdisciplinary and interinstitutional approach, SANREM research aims to support improved natural resource decision making at all levels. This stems from the fact that decisions directly influencing natural resource management are taken by local decision makers, while those decisions that indirectly but often strongly impact local level decision making take place at higher scales. Local level natural resource decisions are currently being taken in the context of influences such as a globalizing economy, government decentralization, devolution of power, privatization of services, and conflict over limited resources

The papers included in this book focus on community-based natural resource decision making that has resulted from SANREM activities in the Andes, Southeast Asia and West Africa. Each paper offers examples of community-based approaches that address natural resource issues through enhanced participation of multiple stakeholders, often with multiple objectives. These approaches include: Citizen Volunteer Water Quality Monitoring, the Landcare Approach, Future Visioning Scenarios, Holistic Management, and the use of Advocacy Coalitions.

Each of these works reflects Bob Hart's passion for social justice that can be achieved through local level decision making and community networks. It is in his honor and with great pleasure that we present these works at the 16<sup>th</sup> Symposium of the International Farming Systems Association Meetings in Santiago, Chile – the association for which Bob cared so much and to which he was so committed.

Constance L. Neely  
Deputy Director, SANREM CRSP



## **Abstract**

The Sustainable Agriculture and Natural Resources Management Collaborative Research Support Program (SANREM CRSP) is organizing a two-part Special Session in honor of former director, Robert D. “Bob” Hart. The SANREM CRSP is a participatory, interdisciplinary and inter-sectoral program whose objective is improved decision making by natural resource managers from the local to global levels. This Special Session will focus on different approaches that SANREM is taking to enhance local institutional development and stakeholder participation in countries where decentralization or shifts in power are in progress. A panel will present case examples of Holistic Management from West Africa, Community-Based Research and Policy Advocacy (Water Quality and Landcare Initiatives) from Southeast Asia, and Future Visioning and Advocacy Coalition Strategies from the Andes region. A dialogue facilitated by guest discussants will follow the panel presentations. Papers presented will be available at the presentation.

## **Resumen**

El Programa Colaborativo de Apoyo a las Investigaciones sobre la Agricultura Sostenible y Manejo de Recursos Naturales (SANREM CRSP) está organizando una Sesión Especial en dos partes en honor de su exdirector, Robert D. “Bob” Hart. El SANREM CRSP es un programa participatorio, interdisciplinario e intersectoral cuyo objetivo es contribuir a mejorar la toma de decisiones por parte de administradores de recursos naturales desde el nivel local hasta el global. Esta Sesión Especial se concentrará en diferentes enfoques que SANREM toma para aumentar el desarrollo institucional local y la participación de diversos grupos de “stakeholders” en países donde la descentralización o cambios en el poder están ocurriendo. Un panel presentará los ejemplos de caso del Manejo Total (Holistic Management) de Recursos en África Occidental; investigación y cabildeo basado en las Comunidades (Calidad de Agua e iniciativas de Landcare) en el sudeste de Asia; y la creación de una Visión del Futuro y estrategias para formar alianzas para hacer cabildeo en los Andes. Un diálogo

facilitado por comentaristas seguirá las presentaciones del panel. La versión escrita de las presentaciones estará disponible durante la presentación.

# **Formation, Potential and Challenges of a Citizen Volunteer Water Quality Monitoring Group in Mindanao, Philippines**

by William G. Deutsch<sup>1</sup> and Jim L. Orprecio<sup>2</sup>

## **Introduction**

A community-based environmental assessment of the Manupali River watershed in central Mindanao, Philippines (Bukidnon Province) was begun in 1994 as part of the Sustainable Agriculture and Natural Resource Management Collaborative Research Support Program (SANREM CRSP).

There are three reasons why participatory research in water issues was needed in the Philippines in general and in Bukidnon specifically:

1. Both the quality and quantity of water resources in the Philippines is threatened, with evidence of degradation in both coastal marine and inland freshwater environments. At the national level, legislation is before the Philippine Congress that would give the President greater power regarding conservation of a dwindling supply of good quality water. Specific information about water conditions that can be used to establish management strategies are generally lacking.
2. There is a limit to what government can do to protect and conserve water because of a lack of trained personnel, equipment and finances. This is especially true in remote areas, such as Bukidnon. Even with the trend to decentralize power and manage natural resources locally, rates of natural resource loss generally exceed local government attempts to remedy environmental problems.

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3. Perhaps most importantly, many environmental problems cannot be solved by government regulation alone. Citizens need to be made aware of the issues and take an active part in finding solutions. They not only have the greatest vested interest in conserving local water supplies but also have the potential to far exceed the government's capacity to measure conditions, identify specific problems and decide upon a proper course of action.

## Objectives

The objectives of this work were to facilitate the development of water quality and watershed assessments by local communities, and to provide physicochemical data that could be used to improve water quality and to influence policy. Such a participatory approach to natural resource management on a landscape scale, which involved researchers from various disciplines and partners from various governmental and nongovernmental sectors, was the goal of the greater SANREM program.

This research posed the following questions related to the objectives above:

1. What is the general physical, chemical and biological condition of water in the streams of the municipality of Lantapan?
2. Can the local community of Lantapan form citizen monitoring teams to measure water conditions and conserve aquatic resources?
  - a. Is there community-wide interest in becoming more aware of water issues and in forming monitoring teams?
  - b. What is the best way to train and equip citizens to collect meaningful data?
  - c. What is the most efficient way to sample and implement quality control measures so that the information is most usable for community education and problem solving?
  - d. Would citizen water monitoring receive government support and become established or institutionalized in such a way that it has a lasting impact?

## Methods

The participatory methods used were modeled after those developed by Alabama Water Watch, a citizen volunteer, water quality monitoring program that is now underway in the United States. (Deutsch *et al.*, 1998). Filipino SANREM partners who were educators and community developers helped customize the workshops and sampling techniques to the local situation (Deutsch *et al.*, 2000). Community participants primarily included farmers, teachers, members of certain women's organizations and some local government representatives.

Local citizens volunteered to receive training in water quality monitoring and principles of watershed management. The volunteers initiated a systematic monitoring program for four subwatersheds. Water quality monitoring involved collecting data on water chemistry, bacteria, total suspended solids, stream discharge and soil export.

Project researchers and volunteer water monitors selected 16 (later reduced to four) sampling sites on four main tributaries of the Manupali River. Sites were chosen that were generally accessible and representative of the diverse portions of the overall landscape, including subwatersheds with varying degrees of forest cover, agricultural land and population. Each subwatershed ranged in size from about 2,400 to 10,000 ha.

A "menu" of possible water quality indicators was made available to the monitors in the workshops. These included the physicochemical parameters of temperature, pH, alkalinity, hardness, nitrates, phosphates, dissolved oxygen, turbidity and total suspended solids. Biological parameters included biotic indices of stream macro-invertebrates, and measurements of *E. coli* and other coliform bacteria concentrations.

After several months of working together, the monitoring teams made suggestions for improving the project, including sampling site selection and ways to use collected data in community outreach efforts. The teams also formed a non-governmental organization (called the Tigbantay Wahig, Inc., meaning "Water Watchers") and registered with the Federal government.

Table 1. Summary of Community-Based Water Quality Indicators.

Issue/Problem	Indicator	Unit of Measure
General Memories, Experiences	Community Perceptions, Questionnaires/Surveys	Anecdotal or Environmental Degradation
Soil Erosion	Suspended Soils in Water Soil Loss in Water	mg/l TSS; kg/ha soil export
Disrupted Stream Flow	Stream Discharge (monthly measurement); Flow Variability (comparisons: time, space)	cu. meters/second flow; coefficient of variation
Bacterial Contamination	Coliform Concentration	no. colonies/ml of water ( <i>E. coli</i> and other coliforms)

## Results and Discussion

Water quality monitoring has continued from 1994 to the present, resulting in the analysis of thousands of samples and a general description of the physicochemical and biological features of the watershed. The primary indicators of watershed health and ecological sustainability derived from the research were described in Deutsch *et al.* (2000) and are summarized in Table 1.

Research results have begun to have several applications, including:

1. Establishing a baseline of water quality conditions across the SANREM-Philippines study site that may be used to assess change over time and evaluate research goals of implementing sustainable practices for agriculture and the environment.
2. Providing the Lantapan local government and citizens of Bukidnon with the techniques and information to establish and perpetuate a community-based water-monitoring program. This information may pertain to public health (potable water supply and waterborne disease), sustainable agriculture (pesticide transport and soil loss from land to water) and economic development (multiple use of the aquatic resource).
3. Providing a model for other parts of the Philippines and other countries (including the U.S.) so that community-based environ-

mental monitoring may be efficiently expanded and coordinated on local, national and global scales. This application of research results could greatly expand the audience and beneficiaries of the information.

The equipment and techniques used in this project provide the potential for collecting data that is adequate for describing and managing aquatic resources. Although tests may not be sufficiently accurate for certified laboratories or research chemists, the ranges of bias and precision are narrow enough to determine valid trends in water quality for several important parameters. This assumes that 1) the monitors are properly trained and are committed to maintaining quality, and 2) the equipment and reagents are properly cared for and regularly maintained according to established protocols.

After collecting and analyzing thousands of water samples, the citizen teams have developed a monitoring program that is beginning to increase public awareness and concern about water issues. Beyond the necessary awareness that a community and policymakers need before lasting environmental protection takes place, specific information that monitors collect has direct relevancy to end-user problems.

For example, by sampling hourly through a rainfall event, citizen-collected data on total suspended solids detected about a 1000-fold increase in eroded soil in a Lantapan stream. With the skills to measure this dramatic rate and magnitude of soil loss, the monitors can now identify hot spots of soil erosion throughout the landscape. The community (possibly through SANREM or local government involvement) can then work toward remediation measures and continue monitoring streams to evaluate their effectiveness and success.

## **Conclusions and Lessons Learned**

In spite of initial skepticism that rural communities would be unwilling or unable to consistently participate in an environmental monitoring project, the water monitoring team has collected a valuable data set. The water information was gathered prior to, during and after the El Niño phenomenon and is, therefore, an important and unique data set for upland tropical watersheds.

One of the main strengths in participatory research is that research, information exchange and community action are occurring simultaneously and that citizens, community organizers and scientists learn together.

This contrasts with traditional models where research is conducted in isolation from the local community and then the significant findings are extended to the community through mechanisms such as technology transfer and the media.

It has been difficult to translate the project's significant research findings into policy and environmental improvements because of a variety of factors:

- a. The local government has undergone changes in key leadership and agendas.
- b. The critical mass of interested citizens and policymakers is still low. There is considerable apathy in addressing environmental problems among the government and citizenry.
- c. Economic development, such as building new roads and bridges and attracting plantation-style agro-business, has taken precedence over conservation, sustainable agriculture and natural resource management.
- d. The SANREM program has a relatively small presence in the community and thus has reduced recognition as an important part of community development. This relates, in part, to changing agendas of the U.S. Agency for International Development (primary funder of the SANREM CRSP) and the SANREM Management Entity.

Although the impacts of the Tigbantay Wahig's work is yet to find its full potential in Lantapan, it continues to grow and has attracted considerable interest among other municipalities in the Philippines. Study tours of local government representatives from Sarangani Province (southern Mindanao) led to the start of a similar, community-based water monitoring effort there. Importantly, this was done with the Sarangani government's initiative and financial resources. A third program, requested by the Governor of Bohol, is scheduled to begin in early 2001.

Important lessons from this research include:

1. Many citizens in the Philippines and other parts of the world have a keen interest in being a part of environmental assessments that pertain to their daily lives. Awareness of environmental issues is relatively high, even in remote rural areas.
2. The hands-on activities of environmental monitoring using simple equipment and techniques are a tremendous motivation for participation. Once the mystique that “only the professionals can do this” is removed in a workshop, citizens are usually eager to become involved. They take pride in knowing that the information they gather is important and can improve the management of their land and water.
3. The type of information needed by policymakers for natural resource management planning should be science-based, but need not necessarily meet all the requirements of the scientific community with regard to precision and rigor. This is especially true in watersheds that are degrading rapidly, with irreversible consequences. In these situations, application of partly understood conservation practices, with full community involvement, may be far better than waiting for “complete” scientific understanding.
4. The startup of a collaborative process in these projects was relatively slow and expensive, but initial results indicate that the potential for lasting benefits and project sustainability is much higher than if attempted by a community, NGO, university or government agency in isolation.

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# **The Landcare Approach: Enhancing Community Participation in Sustainable Agriculture and Natural Resource Management in the Uplands<sup>1</sup>**

by Agustin R. Mercado, Jr.<sup>2</sup> and Dennis P. Garrity<sup>3</sup>

## **Introduction**

Three factors are increasingly fundamental to successful natural resource management in the uplands. First, there is a need for improved land husbandry practices that enable farmers to sustain food production on sloping lands. Such practices would help farmers change gradually from a monoculture system to mixed tree, crop and/or live-stock-based systems that provide increased income and environmental protection. Second, there must be real and effective participation by the rural population, through their own local institutions, in the decisions that impinge upon their livelihoods. Third, there must be an effective partnership among service providers and stakeholders. This paper describes the evolution of Landcare, a farmer-led movement in the Philippines that has emerged as an approach to successful natural resource management in the uplands.

## **What is the Landcare approach?**

Landcare refers to groups of people who are concerned about land degradation problems and are working together to safeguard the long-term health of the land. It evolved as a community-based approach designed to effect change in complex and diverse situations. In the

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Philippines, the Landcare movement initially arose for rapid and inexpensive dissemination of new conservation farming technologies and agroforestry practices to upland farmers. It was based on the innate interest of farmers to learn and share knowledge about new technologies that generate higher incomes and conserve natural resources (Garrity and Mercado, 1998, Mercado *et al.*, 2000). Effective local community groups and partnerships with local government units became the core of the Landcare model. Now the partnership consists of grassroots Landcare groups, local government units, and technical service providers and facilitators (such as non-government organizations (NGOs) and research and extension agencies). The success of the Landcare approach is dependent on how these three sets of key actors interact and work together.

## The Facets of Landcare

### *Facet 1: Practices that enhance production and natural resources*

Continuous crop production on steep slopes in Mindanao induces annual rates of soil loss often exceeding 100 to 300 t/ha (Garrity *et al.*, 1993; Mercado, 2000). The installation of contour buffer strips reduces these losses by 50 to 99 percent and creates natural terraces that stabilize the landscape and facilitate further management intensification. In the early 1990s, the International Center for Research in Agroforestry (ICRAF) began using an indigenous practice called *natural vegetative strips* (NVS), which are made by laying out contour lines on sloping fields and then allowing them to revegetate naturally (Garrity, 1996). NVS are exceptionally effective in soil conservation, even with minimal maintenance, and require no outside source of planting materials. Nelson *et al.* (1998) modeled the long-term trends in maize yields and found that the yield advantage of NVS use increased to about 0.5 t/ha. Since 1996, about 2,000 farmers participating in the Landcare program have now adopted the NVS practice on their farms in the upper watershed areas of northern Mindanao.

Farmers who adopted NVS maximized the benefits of their contour grass strips by planting fruit and timber trees, fodder grasses, and cash perennials on or just above the grass strips. This practice enhances

the productive, protective and aesthetic functions of their farming systems. As interest in planting trees became widespread, ICRAF and other partners facilitated the provision of technical backstopping to Landcare groups that wanted to establish nurseries for fruits and timber trees. Interest in the Landcare groups also gravitated toward other technical issues outside conservation farming and agroforestry technologies, such as backyard gardening, solid waste management and composting, and livelihood activities such as backyard animal raising, apiculture, sericulture, animal dispersal, and establishment of small scale credit unions at the village level.

### *Facet 2: Institution building*

How did Landcare begin? In 1996, twenty-five farmers requested ICRAF training on the establishment of NVS. In the process of learning the technique, the farmers decided to form a self-help group to radiate the practice in their neighborhood. Adjacent villages learned about this and organized their own groups. Within a year, more than 20 self-governing groups had been formed and then federated to become the Claveria Landcare Association (CLCA). The members use the CLCA organization as a mechanism for vertical and horizontal information dissemination, sharing and learning. The CLCA also serves as a venue for addressing issues and solving problems that farmers encounter. It became a mechanism for articulating needs and mobilizing resources from the local government and other support agencies. The association now occupies the driver's seat, steering the wheel of extension and learning in its desired direction.

The Landcare movement spread to the municipality of Lantapan in 1998, where it has been supported by the Sustainable Agriculture and Natural Resources Management (SANREM) program. Today, there are more than 100 Landcare groups in Claveria, more than 60 groups in Lantapan, and groups other municipalities throughout northern Mindanao. More than 5,000 farming families are involved. The groups have enabled conservation farming technologies to be adopted by more than 2,000 farmers and more than 300 communal and individual tree nurseries have been established (Mercado *et al.*, 2000). Hundreds of thousands of fruit and timber tree seedlings have been planted on or

just above the NVS, on farm boundaries and small-scale tree plantations, in the buffer zones of protected areas, and in riparian areas, all through strictly voluntary efforts.

Landcare groups are organized at the smallest political unit – a hamlet or neighborhood of 20 to 30 households (subchapter level). Organization at the neighborhood level encouraged deeper participation, reduced transaction costs and enabled farmers to meet frequently and discuss farming issues. The groups promote camaraderie, knowledge sharing, and enhanced awareness, skills and environmental appreciation.

Each Landcare group elects its own officers, and plans and runs its own activities. This has encouraged widespread leadership and participation. The Landcare neighborhood groups are joined into chapters at the village or micro-watershed level. The chapters are composed of 8 to 12 neighborhood groups. The chapters are federated at the municipal (macro-watershed) level. This innovative organizational structure provided both vertical and horizontal mechanisms for information dissemination, sharing and learning. It enabled a mechanism to raise issues from the household level to the municipal level, as well as efficiently filter information from the municipal level down to the household.

*Facet 3: Partnership – triadic approach: Building synergy*

The strength of Landcare is strongly related to the involvement of three types of organizations: the farmer groups, the local government units and technical facilitation organizations. The farmer groups implement practices that combat soil depletion and erosion, build sustainable agriculture and improve natural resource management. The local government units strongly support Landcare and have extended regular financial, policy, and moral support. Mutual expectations and obligations emerge from the interaction. Furthermore, the extension assistance by the technical service providers is also important to the success of the Landcare groups. The relationship is a triangular one. A balanced triangle depicts a partnership that is working harmoniously with reciprocity in actions and outcomes.

## The Impact of Landcare and the Process of Scaling-Up

There is significant evidence that the Landcare approach has created an effective linkage between development and conservation. Through the efforts of the grassroot-level Landcare farmer groups, local government entities, and technologists, a conservation ethic is evolving and biodiversity protection is beginning to be viewed as a local responsibility – one that is pursued with pride. For instance, in Lantapan the number of incursions into the local national park has decreased by about 90 percent in the past three years. The Park Director attributes this to community collaboration and environmental awareness that arose through Landcare.

Landcare is changing the attitudes of farmers, policymakers, local government units, and landowners about how to use the land to meet their current needs while conserving resources for future generations. Farmers voluntarily share their time and efforts. Policymakers are supporting these efforts by allocating local government funds and by enacting local ordinances to provide incentives. The Landcare approach provides:

- ❖ A vehicle for interested farmers to learn, adopt and share knowledge about new technologies that increase income and conserve natural resources;
- ❖ A forum for the community to respond to issues considered to be important to local citizens;
- ❖ A mechanism for local government support; and
- ❖ A network for ensuring that ideas and initiatives are shared and disseminated.

Landcare is emerging as a method to empower local government and communities to effectively and inexpensively disseminate conservation farming and agroforestry practices. In the municipalities of Claveria and Lantapan, we have observed an exponential rate of adoption of conservation farming technologies. The experiences and lessons learned provide a strong basis to scale-up to the regional and national levels and to reach out to other municipalities.

The new *Philippines Strategy for Improved Watershed Resources Management* published by the Department of Environment and Natural Resources (DENR, 1998) incorporates the Landcare approach in its key institutional elements and operational framework. As the strategy moves into the implementation phase, the opportunity arises to spread useful Landcare principles and experiences to other parts of the Philippines. However, this process must respect and adhere to the critical underlying elements that have been a basis for its success, particularly a focus on farmer-driven voluntary action and on partnership with local government.

We are beginning to exploit the opportunities that Landcare provides for enabling major innovations in the way on-farm participatory research is conducted. We see the prospect for research to be carried out through Landcare groups. This would multiply the amount of on-farm research that can be accomplished. Currently, we are conducting surveys through the Landcare groups to get grassroots feedback on research priorities. In Australia, public sector research institutions (such as CSIRO) are adjusting to the new reality that through Landcare, farmers have positions, and may even dominate, the boards that decide on research project funding. This is having a galvanizing effect on focusing researchers on problems that concern farmers.

We summarize by listing four hypothesized functions of farmer-led knowledge-sharing Landcare organizations:

- ❖ Enhanced efficiency of extension or diffusion of improved practices (more cost-effective than conventional extension functions);
- ❖ Community-scale process to seek new solutions or adaptations, suited to the diverse and complex environments of smallholder farming (a unique aspect of Landcare);
- ❖ Enhanced research by engaging large numbers of smallholders in formal and informal tests of new practices; and
- ❖ Mobilization process at the community level to understand and address landscape-level environmental problems related to water quality, forest and biodiversity protection, soil conservation, and others.

Our analysis indicates that much can be done to further release the power of the Landcare concept. The public sector and non-government sector can assist in facilitating group formation and networking among groups, enabling them to grow, developing their managerial capabilities, and enhancing their ability to capture new information from the outside world. They can also provide leadership training to farmer leaders, helping to ensure the sustainability of the organizations. External assistance in cost sharing for activities can also be provided. For this, the use of trust funds should be emphasized, where farmer groups can compete for small grants to implement their own local Landcare projects. This has been remarkably successful in the Australian Landcare movement.

The evolution of Landcare has stimulated great interest in the government and non-government community of the Philippines. We are now working with a range of agencies to spread Landcare nationally and to develop the capability for Landcare to be integrated into national projects and programs. We envision that the Landcare approach may be suited to other locations in the Philippines and elsewhere, providing a focus for the sustained management of resources by farmers with minimal local government support.

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# **Holistic Management in West Africa: A New Approach to Community-Based Natural Resource Management Decision Making and Institutional Development at the Decentralized Commune Level<sup>1</sup>**

by Michael K. Bertelsen<sup>2</sup>

## **Introduction**

SANREM<sup>3</sup> West Africa's (SANREM WA) collaborative research support program seeks to improve natural resource and conflict management practices in agro-pastoral systems in West Africa's arid and semiarid regions. Our project does this by supporting decision makers at multiple scales with appropriate data, tools and methods to analyze information. We also provide support through capacity building activities.

The focus of our work is on the newly decentralized decision making unit in Mali – the commune. Communes, which have recently been empowered by decentralization legislation, now manage natural resources at the local level in Mali. A commune is comprised of a number of somewhat arbitrarily aggregated villages, is the lowest administrative unit, and is similar in nature to the lowest units recently created or empowered in most other countries of the subregion.

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<sup>3</sup>SANREM CRSP West Africa collaborating institutions include Virginia Tech, The Institut d'Economie Rurale, Washington State University, CARE-Mali, the University of Georgia, and trainers associated with the Center for Holistic Management. SANREM WA's activities are undertaken in the Commune of Madiama, Mopti Region, Mali.

To support decision making at the commune level, SANREM WA is building a decision support unit and is providing tools and science-based information to facilitate natural resource management-related decisions. The decision support unit or Natural Resource Management Advisory Committee (NRMAC) is a project-created body composed of representatives from each of the villages of the Commune of Madiama (the target commune), women's groups, pastoral organizations, and village-based resource user groups. The NRMAC serves as the consultative and participatory bridge between the project and the populations of the commune. Although it does not have official standing within the commune, the NRMAC has unofficial ties and support from the governing Rural Council. Our hope is that our work with the NRMAC will lead to the development of a prototype decision support unit that will serve as a model for other countries of the subregion as they seek to confront similar natural resource management issues and problems.

## **Objectives**

SANREM WA's strategy is to support the movement toward decentralization with improved natural resource and conflict management by achieving the following objectives:

1. The development of a participatory model to deal with natural resource management issues and project directions at the new "commune" level, and
2. Seek out, adapt, and test a consensus building agricultural and natural resource management model that can be used at the commune level to deal explicitly with livestock and agricultural interactions (including potential conflicts) within a landscape ecology framework.

## **Methods and Materials**

Objective (1) is being addressed by the development and support of the NRMAC. Various conflict management workshops with the NRMAC and SANREM researchers have been lead by an expatriate

expert in this area. Long-term NRMAC training in organizational development and functional literacy is being carried out by CARE-Mali, our local NGO partner. The focus of this paper is on our activities directed toward meeting the second objective.

Long-term trends in population growth, a deteriorating natural resource base, and a harsh and capricious climate have exacerbated the cycle of poverty for the vast majority of West Africa's farmer and pastoralist populations. Clearly, a local consensus building effort is required to arrest this serious and potentially explosive trend. Holistic Management is one approach that holds much promise, particularly in West Africa's arid and semiarid region.

The Holistic Management Model was developed by Alan Savory (1988) during the last two decades as a direct result of his experience and observations of large animal grazing patterns and their effects on land resource quality in Southern Africa. Because of its explicit treatment of livestock within an arid and semiarid landscape ecology framework and because of its positive anecdotal results at smaller scales elsewhere in West Africa, it was of particular interest to SANREM researchers. As a result of this interest, SANREM WA decided to adopt and adapt the Holistic Management Model as its participatory approach to defining its research program. The goal is to use the Holistic Management Model to build broad-based consensus concerning the consequences of past activities and the potential for future community actions. By integrating SANREM WA researchers into this process-oriented approach, we expect to build a scientifically rigorous research program that is also understandable and relevant to the local populations. To this end, SANREM WA has invested a great deal of its resources over the last one and one half years in providing Holistic Management training workshops for the NRMAC, other community leaders, and participating researchers and partner organizations.

The Holistic Management Model (Figure 1) emphasizes the importance of enabling the four defining processes of the ecosystem (water cycle, nutrient cycle, natural succession or community dynamics, and energy flow) to achieve a sustainable holistic goal. The holistic goal is composed of three parts: the future quality of life that is desired, the level of production that is necessary to achieve and maintain this quality of life, and the future landscape that is necessary to achieve

and maintain these production levels. The goal is defined by consensus of the stakeholders involved in the “whole” or entity under management control. Holistic Management is, therefore, amenable to different scales from individual enterprises to village, commune, and higher levels.

The Holistic Management Model describes six direct (rest, grazing, animal impact, living organisms, technology, fire) and two indirect or enabling tools (human creativity; money and labor) responsible for the current status and future remediation of the four ecosystem processes. All tools are viewed as having both potentially positive and negative consequences for the ecosystem. Intervention planning under Holistic Management does not focus on defining a traditional list of constraints leading to highly specific prescriptive action plans with their usual dependence on technological solutions. Rather, emphasis is placed on understanding how the tools have been used in the past to bring about the current situation and what changes may be necessary in the use of these and other tools to correct the ecosystem processes in the future.

Various testing criteria are offered to help guide the participatory intervention planning. These include: cause and effect (ensure the cause and not the symptom is being treated); weak link (social, biological, financial); marginal reaction (for any given type of intervention, the largest movement toward the holistic goal with least investment); gross profit (choice among enterprises); energy and wealth source (internal versus external and potentially unsustainable investment); sustainability (movement toward the holistic goal); and society and culture (social compatibility of intervention).

A major strength of the holistic model is its flexibility. It is explicitly recognized that all planning *per se* is imperfect so that careful monitoring and replanning should be undertaken on a regular basis.

## Results and Discussion

With only a little over one year of on-the-ground experience, our discussion of results from SANREM WA’s experiment with Holistic Management must be tentative. Nevertheless, it is evident from its

enthusiastic reception among local participants in the Holistic Management workshops that it has much to offer. The model is simple (but not simplistic) and very accessible to farmers, livestock producers and other local-level natural resource management decision makers. It connects well with their understanding of their environment, experiences, and observations. It provides the framework not only for discussing and sharing a vision for tomorrow, but also provides a flexible roadmap for collaboratively diagnosing natural resource management problems, prescribing remedies, monitoring results, and making needed changes. It is also robust enough to engage researchers in collaborative diagnostics, hypothesis formulation and testing. Consequently, it appears that Holistic Management can serve as an effective bridge between local stakeholders and the research community during the research planning, implementation, and evaluation phases.

For West Africa's arid and semiarid region, the Holistic Management model appears to be particularly useful in discussing livestock and agriculture interactions, problems, and potentials. A fundamental tenet of Holistic Management is that the degradation of the vast areas of pastureland resources in West Africa is not due to overstocking but rather to selective overgrazing of desirable species caused by inadequate management. Holistic Management proposes a program of timed rotational pasturing wherein all animals are grouped together on small parcels for limited time periods. This approach maximizes animal impact benefits to the land as all grasses, even less desirable species, are eaten down. After the animals leave one parcel for another one in the rotational sequence, adequate time is given to permit all grasses to fully recover without the physiological damage caused when animal re-graze desirable species too soon in their growth cycles. If this scenario is generally true (and anecdotal evidence indicates that it may be), Holistic Management holds the possibility of greatly increasing pastureland resource productivity with associated increases in incomes and food security for some of poorest people on earth. However, given that West Africa's pasturelands are generally common property resources, the implementation of such a timed rotational grazing scheme would require the buy-in and cooperation from a large number of stakeholders. It is hoped that the accessibility and consensus-building nature of the Holistic Management model will encourage this buy-in.

Although the Holistic Management model appears to have much promise in dealing with priority natural resource management problems in West Africa, a number of concerns have been noted, many of them from research partners. The model has been criticized for not being comprehensive enough. In particular, socioeconomic researchers question the lack of any explicit treatment and role for markets and policy in the ecosystem foundation blocks. Similarly, risk – a fundamental determinant of smallholder behavior – is not explicitly treated. Temporarily, at least, these elements may be subsumed into some of the other elements of the model for treatment but may eventually have to be dealt with more explicitly as the model evolves.

A more fundamental concern, which is not unique to Holistic Management but deserves mention, is the great philosophical divide that exists between researchers and holistic development practitioners. Traditional scientists are all reductionists to some degree. In other words, they attempt to reduce problems to small and discrete phenomena that can be measured and to testable hypotheses that can be accepted or rejected. This is an anathema to holistic practitioners who believe the development process is too complicated and interrelated for any meaning to be divined in this manner.

In our project, the manifestation of this ongoing conflict occurs during two stages. During the diagnostic stage, when the Holistic Management model is being used to define underlying causes and potential solutions to problems within the ecosystem foundations, we see researchers becoming impatient with the process. After identifying familiar themes, researchers often propose experiments that they would be predisposed to do anyway. The simplicity and generality of the model allows them to readily rationalize these experiments in terms of the model when pressed to do so.

Holistic practitioners, on the other hand, offer resistance at the end of the process after the underlying problems and potentials have been identified. They are reluctant to agree that testable hypotheses and appropriate protocols can be developed. While researchers feel that holistic practitioners fear the results of such experiments might not confirm their preconceived ideas, the practitioners argue that too many factors are in play to realistically test elements of the model.

Despite this debate in the background, the farmers and herders involved in the project are anxious to get the program started and

move forward. We have found them willing and active participants in the preliminary steps we have taken so far.

## Conclusions and Lessons Learned

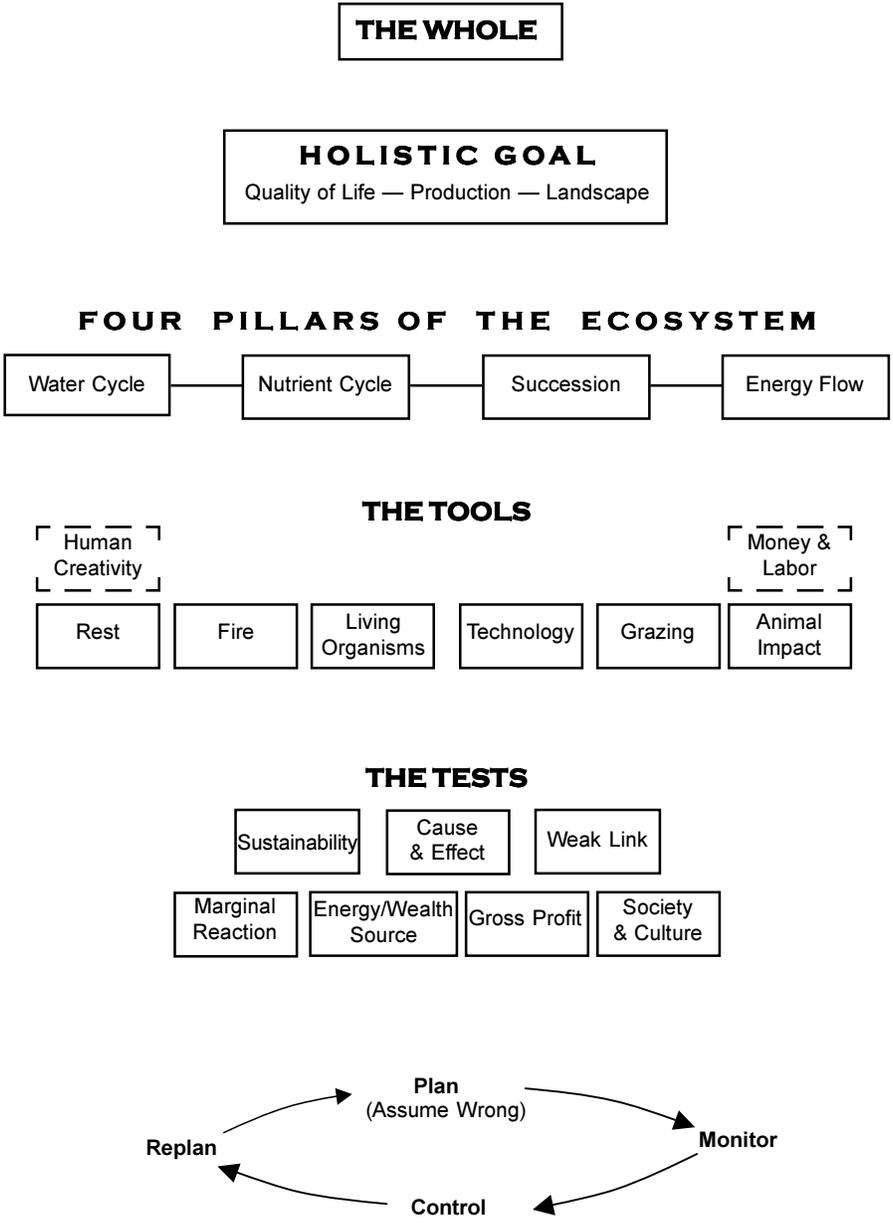
Holistic Management offers a unique and potentially effective approach for promoting community-based understanding and responses to natural resource management problems and issues at the decentralized local level in West Africa's arid and semiarid regions. In six months, we will move into our critical third year of on-the-ground activities when we expect to begin to see major research payoffs from our initial two-year investment in time and resources. Within the mandate of our collaborative research support program, our principal challenge is to continue to bring together researchers, Holistic Management practitioners, and our local partners to determine which elements and prescriptions of Holistic Management are testable. Then, we will collaboratively develop the rigorous protocols to proceed. We realize, however, that these efforts will not test the validity of the Holistic Management model *per se*. All management models are by their nature too broad for scientific validation.

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Figure 1. The Holistic Management Model as adapted by SANREM West Africa.



# **Sustainable Futures: Contrasting Local Visions and Scientific Scenarios for Sound Community-Based Decision Making**

by Robert E. Rhoades<sup>1</sup>

## **Introduction**

Dr. Robert D. Hart's career can be divided into two professional inspirations and stages. The first, growing from the farming systems movement of the 1970s, was his love of working with farmers and communities at the landscape and field level. As one of the pioneers of agroecology research, he was among a handful of practitioners who developed both the theoretical concepts and the practical field methods for involving local people in the agricultural research and development process (Hart, 1985).

During the late 1980s and 1990s, however, Dr. Hart's attention turned to the possibilities of new technologies for improving the flow of information among scientists and policymakers as well as between these groups and farmers or local communities. Hart possessed a keen sense of anticipating future trends as well as a willingness to give up well-trodden paths for risky, untried ideas. Deep down, he held a conviction that participatory research and digital cyberspace technologies were not mutually exclusive and that the two could be joined to create better science, better policy, and better lives for the people who ultimately counted in the development process. Unfortunately, his life was cut short before he was able to fully blend these two seemingly contradictory stages in his career.

In this brief paper, I would like to outline a methodology or approach to sustainability, which grew out of my interaction with Bob in his final years. In his humble way and without any preconceived dogma, he challenged those of us in SANREM to make our research local and global, applied and basic, and available and understandable to all deci-

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sion makers over a landscape. This methodology is a work in progress, just as Bob Hart would have preferred.

## Why the Future in Sustainability?

After a decade-long struggle to define, measure, operationalize, and deconstruct the concept of sustainability, most theorists and practitioners have abandoned the search, thinking that the notion is little more than a catchall “Motherhood” statement. Part of the frustration is that much of what now passes for sustainable development is merely old wine in new bottles. Many projects are often no more than outdated and renamed Farming Systems Research, conventional agriculture with a “green” window dressing, or restoration ecology as narrowly practiced over the years. The pressure from funders and other impatient overseers of development work has led to the scramble for immediate results, which has allowed precious little room for experimentation with innovative or radical approaches. Business as usual meant thinking of sustainability in limited time frames, involving little more than projecting past trends or analyzing present land use patterns.

A central problem for scientists and applied practitioners is the inability to deal effectively with uncertainty and the future. As many early authors writing on sustainability argued, the concept is about creating conditions at least a generation in the future (20 years), not about outcomes over an annual planning or planting cycle. In some cases, however, sustainability became a synonym for monitoring the present distribution of plants, animals, and other biological components. Although such information can be advisory to people who live in a landscape (or at any other scale), the true essence of sustainability is about societal values and what society, in all its negotiated complexity, desires for the future. This has been called “desired future conditions.”

Any program that addresses sustainability must come up with a methodology that deals with the time dimension and the uncertainty of what lies ahead. This is what the Bruntland report (WCED 1987) meant when it recorded: “sustainable development is ... development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Therefore, we need

methods, tools, theories, and organizational guides that help all humanity to deal with the fact that the present must be connected clearly with an uncertain and distant future.

In our rush to get on with the job at hand, however, we have lulled ourselves into believing that all we need to do is get people (called “stakeholders”) around a debate table and discuss problems, resolve our differences, and come to some kind of a consensus plan for action. The notion is that by bringing together diverse people from different walks of life, advised by scientists and planners, and arguing out consequences and trade-offs, we can achieve a common understanding of the problem and the required solutions. This is fine in theory but all too often in such “participatory” community meetings there is little that people can really grab onto that allows them a clear image or vision of the future they may want to create. Since the future is unknown, ambiguous, and fuzzy, people have a hard time thinking beyond vague generalities guided by their own ill-informed biases. In such participatory encounters, no matter how well intended, there is precious little empirical reality around which precise boundaries can be drawn so as to keep the community-expert dialogue on target. Feel-good consensus building exercises do not yield understandable, empirical or visual information capable of dealing with the future or the consequences of different decisions. As a result, the consensus building process tends to break down since it is not easy to understand the consequences of different decisions by different groups or alliances of groups. All too often scientists dazzle and confuse nonscientists with numbers, equations, charts and models, which tend to be static for the most part. And in all such meetings, there are invariably power plays, groups and individuals who dominate, and those who have the ability to distort the dialogue (especially scientists). It is precisely this lack of a clear methodology to get at the future in a clear and empirical way that underlies much of the dissatisfaction with sustainability as a useful concept for science and development.

## **Future Visioning as a Scientific and Planning Question**

If sustainability is about what local people value and want in the future, and not necessarily what outsiders like scientists or govern-

ment leaders want, then we need an approach that combines both science and local people's perceptions and visions of the future as a way to focus sustainability planning. Furthermore, sustainable development proponents need to develop methods that reach beyond the specifics of particular settings. To this end, we are proposing the development of a methodology we call "sustainable mountain futures." It is an Andean variant of what has been labeled "common visioning" or "desired future conditions." The premise of the methodology is that different groups have different perceptions, and therefore solutions, to changing the world. Each group carries their own biases, values, and hopes for a future world. The aim of the methodology is to bring these stakeholders, especially scientists and other outsiders, into a dialogue that is based on clear empirical information. This means that a sustainable development project must faithfully capture these different perceptions, translate them into images or representations understandable to all involved, and then use them as platforms for education, debate, planning, and – obviously – action in the future at least a generation away.

Although the methodology is *in progress*, we can sketch in broad strokes how it will work. The methodology will compare scientifically generated rules, patterns, and visions based on robust, predictive models with the rules, patterns, and visions generated by local people themselves. There is no assumption of superiority or correctness of either, but that ultimately local people will make the final decision about the future. Past, present, and future visions (in actual images) will be presented to local communities and relevant "external" decision makers in an effort to arrive at better decision making that combines the wisdom of science with the wisdom and desire of local people who must live with the consequences of sustainable development projects. In this process and as various stakeholders discuss actions and consequences of decisions, it will become clear that each "view of the landscape" has its own predictive and explanatory power. When the various scenarios are illustrated, this will lead to disagreements over desirability and predictability. Indeed, highly rational and scientific external models of landscape resources over time may prove to be meaningless or irrelevant within the context of local culture or it may contradict local values, or even demonstrate poor predictive power when

applied at a household or community level scale. In short, the purpose of the contrasting futures methodology is to present alternatives to the future from both scientific and local points of view and to establish a clear and visible platform for debate and planning. This methodology can help sharpen a field team's work so that each discipline has a common focus on creating integrated, alternatives for the future. Likewise, for communities, it allows clear empirical possibilities or plausible scenarios growing from the impact of decisions taken. The hope is that this methodology is portable, that it can be applied to other projects with similar goals, and that the information can be used to modify future trajectories in landscape and livelihoods.

## The Future Visioning Methodology

In developing and illustrating the sustainable futures methodology, we have focused on the four SANREM study communities in Nanegal Parish located in Northwest Ecuador. For the scientific scenarios, we have relied on our long-term land use study of the area (1966-1990), although the methodology would have worked with hydrology or biodiversity data. For the local perspectives, a team of ethnoecologists worked intensively with key informants to test the scientific scenarios against local images. These data are now being analyzed in preparation for the next stage, which is to take back information and various images to the community so the dialogue and planning process can begin (Rhoades 2000; Stewart 2000).

Each of the following steps is now being tested, analyzed, and modified.

1. Development of the scientific view of alternative futures
  - ❖ Analyze and explain in robust scientific terms the past, present, and future land use changes over the past 30 years;
  - ❖ Link land use changes to “human drivers” (e.g., population, roads, markets) to describe the dominant historical process that produces the landscape through time;
  - ❖ Project these dominant trends and processes into the future, to describe plausible, scientifically described rules and scenarios of future conditions.

2. Steps in understanding local people's visions of the future
  - ❖ Using ethnoecological methods (e.g., story completion, photo interpretation, etc.), generate local people's parallel visions of scientific scenarios and rules in order to elicit their understanding of change related to natural resources and agriculture;
  - ❖ Compare scientists' perceptions (predictive rules) with local perceptions (cultural rules) to arrive at a systematic understanding of differences in assumptions, values, beliefs, time and space horizons, etc.
3. Use these contrasted findings of the future ("scenarios") as a springboard or platform for community-based dialogue and planning for natural resource management
  - ❖ Translate the scientists' predictions into visual landscape images (through photo-manipulation) drawn from a point of geographical reference easily recognized by local people (e.g., the same panoramic view in 1966, 1990, and 2014);
  - ❖ Present these images, along with other sets of information readily understood by all stakeholders, for purposes of debate and action planning. In such discussion, changes will be linked to past and ongoing behavior and "if-then" outcomes made clear. The alternatives (e.g., doing nothing, ecological or industrial agriculture, etc.) will be presented. Trade-offs will be made clear in a way understandable to the very people whose lives are to be impacted by the planning process.

## Conclusion

The purpose of the methodology outlined above is to provide decision makers (at all scales and social levels) with insights about the impact of their decisions and actions. This stands in clear contrast with the conventional cost-benefit analysis, conventional public meetings aimed at consensus building, or other tools of the trade in natural resource management (Gregory 2000). The difference also lies in the fact that there is an up front admission that we need to understand

the perspectives of all stakeholders, including those of scientists. The notion that objective science has the answers for local people is drawn into question. Science is merely one of the perspectives on the table. The approach attempts to pinpoint the consequences or impacts of alternative actions related to the objectives, goals, and values of the community. It means there is a very close tie between analysis and deliberation of issues wherein stakeholders' judgments are informed not only by science but also by their own world views. I realize that this approach is very different than conventional approaches in that it requires scientists and policymakers to accept that local values and objectives are primary. Scientists can play a role by demonstrating the trade-offs or impacts of such values and proposed alternatives, but they cannot determine the values themselves. This approach is a humbling one and Dr. Robert D. Hart would have liked that.

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# **The Advocacy Coalition Framework: A Theoretical Frame for SANREM to Address Policy Change and Learning**

by Cornelia Butler Flora<sup>1</sup>, Jan L. Flora<sup>1</sup>, Florencia Campana<sup>2</sup> and  
Edith Fernández-Baca<sup>1&3</sup>

The everyday activities of individuals and communities are generally channeled and limited by decisions about resource allocation and regulation that are taken beyond the local level. These decisions may or may not be contested and the “beneficiaries” of those decisions may or may not be aware of them. Further, these decisions are made not only by governments, but also by corporations and non-governmental organizations. Information is always used to justify those decisions, but it is often sought after the decision to validate the course taken rather than before the decision to inform it.

In our research in the Andes, we work with community-level decision makers to identify the key issues around which decisions concerning natural resource allocation and regulation are made. Then we identify key institutional market, state, and civil society actors engaged in those issues. We can identify key decision points and critical information used at decision making junctures by analyzing each institution’s desired future conditions, mental causal models of how to achieve those conditions, and then clustering institutions around different aspects of these conditions and causal models.

SANREM, which funds this research, is a program that has as its goal the betterment of natural resource management. One aspect of improved natural resource management has to do with the decisions made by institutions and actors at a ground level that are encompassed and enclosed in a policy framework determined by multiple levels. By working with local communities, sharing our data in the case of

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Cotacachi, Ecuador, and working with community members to gather the data in the case of Colpar, Peru, we are designing appropriate decision-support tools that link levels and sectors in ways that improve local sustainability and address issues such as the economy, the environment, and equity.

We have adapted the Advocacy Coalition Framework (Sabatier and Jenkins-Smith, 1993) for our studies of advocacy coalitions in the Andes. An advocacy coalition consists of actors from a variety of market, state, and civil society institutions at all levels who share a set of basic beliefs (policy goals plus causal models and other perceptions) and who seek to manipulate the rules, budgets, and personnel of institutions in order to achieve these goals over time. The Advocacy Coalition Framework allows us to examine coalition formation and reformation over time. We can also investigate how information is used by different coalitions at different points in time. The Framework allows us to go beyond the assumption that policy formation follows a linear process of problem identification, agenda setting, adoption, implementation and policy evaluation (input, throughput, output and feedback) to work with the cyclical and interactive nature of decision making regarding agriculture and natural resource management.

Our review of research on the utilization of public policy analysis and other forms of relatively technical information by public policymakers draws these major conclusions:

- 1) Substantial cultural differences impede interaction between researchers and decision makers at all levels.
- 2) While policy analyses seldom influence specific governmental decisions, they often serve an “enlightenment function” by gradually altering the concepts and assumptions of policymakers over time.
- 3) Policy analyses are often used for non-substantive reasons, such as to enhance organizational credibility, defend or expand turf, and delay undesirable decisions.
- 4) If researchers and policy analysts wish to have a significant impact on policy, they generally must abandon the role of neutral technician and instead adopt that of an advocate.

Thus decision-support tools must enhance the ability of institutional actors to understand their own and other institutional actor's desired ends and assumed means. The research we are undertaking is designed to enable grassroots organizations to develop their own sources of knowledge and their ability to make coalitions with others who share their desired future conditions and mental causal models.

We therefore examine the following processes:

- 1) The interaction of competing advocacy coalitions within a policy subsystem;
- 2) Changes external to the subsystem in socioeconomic conditions, system-wide governing coalitions, and output from other subsystems that provide opportunities and obstacles to competing coalitions within the subsystem; and,
- 3) The effect of stable system parameters, such as social structure and constitutional rules, on constraints and resources of various subsystem actors. In situations of great instability, it is often difficult to determine what the stable system parameters are. This is particularly challenging in a site such as Ecuador, where constitutional changes, political instability, and major economic changes of crisis proportions make it important to understand the emergence of advocacy coalitions that improve the well-being of people and places in the rural Andes. We contrast the Ecuadorian situation to Peru, where there has been greater government stability, but increasing delegitimization of the national government.

Research in developed countries has found that coalitions organize around shared desired future conditions and shared mental causal models of how to get there. These common beliefs lend credibility to particular sorts of information over others. Understanding these differing informational sources – complex mathematical models, analogies, metaphors, anecdotes, bivariate changes, etc. – can help researchers better inform the coalitions as they seek to influence natural resource management, including agriculture.

Desired future conditions and mental causal models emerge in both institutions and in individuals. As individuals and institutions

change and as the containing systems change, desired future conditions can be slightly modified or elaborated and mental causal models can be tweaked slightly. More often than not, however, changes in an institution's desired future conditions and mental causal models are accompanied by a change in personnel within that institution.

We ascertain desired future conditions and mental causal models by analyzing information provided by institutional actors in documents and interviews. We then empirically examine the extent to which these change over time. Only by understanding the implicit causal model of each institution can decision-support tools be effectively provided to help move toward a stated desired future condition.

Desired future conditions for a particular location are compared in terms of the four types of capital we have identified in our previous work in the area: human capital, social capital, natural capital, and financial or built capital. Human capital encompasses people's knowledge and skills. Social capital refers to networks of social organizations. Natural capital includes a region's natural resources, for example, water, land, forests, and biodiversity. Financial capital – this is fairly straightforward – has to do with economics and infrastructure. All four types of capital are critical contributors to long-term sustainability. When one of these capitals is not included among desired future conditions, it can provide an opening for discussion by other institutional actors seeking to reach sustainable goals of a healthy ecosystem, a vital economy, and social equity and inclusion. When there are agreements on specific aspects of these different place-based resources, the possibilities for collaboration are enhanced.

The Advocacy Coalition Framework hypothesizes that changes come within advocacy coalitions because external changes that allow for redistribution of power favors one belief system over another. By analyzing different socio-political contexts within somewhat similar areas in the Andes, we can determine how local action that enhances issues of sustainability (ecosystem health, social inclusion and equity, and economic vitality) are facilitated or constrained by decisions made at higher system levels. Local understanding of how current policies of privatization, decentralization, and participation are developed, interpreted and implemented in their situation is key to empowering communities to become part of advocacy coalitions that influence the de-

cisions that facilitate or limit their sustainable options. Our analysis is aimed at determining how desired future conditions (core values) and mental causal models (near core values) of different institutional actors compare, contrast, and interact so that advocacy coalitions can be formed to use decision-support tools that enhance sustainability at the local level. Our comparative methodologies – one working with our non-governmental organization (NGO) colleagues as the primary researchers and one working with the traditional community organization supported by an NGO as the primary researchers – allow us to determine how information about the current state of sustainability can best be framed in order for policies to be implemented at various levels to increase future sustainability. Decision-support tools will be based on multi-institutional, multilevel collaborations. In the context of increasing decentralization and privatization, it is imperative that civil society, market, and state institutions at the local level work together and form coalitions with others who can set the stage for household, enterprise, and community decisions regarding agricultural and natural resource management.

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# Social Capital and Advocacy Coalitions: Examples from Ecuador

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## Introduction

Institutions play a major role in the workings of the market and in shaping relations among human, economic, social, and natural capital. They condition relationships – from the local to the international levels. The development process can be understood by examining relationships among three institutional sectors: market, state, and civil society. Appropriately balanced and linked, these sectors can reinforce one another and promote sustainable development – that which is socially just, environmentally benign, and economically viable.

Each sector should make its unique contribution *and* reinforce the efficacy of the other two. The market provides incentives for production and assures efficient distribution of traded goods and services. A well-functioning state provides the rules under which the market functions and enforces them. A robust and diverse civil society reduces transaction costs in the other two sectors by building trust and diversifying social networks, and providing social values for the state's regulation of the market.

Relations among these three sectors are researched using an advocacy coalition framework. Organizations, agencies, and firms coalesce around concrete issues to achieve common ends or – more frequently – they form advocacy coalitions based on different mental causal models and hence different means (projects and corresponding activities) for arriving at desired futures that often are quite similar.

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We have examined advocacy coalitions around the issues of (a) governance of the Cotacachi-Cayapas Ecological Reserve on which the Canton of Cotacachi abuts, and (b) whether open-pit mining will occur in the semitropical part of Cotacachi in northern Ecuador. These issues will be assessed in the context of governmental decentralization and privatization.

The central concept in the decision making approach we have adopted is that of advocacy coalitions. Advocacy coalitions are groups of organizations that may come together, either because of commonly held values or so-called *marriages of convenience* to achieve a commonly desired end.

## Context

Although the Andean or highland sector of Cotacachi covers only 20 percent of the canton, it is home to more than 60 percent of its population. The highlands or *altiplano* are the ancestral home of the canton's indigenous population. Traditional ranches or *haciendas* are also located here. The economy of this highland microregion is based on three main activities: agriculture, artisanry (particularly leather goods), and tourism. In the past decade, agro-industrial firms that specialize in nontraditional export products – flowers, asparagus, and fruit – have come to provide significant local employment.

Conventional crop and livestock production is still the backbone of the economy, employing 65 percent of the economically active population. Unlike other parts of the Ecuadorian highlands, Cotacachi did not undergo land reform. However, the disputes in this region are principally over scarce water rather than land per se. The Andean zone produces mainly corn, beans, vegetables, and tubers in the mountainous land belonging to indigenous communities. The traditional *haciendas*, located mainly on the best lands on the valley floors, produce livestock and commercial crops.

The tourist and hotel trade emerged in the 1970s. The Cotacachi-Cayapas Ecological Reserve was established in 1968 and includes Cotacachi Mountain and the crater lake, Lake Cuicocha. The lake has become an important and easily accessible tourist point. The city of Cotacachi is only a few miles off the Pan American highway. In addi-

tion, its nearness to the famous Otavalo market undoubtedly leads to some spillover tourism.

In the Canton of Cotacachi, there is a thick and varied organizational network (bonding social capital), particularly in the rural part of the Andean zone. The community or *comuna* is the traditional organizational form of the indigenous population of the highlands. More recently, the rural population has formed water boards for potable water, women's groups, and farmers' associations. The rural population of the semitropical zone, mostly *mestizo*, is also organized into cooperatives, agricultural and livestock associations, and an environmental organization that has spearheaded the opposition to mining in the subregion.

The most important peasant organization is the Union of Peasant Organizations of Cotacachi (UNORCAC), a secondary-level organization that brings together some 43 rural communities in the Andean zone. Since its founding in 1978, UNORCAC has focused on cultural and political issues. It has fostered a strong bilingual education movement and, over the years, has succeeded in bring political pressure to bear for government services in rural highland areas.

Since 1996, the canton has initiated a process of participatory democracy, involving both *mestizo* and indigenous organizations and citizens in a municipal assembly. Citizen commissions on issues such as health, tourism, education, and the environment, are active throughout the year. Open to all citizens, the Assembly itself meets annually under the tutelage of the mayor (Báez *et al.* 1999: 64-65).

## Methodology

To be chosen for study, issues should involve some local mobilization, must crosscut sectors, and must be policy relevant. The Advocacy Coalition approach involves analysis of documents produced by each key organization in the issue's outcome. The purpose is to determine collective desired futures and mental causal models. Then key organizational leaders are interviewed to understand how the issue has unfolded, the role of their organization and others in that process, and to elicit names of other institutional actors. Proposed outcomes and outputs are then mapped based on both documents and inter-

views. The interviews supply basic information to later compose focus groups consisting of local organizations with the potential to become an advocacy coalition. There our assessments regarding desired futures and composition of advocacy coalitions can be tested against the interpretations of relevant actors.

## Tourism and Management of the Cotacachi-Cayapas Ecological Reserve

In the context of the discourse regarding tourism as an alternative “development pole,” the mayor’s office contracted a consultant to recommend how tourism initiatives could be put into practice. He proposed that a mixed public-private firm be established to manage the tourist “circuit” that extends from the city of Cotacachi to Lake Cuicocha. Bolstered by the legal structure for decentralizing management of natural resources, the mayor’s office initiated a petition to the Minister of Environment to concede the administration of Lake Cuicocha to a mixed company. The firm was immediately organized with private capital, largely from urban *mestizo* stockholders, and with funds from the municipality.

Shortly thereafter, in early 2000, UNORCAC asked the Ministry of the Environment to transfer the management of various tourist points within the Reserve to UNORCAC in order to maintain the management integrity of the natural resources in the highland portion of the Reserve.

In response to these two requests, the Ministry asked the Mayor’s office to develop an integrated proposal to be based on agreement among all parties interested in managing the resources of the Reserve: the municipality, UNORCAC, and Incamaki (an indigenous artisan and tourism organization that currently manages the boating service at Lake Cuicocha). The Ministry suggested that the three principal interested parties form a “management board” to administer resources of the Reserve.

The process by which such an agreement might be reached has not yet been developed. Rather, the municipality (jointly with the mixed public-private company), UNORCAC, and the Incamaki Association have each developed and presented separate proposals.

## What Are the Diverse Interests Behind the Various Proposals and Can They Be Reconciled?

The ethnic and organizational background of the mayor, the first indigenous person to hold that post, is central to understanding his role in representing general interests. His legitimacy with the *mestizo* population is based squarely on his ability to evenhandedly respond to the interests of the two main social groups in the canton: *mestizos* and indigenous peoples. In this case, the mayor must overcome the image held by *mestizos* that indigenous people lack the knowledge of how to carry out public functions. To do that, he has emphasized institutional modernization of local government and efficiency in managing natural resources, which in the case of management of the Cotacachi-Cayapas Ecological Reserve, involves pursuing the dual goals of conservation and commercial tourism development. The mixed tourism management company is a concrete manifestation of that vision.

The entrepreneurial imperative to generate wealth, which has already manifested itself in the area through *mestizo* leather crafts, flower growing, agroindustrial enterprises, and other activities has begun to be shared by members of the indigenous population and their organizations. For instance, the water boards that are part of the Chumabi Project have supported the mixed-company proposal because they believe it would lead to investment in the potable water system. In addition, their support may also be related to their close ties with the mayor who has carried out public works in the communities in which the water systems are located.

## Identification of Advocacy Coalitions Around Governance of the Reserve

The discourse that cements the municipality's coalition is entrepreneurial development, which resulted in greater support for the mayor from the *mestizos* involved in tourism and retail business.

UNORCAC has also built another advocacy coalition around itself. It consists of the leaders and technical people (staff and contracted) of the secondary-level organization (SLO) itself; its constituent communities that are located inside the Reserve and within its buffer zone;

the Incamaki Association, whose interests are compatible with the UNORCAC proposal, although it has presented its own proposal; PRODEPINE<sup>5</sup> (a World Bank social fund organization for indigenous and Afro-Ecuadorian communities); and a Dutch NGO (AGRITERRA) that works closely with UNORCAC.

The desired futures of the two coalitions are not so different. Both support (a) decentralization processes that benefit the locality and (b) management of natural resources as natural capital to be invested for both present and future generations. For one group, an entrepreneurial rationale that would generate resources for local self-management and for the individual stockholders is most appropriate. For the other, without discarding the entrepreneurial aspect, it is essential to build a future in which the conditions for the social reproduction of the peasant communities are not only maintained, but their quality of life is raised. Many in the entrepreneurial coalition believe that UNORCAC lacks management capacity (even though it has been clearly demonstrated in other areas) and would therefore put at risk the tourism project that is a core component of canton development. For the indigenous-led coalition, the entrepreneurial tourism proposal would benefit a social group that already has better economic conditions, and therefore would exacerbate the substantial inequality of access to resources that already exists.

## The Mining Controversy

The second issue has to do with the controversy over mining in Intag, the semitropical part of the canton. The first step in our research was to determine which organizations are stakeholders in the issue, followed by interviews and focus groups with the principals. An initial list of organizations was developed from those mentioned in the documents provided to us by organizations we felt sure were actively involved in the mining controversy. These included organizations, agencies and firms at the local, county, provincial, national, and international levels.

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<sup>5</sup>The control of PRODEPINE has recently shifted to the CONAIE indigenous federation, so it may now be part of the coalition centered on the mayor.

One advocacy coalition – the opposition coalition – centered on a local environmental NGO called Defense and Ecological Conservation of Intag (*Defensa y Conservación Ecológica de Intag* or DECOIN) whose membership includes both middle class environmentalists who have chosen to live in the area and longer-term residents of various backgrounds. The other coalition centers on the Ministry of Energy and Mines. Their view, backed up by advisors from the World Bank, is that the western slope was not suitable for agriculture and tourism and therefore should be mined to meet the nation's need to increase foreign exchange during this period of great financial stress.

The opposition coalition felt it needed information on the environmental impacts of open pit mining, so, with financial help from the national and international environmental groups in the coalition, it sent a delegation to visit open pit mines in Peru. Their visit included the Aroya mine in the central Peruvian highlands. This coalition's rules of evidence are experientially, not scientifically, based. They visited people and places where what they opposed had already occurred.

Whether the Aroya mine, which continues to pollute air and water alike, is an appropriate comparison for understanding the likely impact of a modern copper mine is unclear. Perhaps there is room for science-based information in the next round of discussions as pro-mining and anti-mining forces prepare to win the hearts and minds of Intag residents. How such information is inserted into the dialogue and by whom will help determine whether it contributes to a resolution of the issue.

The opposition group, DECOIN, also organized a trip to Japan and asked the mayor of Cotacachi to lead the delegation. DECOIN had previous contacts with environmental groups in that country, who organized their trip within Japan.

DECOIN also attempted to engage the Ecuadorian Ministry of Energy and Mines on the residents' own turf. The Ministry, in turn, invited them to Quito. The standoff was broken by DECOIN's occupation of the prospecting camp that had been built by Mitsubishi Metals. They then invited the Vice Minister for Mining to come meet with them. When they had received no response by the third day, they carefully inventoried all the machinery, carted it off the premises, and left it in the safekeeping of the mayor of Cotacachi. Then they burned

the camp down. While this discouraged the Mitsubishi Metals from opening what would most likely have been an open pit copper mine, the Ministry of Energy and Mines remains determined to regroup and to seek other possible concessionaires.

Local people are split on the issue. Some are strongly in the opposition to the mine. Others believe that the lack of jobs and income in this physically rugged area and the primitive nature of access roads, all point to mining as an effective engine of growth and modernization for the area. The opposition argues just as vehemently that a way of life would be destroyed. They recognize that it is not enough to show that mining is harmful to the environment and to residents, and have proposed and implemented some economic alternatives. For instance, they organized some 200 farmers into an organic coffee cooperative, and with assistance from their contacts in the Japanese environmental movement, have made an initial shipment of coffee at a premium price to that country. The Mining section of the World Bank strongly supports the mining alternative, but unlike the Ecuadorian Ministry they are advising, World Bank personnel insist that local people must participate in the decision making process, although they are not sure how to carry that out in the face of the “illegitimate” tactics used by the opposition group.

Other actors who are either part of the coalition centered on DECOIN or at least share similar desired futures include Ecological Action (a national NGO), Friends of the Earth (an international NGO), a couple of church-related development organizations, the Municipal Assembly (by declaring Cotacachi an Ecological Canton), the coffee cooperative, and one or two of the local township boards (*juntas parroquiales*). The pro-mining coalition consists of the Ministry of Energy and Mines, advised by the World Bank, and two or three local township boards. Mitsubishi Metals was a part of the pro-mining coalition but this Japanese mining company left the region a few months after its camp was razed. Only two entities have potential to bridge the two coalitions. One is the Ministry of the Environment, which has been rather circumspect because of a reluctance to criticize a sister ministry. The other is the mayor of Cotacachi, who was mentioned favorably by both sides. His strong victory in the recent elections and the apparent imperious behavior of his local supporters (many of whom

oppose the mining project) may have dimmed his star as a possible mediator. It is too early to tell. The inherent winner-take-all nature of a decision about mining also makes it difficult to find individuals or institutions willing to broker a solution. Strip mining will either happen or not happen.

## Conclusions

The advocacy coalition approach is a useful way to understand how issues develop and are resolved or heighten conflict. In the case of bioserve governance, there is considerable room for compromise and reconciliation. Yet stalemate has resulted, in spite of the fact that desired futures of different institutional actors are not very different. Why? We believe that the focus on activities and short-term outputs (in this case, the rush to develop plans for tourism and governing parts of the reserve) has obscured common values and similar desired futures. The Ministry of Environment may be at fault in calling for proposals without first bringing interested parties together to discuss goals for the Reserve. The April 2000 municipal elections also got in the way of finding a commonly acceptable solution. Now that the elections are over and the mayor is secure in his post, the obligation falls to him to use his cachet with both sides to broker an agreement. The agreement should at the same time encourage those living in or near the park to participate in ecological protection while being assured of the opportunity to gain their livelihood. It should promote appropriate tourism in and around the park in such a way that market, state, and civil society benefit from and maintain this rich natural environment. The advocacy coalition methodology and the NGOs that are assisting the municipality in building local democracy (Instituto de Estudios Ecuatorianos and Terranueva, who are also partners in SANREM), we believe, could help set the stage for reconciliation by using the advocacy coalition and other participatory methodologies to help the parties explore the commonality of their desired futures and the means for reaching them.

The mining issue presents much starker choices. Few institutions bridge the two entrenched advocacy coalitions. Brokering a solution (and indeed determining who would be an appropriate broker) is a

much more daunting job than defining the governance approach to be used in the Cotacachi-Cayapas Ecological Reserve. The winner-take-all character of large-scale mining means that the only room for compromise is in ameliorating the negative effect on the losers.

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