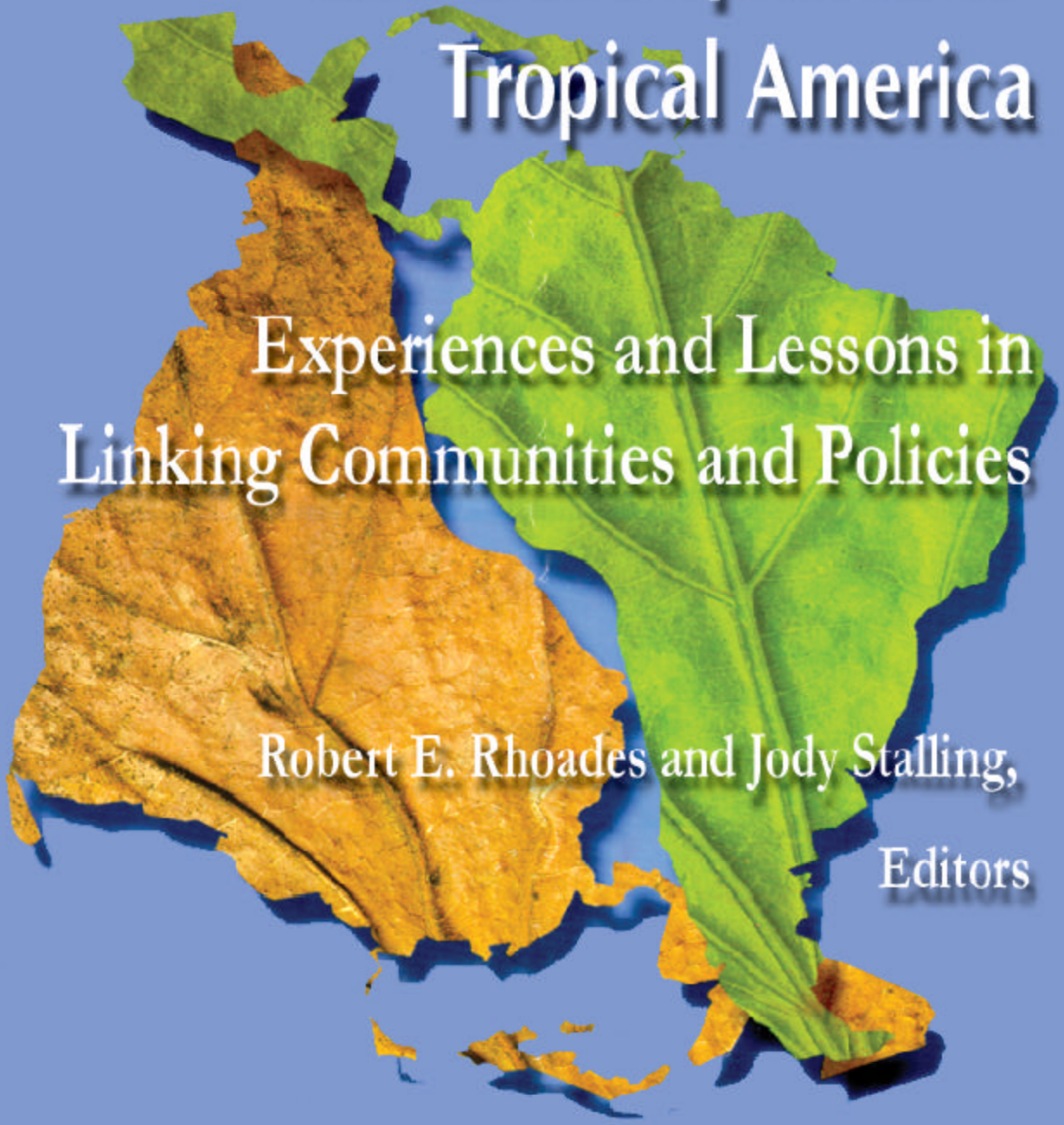
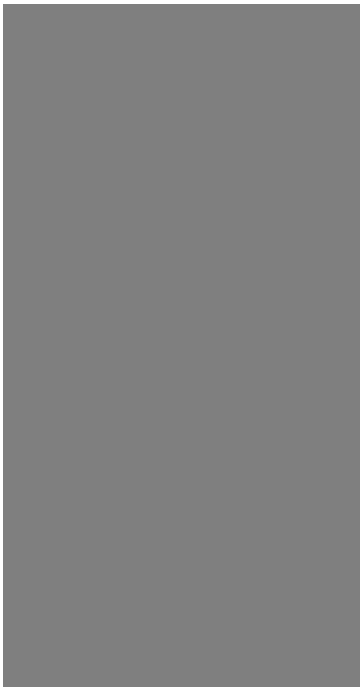
Integrated Conservation and Development in Tropical America



Experiences and Lessons in Linking Communities and Policies

Robert E. Rhoades and Jody Stalling,

Editors



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Acknowledgments

The idea for the conference "Operationalizing Strategies for Integrated Conservation and Development: Lesson Learned in Linking Communities , Projects, and Policies in Tropical America" grew out of an informal discussion in 1998 between Enrique Barrau, former Director of Agriculture and Natural Resources Office of USAID-Ecuador, Jody Stallings, Director of the SUBIR-CARE project in Ecuador, and Robert E. Rhoades, Program Manager for SANREM-Andes. Although all three of our organizations were concerned with integrating conservation and development within the buffer zones of the Cotacachi-Cayapas Ecological Reserve in Northwest Ecuador, we had not fruitfully compared our experiences or extracted the "lessons learned" for future planning. The more we discussed the possibility of a conference, the stronger the idea grew that we should also be learning from similar projects throughout Latin America. As a result, we issued a "call for papers" to all individuals and projects with experiences in combining development and conservation in Mexico, Central America and South America.

Successfully convening this conference and publishing a bilingual proceedings were no minor undertakings. Throughout the process we incurred a debt to many individuals and organizations. In USAID-Washington, we received both financial and moral support from Christine Bergmark, then USAID Program Officer for the SANREM-CRSP project (The SANREM-CRSP is supported by the USAID Cooperative Agreement Number PCE-A-00-98-00019-00). This support was further facilitated within USAID-Ecuador by our colleague Enrique Barrau. The late Robert D. Hart, Director of the SANREM-CRSP, encouraged us to elevate our findings from the local to a continental scale. A special thanks goes to Ecuador's Minister of the Environment, Yolanda Kakbadse, who along with Hilda Arellano, USAID-Ecuador Mission Director, gave opening remarks at the conference. Danilo Silva, Executive Director of the Ecuador's Ministry of Environment, kindly delivered the closing remarks.

The conference and these proceedings would not have been possible without the dedication of numerous people working at the ground level. In the U.S., Eric Jones helped organize and process the conference abstracts while

Mika Cohen edited drafts of the English proceedings. Finalizing both English and Spanish versions of the proceedings would not have been possible without the dedication, skill, and hard work of Milan Shrestha of the University of Georgia. In Ecuador, the conference was organized by Gabriela Encalada and Brian Hayum with logistic support from Rosario Granda, Ruben Arcos, Elena Barrioneuvo, Paulina Venegas. Simultaneous translation was provided by TW Congresos. The management and staff of the Hotel Alameda Real performed far above the call of duty in hosting the conference. Mary Ellen Fieweger edited and translated the proceedings in both English and Spanish. Natalia Parra and Alexandra Almeida helped with the final arrangements for publishing the proceedings. Also, our appreciation to the Director of Editorial Abya Yala, José Juncosa, for his oversight and guidance.

Robert E. Rhoades
Jody Stallings

Quito, Ecuador
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Preface

Robert E. Rhoades and Jody Stalling

Less than two decades ago conservation and development agendas began to merge in an effort to link biodiversity conservation with socio-economic development. This nascent dual approach constructed significant objectives and hurdles. At one end of the spectrum was the overall objective to conserve biodiversity, a worthy, but seemingly intangible objective. At the other end of the spectrum were the people who used and depended on natural resources on a daily basis. Somewhere in between were the connectors or equations that were supposed to bring together these two seemingly opposed agendas.

Integrated conservation and development projects (ICDPs) were designed and executed as early as the mid 1980s as an important answer to the development-conservation dilemma. These projects aimed to simultaneously recognize and represent local people's needs in and around protected areas, while conserving biodiversity. In the recent years various models of project execution were experimented with conservation and development organizations. In some cases, conservation organizations led the way, and in others, development organizations took the lead. Typically, an ICDP involved non-governmental organizations, a foreign donor, a national agency in charge of conservation, and local communities.

Based on these experiences, it became obvious that was difficult to determine the linkages between conservation and development, activity from impact levels, and the conservation of biodiversity. What was clear, however, is that the ICDP equation was not linear. There was not a simple solution of replacing variables with simple answers. Rolling design and execution were of upmost importance.

We find ourselves about 15 years later, with several lessons learned from numerous studies and projects. Most of the observations have emerged from the conservation movement, and most of these observations are grim and stark reminders of an equation out of balance. Numerous review of ICDPs around the world, but mainly in Africa, pointed to only modest success. First, the approach has not proven to be a panacea for biodiversity conservation as

promised but rather only one alternative among many. Second, most ICDPs do not have solid *ex ante* or *ex post facto* research and monitoring programs in place to answer critical biological and socio-economic questions. Third, few projects have published their full experiences, including "lessons learned" from failures and successes. Fourth, many of the assumptions underlying ICDPs are possibly false (e.g., reduce poverty also means reduced habitat loss). Fifth, ICDPs have largely ignored external forces affecting local behavior in a given buffer zone. Sixth, inadequate methods and tools to deal with the multiple stakeholder, multi-scale, and complex trade-offs involved in landscape research. Perhaps in retrospect, we should have realized early on in the game that the ICDP approach was not a linear paradigm. We should have realized that for every development activity in bio-sensitive areas that there would be a net negative impact, regardless of conservation programs. How could we try to bridge the gap between conservation and development? How do we link these two apparent opposing agendas? How do we interest local communities near protected areas, usually those with the most precarious and unmet livelihood security, to embrace conservation objectives when these people are living day to day and depending on natural resources for their survival? All of these are tough questions.

Given this situation, CARE and SANREM co-organized a Latin American conference entitled "Operationalizing Strategies for Integrated Conservation and Development: Lessons Learned in Linking Communities, Projects, and Policies in Tropical America". The conference was held in Quito on May 12, 13, 14, 1999. We decided the meeting was timely for a number of reasons. Most assessments of ICDPs focus on biodiversity and development in Africa, especially around the large parks with large animals. Conversely, the least attention has been given to Latin America which boasts of large numbers of ICDPs. In addition, we felt the tendency among ICDP practitioners not to share experiences or publish results could be redressed by holding a regionally focused conference where a common language (Spanish) facilitated communication among participants. We knew from our own projects, and those of our colleagues throughout Latin America, that many of us had moved beyond seeing ICDPs as a "magic bullet" which would both conserve nature while developing the economy. Instead of "throwing the baby out with the bathwater" and condemning all ICDPs for their shortcoming we decided to focus instead on the practical areas of doing better interdisciplinary conservation-development research, resolving conflicts that arise in trade-off situations, making conservation economically and socially viable, and developing the capacity for integrating conservation and development.

The response to our call for papers was overwhelming and resulted in receiving participants from 12 Latin American countries, over 60 presentations, and more than 160 participants. We selected 21 papers that we felt represented the main conference themes for this edited volume focused on operationalizing ICDPs.

The opening chapter by Jody Stallings (chapter 1) describes various paradigms followed by ICDPs in the past. He further presents the eclectic mix of approaches used by the SUBIR project in Ecuador wherein it was learned that a common vision among diverse institutional partners is critical. Section I of the proceedings looks at creative uses of local knowledge and scientific investigation—jointly and separately—in order to more clearly plan, set priorities, implement and monitor the activities and impacts of a given project. Rhoades (chapter 2) outlines an innovative methodology combining scientific bio-modeling with creation of locally ground truth scenarios of the future as a way to concretize planning efforts. Alarcon (chapter 3) addresses the most neglected aspect of ICDPs—biological monitoring—and relates the lessons learned in her work around the Cotacachi-Cayapas Ecological Reserve in northwest Ecuador. Working within the same SUBIR project, Tolisano (chapter 4) discusses how environmental assessment can be an interdisciplinary tool which not only identifies priorities and describes the target ecosystems but also engages the local people. Olaf Jahn in chapter 5 outlines the Multi-Time window Transect Mapping (MTW) method to accurately assess biological diversity and the impacts of development. Finally, Grettel Vargas (chapter 6) shows how Geographical Information Systems (GIS) is an important decision-making tool in creating land-use and critical area maps which show that a multi-institutional approach is needed to address problems of deforestation.

Part II examines the resolution of social conflicts and creating strategic alliances in operationalizing ICDPs. Chapter 7 by Manolo Morales examines one the most sensitive issues in much of Latin America: the increasing illegal sale and fragmentation of common property and how this affects conservation. His work in organizing community action to protect communities from negative consequences is noteworthy. Chapter 8 by Juan Camilo Cardenas, John Stranlund, and Cleve Willis is a solidly academic piece which questions the assumption that state intervention will always improve what a community or users may achieve through self-governing institutions. Their use of game theory and participatory experiments with local communities is especially creative and worthy of replication. In chapter 9 (Georg Grunberg), looks at what he refers to as socio-environmental consolidation of new settlements in the Maya Biosphere Reserve, Peten, Guatemala. He questions "environmental education" in a North American sense and emphasizes instead cultural

intermediation based on local practices which are grounded in local understanding. In Chapter 10, Brian Hayum discusses the well known SUBIR Project in Ecuador and its practical approaches to reconcile information needs at all levels while introducing hypothesis-testing methods through a logical framework for project management. Lastly in this section on resolving conflicts, Manolo Morales—an Ecuadorian lawyer—discusses the use of community paralegals as a locally accepted way inform communities of rights and procedures in various legal questions, especially as it relates to land.

Part III is dedicated to that of creating incentives, both social and economic, for conserving biodiversity. The underlying assumption here is that unless local communities see a social or economic benefit they are unlikely to either appreciate or behave in a manner conducive to protecting their natural resources. In Chapter 12, Cornelia Flora discusses how the four types of capital—human, social, natural, and financial or constructed capital—must have a balanced interplay for an ICDP to succeed. Various motivations (social pressure, force, and economic incentives) are analyzed as to their effectiveness. Jody Stallings and Mario Garcia (chapter 13) discuss Ecuador's EcoCiencia as a model for showing how strengthening of organization capacity can take place while executing projects. Kleber Machado (chapter 14) adds an important dimension to the incentive discussion: the funding of conservation in the Galapagos National Park through the use of tourist entrance fees. The question entertained is whether or not people will pay more to visit a park if they know the funds are going directly to conservation efforts. In the next two chapters (15 and 16), Marcelo Leon examines two aspects of the timber industry around the Cotacachi-Cayapas Ecological Reserve in Ecuador. The first deals with the distortions in the timber industry brought about by protectionists policies while his follow-up chapter describes an attempt to create a united front among forest communities to get better prices while sustainably managing their forest areas.

The Part IV of this volume examines the issue of creating institutional capacity, at both the local and national levels, to carry out integrated conservation and development projects. Institutional strengthening is perhaps the most critical but yet the most difficult task of ICDP implementation. Following an overview paper on creating institutional capacity by Jan Flora (chapter 17), a series of case studies with lesson learned are presented. Chapter 18 by Pablo Valasco shows how the Small Grants Program of the Global Environmental Fund in Ecuador has functioned. A key element of success is the open monitoring, systematizing, and evaluating the diverse experiences of some 70 projects as a guide to improvement and enhancement of participation at the local level. Next, in chapter 19, Stephen Sherwood and

Jacqueline Chenier offer lessons from experiences of two sustainable agriculture and natural resource management collaborative networks in Honduras. One interesting conclusion from this chapter is that participating universities and scientists need to broaden their agendas to become more appreciative of applied activities. In Chapter 20, José Villacres describes a case study of working with Afro-Ecuadorian and Cachi organizations to develop administrative and technical skills to better manage their natural resources. The need for these communities to be able to better link with external stakeholders through improvement of their own management capabilities is stressed. Finally, William Ulfelder and Susan Poats present a systematic study of the experiences of ICDPs working in the Cayambe-Coca Ecological Reserve in Ecuador (Chapter 21). Like other analysis of ICDPs, one conclusion is that monitoring must not be seen as something separate from the daily work but as integral process of the project.

While each paper carries its own "lessons learned", we feel that the central message in this volume is that practitioners need to be humble, flexible, and open to learn from mistakes. These are no magic formulas which we have identified but there are states of mind which we feel will bring practitioners of ICDPs closer to their goals of integrating conservation with rural socio-economic development. While the more pessimistic of us may see nothing but darkness in resolving the conservation-development dilemma, we feel that the majority of participants in the conference were willing to light candles and move forward. We know that we cannot return to the "fences and fines" solution, even if we are unsure of the next step. We hope this volume will stimulate others to continue to compile ICDP experiences—both positive and negative—so that we all may better understand how to conserve biodiversity and assist those people who depend on these resources for their survival.

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Introduction

The Ecuadorian Andes

(*Photograph by R. Rhoades*).

Chapter 1

An ICDP Implementation Paradigm of Crossed Lines: South-South and South-North

Jody Stallings

Integrated Conservation and Development Projects (ICDPs) emerged on the international development and conservation scene in the mid 1980´s, as an innovative strategy for shifting from the traditional passive management of natural resources to a more active approach to promote the conservation of biodiversity (Ack 1991). ICDPs operated from the working hypothesis that rural poverty is one of the primary factors contributing to over-exploitation of the natural resource base, leading to encroachment on protected areas. These projects aimed to "improve the quality of life of people living in areas rich in biodiversity and promote the conservation and management of these areas" (Brown and Wyckoff-Baird 1992).

ICDPs have been loosely defined to include activities ranging from buffer zone and biosphere reserve management projects, to small-scale rural development projects on park boundaries and in protected areas included in regional development schemes (Wells et al. 1992). According to Ack (1991) the specific objectives of ICDPs are:

- Develop and ensure the long-term environmental protection and management of a natural area.
- Improve the quality of life of local people by providing tangible benefits that are compatible with the conservation of the natural resource base.
- Promote environmental understanding among local resource users.
- Ensure that project activities have a secure institutional base and can be maintained technically and financially with local, national and international resources.

International conservation and development organizations took the lead in the design and implementation of ICDPs with financing from a host of donors, including significant resources from USAID. This approach has been used in Latin America, Africa, Asia, and to some extent in Europe. More recently, World Bank financed Global Environmental Facility (GEF) ICDPs have emerged, as well as European Union initiatives.

By definition, ICDPs require technical expertise in both conservation and development programming. Few organizations are well versed in both disciplines, and the specific focus on either basic science or applied work required for ICDPs results in a technical void at some level within all organizations attempting to design and execute ICDPs. Many organizations have recognized this technical void, and responded by forming consortia, partnerships and strategic alliances The Sustainable Uses of Biological Resources (SUBIR) Project, an ICDP managed by CARE Ecuador and financed by USAID, has experimented with various models of partnership and consortia in order to manage a challenging, large and complex initiative. The objective of this paper is to describe the project implementation paradigm that the SUBIR Project has developed- one that includes an eclectic mix of traditional approaches.

Three models of project administration for ICDPs

Integrated conservation and development projects require strategic alliances in the design and execution phases (Larson et al. 1998). These strategic alliances are essential to achieve project objectives since development and conservation objectives are intertwined in ICDP programming. Traditionally, bilateral donors have funded these projects via international organizations (e.g., Larson et al. 1998).

World Wildlife Fund recently carried out an evaluation of their ICDP portfolio for the period of 1985 to 1996 (Larson et al. 1998). One of the ten lessons that emerged from their analysis: work in strategic alliances and take on more of a facilitation role. The special skill combinations required by the ICDP are usually met by a combination of institutions with distinct mandates. In addition, international NGOs should foster a facilitation role, rather than a direct delivery or implementation role with local NGOs.

Three principal implementation arrangements have emerged throughout the short history of ICD programming. The three implementation models presented here represent various scenarios along a continuum and do not necessarily represent all such arrangements. However, for illustrative purposes it is useful to examine these models.

The "Classic" North-South Direct Delivery Model

The Classic Direct Delivery Model (Figure 1.1) represents a linear relationship between a donor, the recipient of donor funds, and the project beneficiaries. There are no partnerships formed between the recipient of donor funds and local organizations. Project beneficiaries rely exclusively on the recipient of funds for project activities.

Consortium Model

This construct consists of multiple (at least two) organizations responsible for direct implementation of ICD programming (Figure 1.2). Typically, there are mixtures of expertise, that is, conservation and development mandates are usual combinations between and among organizations. International organizations can subcontract to local organizations for execution, or, the consortium members may opt to implement directly. Usually, one consortium member is ultimately responsible to the donor for project results. Rarely, if ever, are there multiple Lead Implementing Organizations (LIO) or multiple organizations that are legally responsible to the donor under a consortium paradigm.

Multiple Lines of Execution

This model employs various cooperative agreements between recipient organizations with a donor to achieve project objectives (Figure 1.3). These agreements may be a combination of local and international organizations. Each organization is responsible for its activity plan and responds directly to the donor. These organizations may work with local organizations, or may work alone in project execution.

Figure1. 1 The Classic North – South Direct Delivery Model

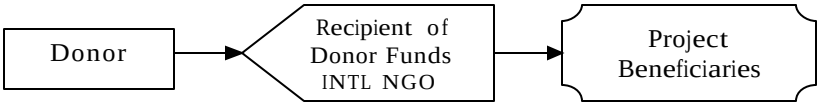
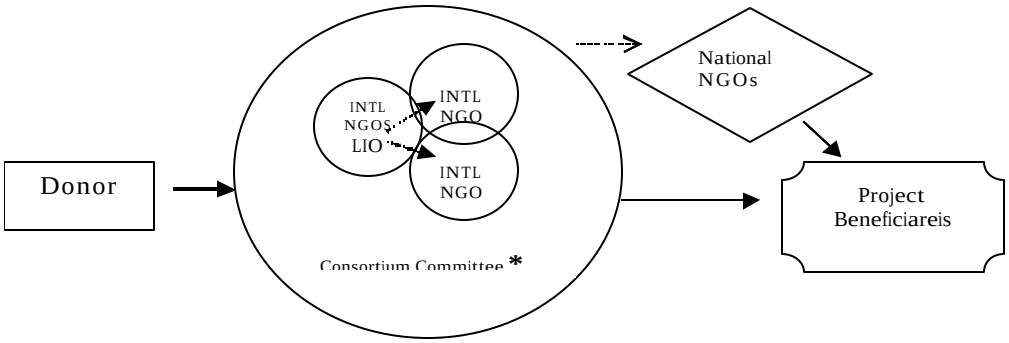


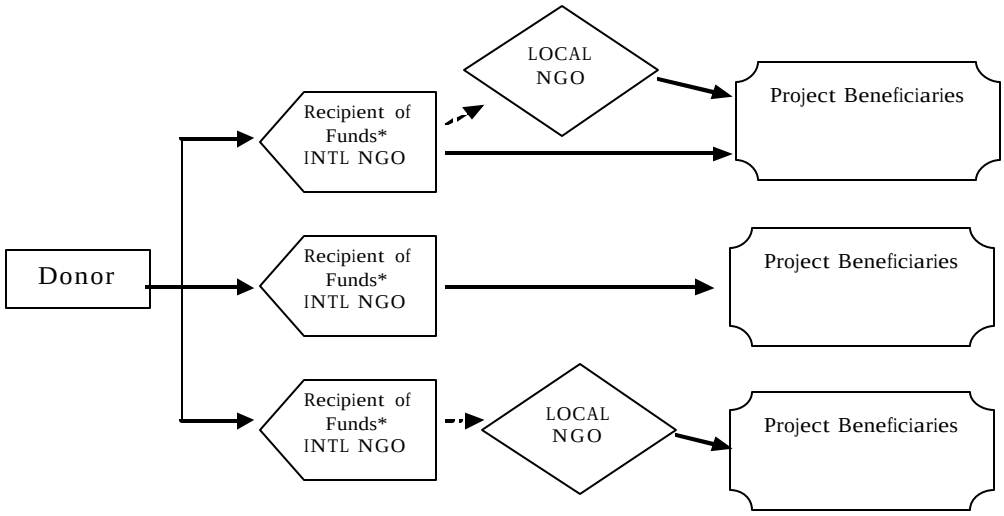
Figure 1.2 Consortium Model



* Composed of conservation and development organizations

Subagreement

Figure 1.3 Multiple Lines of Execution Model



* Composed of conservation and development organizations

Sub Agreement

Comments on the Three Models

Model 1, the "classic" model, does not build local capacity at the NGO level. Project beneficiaries may see the recipient of funds as the donor. At the end of the project cycle, there is little continuity, since there is no shift in functional emphasis from recipient to local NGO. One of the basic errors of this model is that only one institution is responsible for both conservation and development programming.

Model 2, though theoretically interesting, is rarely effective. Theoretically interesting because this model has attempted to link conservation with development by partnering complementary organizations. However, it is rarely effective because consortium executive committees undertake project management oversight and policy guidance and this can lead to duplication of administrative processes and delays in making and implementing critical decisions. This was the case of the first Phase of the SUBIR Project (Glick et al. 1994).

Under model 2, only one institution is legally responsible to the donor. However, the consortium committee may not be in agreement with the LIO policies (such as hiring, salary levels, procurement and vehicle policies, etc.). Project Coordinators can receive directions from the Consortium executive committee, donor, project counterpart, and from the LIO. These different chains of authority can lead to management frustration, generate confused signals, and contribute to high turnover rates in projects (Glick et al. 1994).

Model 3, though politically appealing, can be divisive and counter productive for the integration of conservation and development. Parallel funding mechanisms for project activities in singular geographic areas require attention from donors to develop a shared vision among all project partners to ensure that linkages between conservation and development are perceived by project beneficiaries. This model can be politically appealing because several organizations participate directly with the same donor and thus resources are shared among many. However, one of the negative aspects of this model is that there is no assurance that each organization is responding to the linkage issue. There could be cases of conservation organizations carrying out conservation activities, and development organizations carrying out development activities, but in distinct geographical areas in a project site. In addition, each organization could be attempting to carry out both conservation and development activities while its organizational mandate is to focus only on one (either conservation or development). In addition, this model requires significant management time and costs from the donor side to oversee multiple cooperative agreements. Lastly, coordination between and among multiple recipients of

funds is the responsibility of the donor. This is essential to ensure that a shared vision is achieved on how to obtain the project objective.

The evolution of implementation in the SUBIR project

The SUBIR Project, financed by USAID, began in 1991 as a consortium managed ICDP, with CARE Ecuador as the LIO, and CARE USA, The Nature Conservancy (TNC), and Wildlife Conservation Society (WCS) constituting the Project Consortium. In 1994, an external Project evaluation was conducted and the consortium was eliminated as a result of a series of recommendations. The consortium model created management and execution confusion, and did not add value to the project beyond the simple sum of the consortium members' strengths (Glick et al. 1994).

The Project was structured with a technical backbone of five components: 1) Institutional Strengthening and Organizational Development; 2) Improved Land Use Management; 3) Ecotourism Development; 4) Protected Area Management; and 5) Biological Monitoring. The original design was to allow each consortium member to manage at least one of the five components. CARE Ecuador was the LIO with USAID. USAID never recognized officially the formation of the consortium (R. Ruybal, pers. Comm.), rather the donor saw the international NGOs, TNC, and WCS as subcontracted technical assistance.

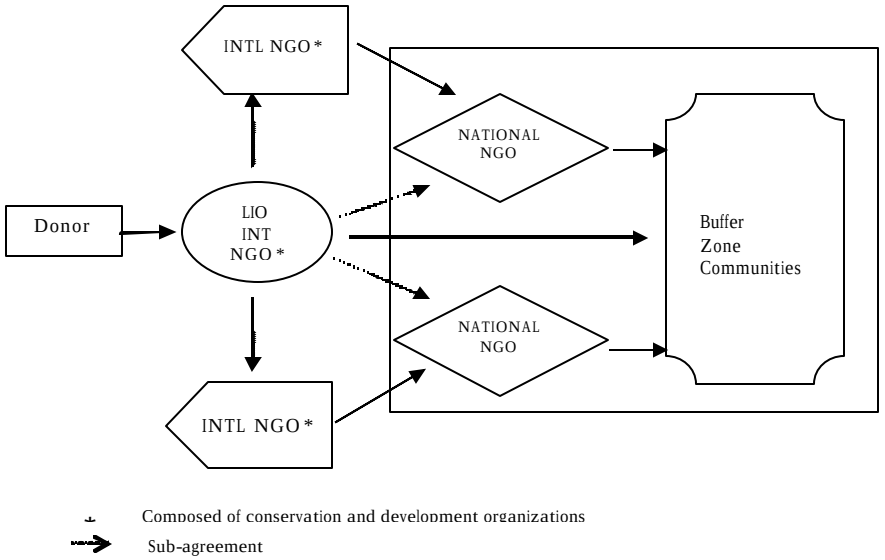
Under the original consortium construct, TNC managed the Protected Areas Management and the Ecotourism Development Components, CARE Ecuador managed the Institutional Strengthening / Organizational Development and the Improved Land Use Components, while WCS was responsible for the Biological Monitoring Component.

The three-chair consortium executive committee was based in the U.S, in each member's respective headquarters. The 1994 evaluation demonstrated that the consortium executive committee contributed to project confusion in administrative and financial aspects, as well as to lines of authority within the management of the Project (Glick et al. 1994).

Post-evaluation: A new project implementation paradigm

The recommendations of the evaluation were acted upon immediately by the Project Coordinator, Donor, and CARE Ecuador. During a six-month "bridging" period between Phases 1 and 2, the management paradigm shifted from a Consortium construct to a Project Consolidated Management structure (Figure 1.4).

Figure 1.4 Consolidated Management Structure Model



A consolidated project management model attempts to bring together local partners in an effort to obtain project objectives. There is one funding arrangement with the donor through which several sub-agreements are made with local NGOs. These NGOs complement, rather than duplicate, efforts to fulfill project objectives. International NGOs, such as WCS, have a technical backstopping and facilitation role, rather that a project implementation role and are sub-contracted by the LIO to provide technical assistance to local NGOs.

The SUBIR consolidated model has both linkage and institutional strengths, as well as a streamlined management structure. A potential weakness of the model is that significant resources are being channeled through one organization. This model builds upon the strengths of both models no. 2 and no. 3. The structure is simplified by having one LIO that is responsible to the donor. The LIO can execute some activities, but should be focused on a shift in functional emphasis to local institutions. This shift is imperative to facilitate the transfer of direct implementation from international NGOs to local partners. Local partners are strengthened in administrative and financial aspects as well as in technical areas. Local partners are selected to be complimentary, and not on existing north-south relationships between international and national NGOs with similar organizational mandates. International NGOs are sub-contracted

by the LIO to provide technical backstopping to local NGOs, rather than performing an execution function in the project. This eliminates "remote control" project execution, detached from the realities of project management. Lastly, this model fosters integration among executing NGOs under one project. Linkages between conservation and development activities are easier to structure in a project where heterogeneous organizations are brought together under one implementation model.

This new model recognized the following objectives in the SUBIR Project:

- Local NGOs will be strengthened administratively, financially, and technically in order to carry on with project activities.
- Local NGOs will be responsible for technical project components.
- Only one international NGO will be the LIO and will be responsible for reporting to the donor.
- Other international NGOs participating in the project will have to facilitate, rather than execute.

The Project was re-structured with these objectives in mind. CARE Ecuador was designated the LIO. This meant that only CARE Ecuador would report to the donor technically and financially. WCS, through a subcontract, became a technical assistance arm used for the Project in very specific technical areas, specifically, in biodiversity monitoring and forest management for EcoCiencia and Jatun Sacha. EcoCiencia and Jatun Sacha began to execute and assume full responsibility for two of the Project´s technical components, Biological Monitoring and Improved Land Use, respectively. These two components are the largest of the five Project components in terms of the number of activities and financial resources. CARE Ecuador executes three of the technical components, to complement the technical expertise of EcoCiencia and Jatun Sacha. These components include Institutional Strengthening / Organizational Development, Commercialization and Marketing, and Policy and Legal Affairs

Conclusions

The model adopted by SUBIR, after the 1994 Project evaluation, was one that fostered the development of local NGOs to execute project activities with a reduced level of direct implementation by international NGOs. This model has many advantages over more traditional consortium or multiple lines of management models. First of all, the Project was consolidated by including all partners in the design, execution and evaluation phases. This approach facilitates the development of a shared vision and encourages the strengthening of partners. Local partners are required to resolve local problems without the

intervention of international NGOs. Secondly, complementarity was sought, rather than duplication or dispersion of effort. Since ICDPs are composed of development and conservation activities, the Project was constructed to allow for clear understanding on the part of each participating organization of its respective role. CARE Ecuador provided development expertise, while WCS provided conservation expertise. EcoCiencia and Jatun Sacha, with years of technical training, carried out conservation and development programs with the technical backstopping of two international organizations. Future ICDP implementing schemes could include a model whereby the donor finances local NGOs directly, without any relationship with international NGOs. This paradigm will require some fine-tuning based on the actual financing arrangements that some donors currently use.

International NGOs have typically received funding from international donors due to the perceived technical strength of recipient international NGOs. Another reason has to do with administrative and financial management, logistical capacity and familiarity with donor requirements. This issue can be central to many ICDPs. ICDPs tend to be large, long-lived and costly. Some donors may prefer to operate via letters of credit rather than via cash advances. In the former case, NGOs that have established letters of credit with donors can begin to use their respective organizations, resources via financial obligations from the donor, and be reimbursed for their expenses on a regular basis. In the latter case, donors have to provide up front cash advances, and settle these advances with the recipient prior to releasing additional advances. The latter can be tedious and expensive for a donor to manage. In general terms, many US based international organizations operate with letters of credit, especially with USAID, while many local organizations operate via cash advances. Thus, for long-term, multi-million dollar ICDPs, there has been the tendency for donors to finance these projects via international NGOs, rather than via local NGOs.

Recognizing this tendency, many bilateral donors have a keen interest in the strengthening of local organizations to receive bilateral donor funds directly without passing through international NGOs. There are three issues related to this interest. First, donors usually require a counterpart match, either in cash or in kind, and many times both. A change from international NGOs to local NGOs could have a major impact in the amount of leveraged counterpart funding that a local NGO could muster. Second, donors will have to increase their local staff to manage local grants that use the cash advance approach. Third, local NGOs will have to pass administrative / financial screening to manage donor funds directly. This screening will include calculation and approval of overhead rates, maintaining and using approved administrative structures (e.g.,

personnel policies [salary structure, evaluations, hiring/dismissal], vehicle policies, etc.), and financial structures and programs.

Lessons learned

- ICDPs require a combination of institutions that specialize in conservation and development.
- Linkages between conservation and development work better when the project institutions share a common vision and philosophy.
- As much as possible, national institutions should carry out their own project activities and, when necessary, international organizations should provide technical backstopping to the national institutions.
- The sustainability of project activities will depend largely on local institutions.
- A consolidated project management model offers many advantages over other models. Common vision is promoted. A shift in functional emphasis from international organizations executing project activities to local organizations taking a more active role in project administration is encouraged.

References

Ack, B. L.
1991 Towards Success in Integrated Conservation and Development. Wildlands and Human Needs. Paper no.1, WHN Technical Paper Series. Washington, D.C.: World Wildlife Fund

Brown, M. and B. Wyckoff-Baird.
1992 Designing Integrated Conservation and Development Projects. Biodiversity Support Program. Washington, DC.: PVO-NGO/NRMS Project.

Glick, D., C. McCorkle, A. Patterson, R. Victurine, and D. Joshua.
1994 Phase I Evaluation. Sustainable Uses for Biological Resources (SUBIR) Project. Tropical Research and Development. United States Agency for International Development/Ecuador, under Cooperative Agreement No. 518-0069-A-00-1113-00.

Larson, P. S., M. Freudenberger, and B. Wyckoff-Baird.
1998. World Wildlife Fund's Integrated Conservation and Development Projects: Ten lessons from the field 1985-1996. Washington, D.C.: WWF

Wells, Michael, K. Brandon, and L. Hannah.
1992. People and Parks: Linking Protected Area Management with Local Communities. Washington, D.C.: The World Bank.

Part

1

Using Local and Scientific Knowledge for ICDP Planning, Implementation and Monitoring

Participatory Water Quality Monitoring in Cotacachi, Ecuador

(*Photograph by R. Rhoades*)

Chapter 2

Scientific Modeling and Local Visions of Sustainability and the Future: A New Method for Natural Resource Community-Based Planning

Robert E. Rhoades

After more than a decade of participatory, multi-scale, multi-objective and multi-stakeholder sustainable agriculture and natural resource research at the watershed and landscape levels, a number of disconnections between theory and practice at the working field level have been identified. One of these is the necessity to achieve an agreement between scientists, the local community, planners and policy makers about the scale in which applied activities should be conducted. Another problem is the inability of our present models to project into the future, a time zone absolutely critical for the attainment of sustainability. This paper outlines a methodology for linking the perceptions of local people with the science of biophysical modelers that takes into consideration the desired future conditions of all stakeholders or actors.

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 catch-all "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 re-named Farming Systems Research, conventional agriculture with "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 about sustainability in limited time frames, involving little more that 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 writers on sustainability argued, the concept is about creating conditions at least a generation in the future (20 years), not about outcome over an annual planning or planting cycle. In some cases, however, sustainability became a synonym for monitoring present distribution of plants, animals, and other biological components. Although such information can be helpful to people who live in a particular 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 by "sustainable 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 all humanity can use 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 lured ourselves into believing that all we need to do is get people—"stakeholders"— around a debate table to discuss problems, resolve differences, and come to some sort 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 is such "participatory" community meetings there is little that people can really grab onto which allows them a clear image or vision of the future they 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 of 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 non-scientists with numbers, equations, charts and models that tend to be static for the most part. And in all such meetings, there are invariably power plays, by 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 if this is not necessarily what outsiders like scientists or government leaders want, then we need an approach which 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 different solutions, to changing the world. Each group carries its own biases, values, and hopes for a future world. The aim of the methodology is to bring these stakeholders, especially scientists and other outsides, 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 which 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 the 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 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 to 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 (1966-1990) of the area, 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 to take back to the community the various images to start the dialogue and planning process (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 last 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 scientists' 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 contrasting findings of the future ("scenarios") as a springboard or platform for community-based dialogue and planning for natural resource management

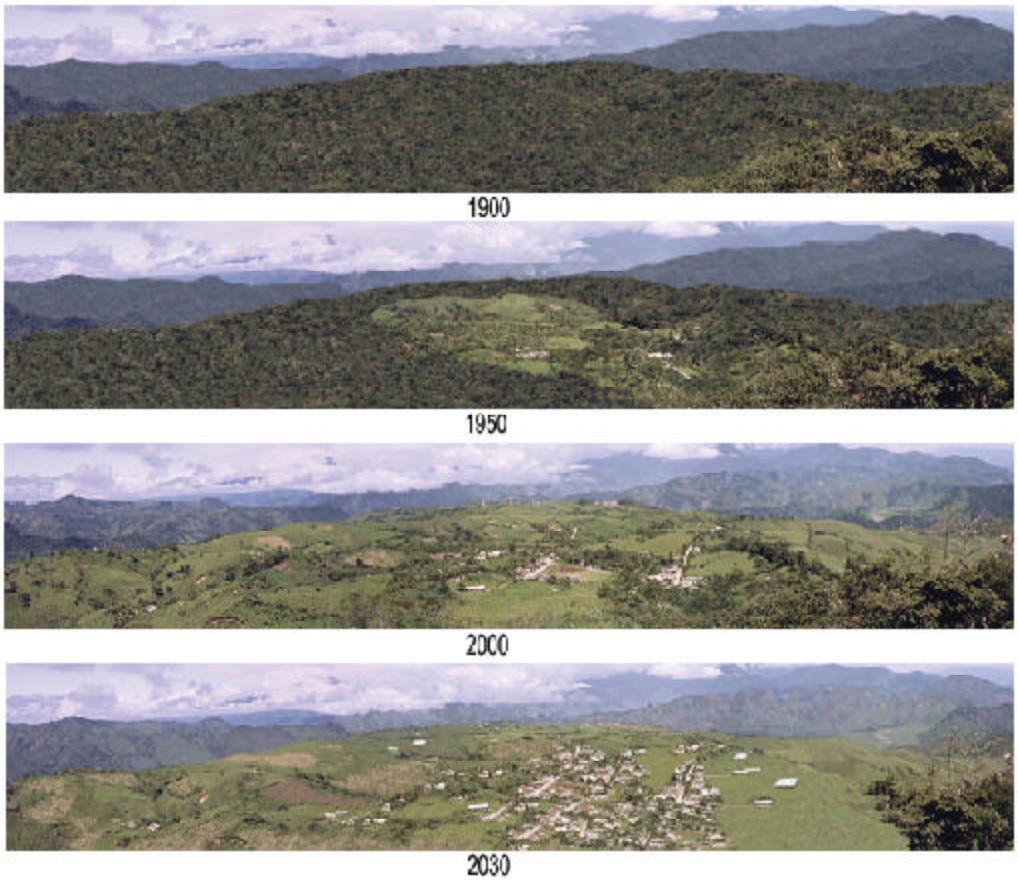
- Translate the scientists' predictions into visual landscape images (through photo-manipulation) drawn from a point of geographical reference easily recognized by local people (e.g., the same panoramic view in 1900, 1950, 2000, and 2030. See figure 2.1).
- Present these images, along with other sets of information readily understood by all stakeholders, for purposes of debate and action planning. In such discussions, 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 upfront 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 and goals / 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 by their own worldviews.

I realize that this approach is very different than conventional approaches in that it requires scientists and policy makers to accept that local values and objectives are primary. Scientists can play a role by demonstrating the tradeoffs or impacts of different values and proposed alternatives, but they cannot determine the values themselves.

Figure 2.1 Scenarios of Land-use Change in Palmitopamba: 1900-2030



Palmitopamba, Ecuador

(Photograph and scenarios by R. Rhoades)

References

Gregory, R.
2000 Using stakeholder values to make smarter environmental decisions. Environment 42(5): 34-44.

Rhoades, Robert E. ed.
2001 Bridging Human and Ecological Landscapes. Kendall/Hunt: Dubuque, Iowa.

Stewart, D.
2001 Creating land-use change scenarios: Past patterns and future trajectories. *In* Bridging Human and Ecological Landscapes. Robert E. Rhoades ed. Kendall/Hunt: Dubuque, Iowa.

World Commission on Environment and Development (WCED).
1987 Our Common Future. Oxford and New York: Oxford University Press.

Chapter 3

Biological Monitoring: A Key Tool in Integrated Conservation and Development Projects

Rocío Alarcón

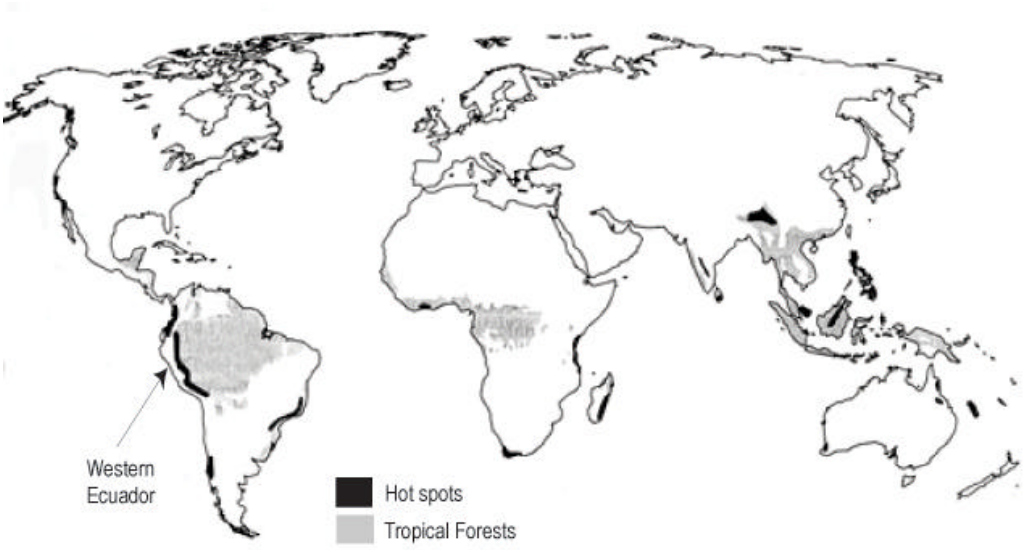
In recent decades, we have witnessed increasing pressure on worldwide natural resources, primarily as a result of anthropogenic activities (i.e., industrial exploitation, large scale extraction of natural resources, deforestation). Forests and other habitats rich in biodiversity are disappearing at increasingly higher rates. The highest risk resources are located in continents and subcontinents characterized by a high level of poverty, especially including South America, Africa, and Asia.

A multitude of international development agencies, foreign governments and multilateral organizations have expressed concern over natural resource degradation. Those involved in the design and implementation of conservation and development projects now focus on the protection of biodiversity and the provision of viable, sustainable models for the use and management of natural resources. Many of the current efforts are also inter-institutional, characterized by strategies that place greater emphasis on areas of high biodiversity.

One recent study of areas with high levels of biodiversity identified ten hotspots distributed over a mere 0.2 percent of the earth's land surface (Myers 1988). Within the zones Myers identified are found 27 percent of all flora species in tropical forests and 13 percent of all plant species in the world. Northwest Ecuador belongs to these "hot spots". The country is characterized by the following privileged elements, as a result of which the struggle to protect biodiversity is more than justified:

- Three of the world's ten hot spots, areas of high biodiversity and endemism, are found in Ecuador: the tropical Andes (the western Amazon), the very humid tropical forests in Esmeraldas, and the Chocó region and the western forests.

Figure 3.1: Map of the World's "Hot Spots"



(Source: N. Myer, 1988)

- Ecuador holds first place in the world for number of species per area unit (11 species for each 1000 sq. km).
- Ecuador contains the highest levels of diversity and endemism in the world (for example, 15 bird species / sq. km).
- The nation is characterized by marked climatic and geographical contrasts (four natural areas: Amazon, Coast, Sierra and the Galapagos Islands).

However, Ecuador's continuing socioeconomic problems provide a distinct contrast to such a privileged position in terms of biodiversity. These include:

- A high level of deforestation: 1.7 percent (280,000 ha) per year.
- A high rate of population growth: 2.1 percent.
- An unviable economic strategy: 70 percent of the population lives in poverty.
- A high rate of foreign debt which limits capital investment in poverty areas.

In light of Ecuador's contradictions, national organizations working in development and conservation are challenged to find practical solutions to the following questions:

- How can the effects of development on biodiversity be minimized?
- What kind of reliable and efficient tools should we be using to conserve biodiversity?

- Who should implement mitigation measures and actions in key areas?

The Sustainable Use for Biological Resources (SUBIR) project's 10-year experience in the buffer zone for the Cotacachi-Cayapas Ecological Reserve in northwest Ecuador suggests that *Biological Monitoring* is one successful approach. Before explaining the elements of Biological Monitoring, however, some important aspects of Project SUBIR need to be presented. The project's goal is conservation for development and improvement in economic well being for members of the Chachi and Afro-Ecuadorian communities located in the zone through their active participation in the management of natural resources. SUBIR is a CARE project, being implemented in coordination with the Jatun Sacha Foundation and EcoCiencia. Its development activities take place within the context of five interdependent components:

- institutional strengthening
- biodiversity research and monitoring
- improved use of lands
- marketing
- analyses of policies and laws.

The EcoCiencia Foundation is in charge of the biodiversity research and monitoring component, the final objective of which is the establishment of biological inventory and monitoring that will provide qualitative and quantitative information on interactions among forest management, biodiversity conservation and future options for the conservation and use of the forests. Within this context, the goals of the biological monitoring program are as follows:

- Implement strategies at the local and regional level for monitoring, managing and mitigating impacts on the forest;
- Strengthen , empower and train local groups in conservation and development; and
- Implement regional participatory strategies for the involvement of ancestral groups in the development and conservation of the environment (ethnic-biological region).

The monitoring programs are designed on the basis of the following specific objectives:

- Establish a biological monitoring program in areas of extensive forest use (buffer zone) and inside reserve;
- Identify indicators that will facilitate the measurement of possible changes in fauna and/or flora in the forest use zones of the project (e.g., plants,

mammals, birds, reptiles, and amphibians);
- Train local groups in biological monitoring (formation of parabiologists);
- Return information to local groups; and
- Disseminate at the local, national and international levels the information generated.

Activities implemented within the context of this component in order to achieve the overall objective of biodiversity monitoring are as follows:
- Work with local groups and technicians from diverse disciplines.
- Develop a monitoring model in accord with the natural landscape and the knowledge of local residents.
- Monitor affected and unaffected forest areas (activities undertaken with groups of biologists and parabiologists)
- Generate key information on the impacts of the extraction of forest products and those of Project SUBIR on the landscape.
- Analyze data resulting from monitoring.
- Organize interdisciplinary forums for discussion of results at different levels (technicians and members of the community).
- Propose mitigation and control measures.
- Publish results.

One of the indisputable major advantages of monitoring is that it provides for proposals for sustainable changes on the basis of real and objective measures of environmental impacts. The objectives and strategies mentioned above are crossed by two important transversal axes:
- Training of parabiologists in biological monitoring processes: these individuals are responsible for carrying out activities to protect biodiversity and to assure the survival of natural resources for future generations.
- Gender analysis and recognition of the importance of this element in project activities. The participation of both men and women has a direct impact on project success.

Changes in the view of technicians

In order to successfully implement activities, conservation professionals from distinct disciplines have had to learn to be flexible as they collaborate with communities, listen to their conflicts and work with various sectors of the population and with their colleagues in other disciplines. Clearly these changes in view points have facilitated monitoring activities. For example, the five components of the SUBIR project and those responsible for implementing the

various components are functioning together and supporting all elements of project execution, especially those involving interaction with the community.

In order to analyze the effects of the forest component, and the relationship between the community and those in charge of biological monitoring, we developed the following questions:

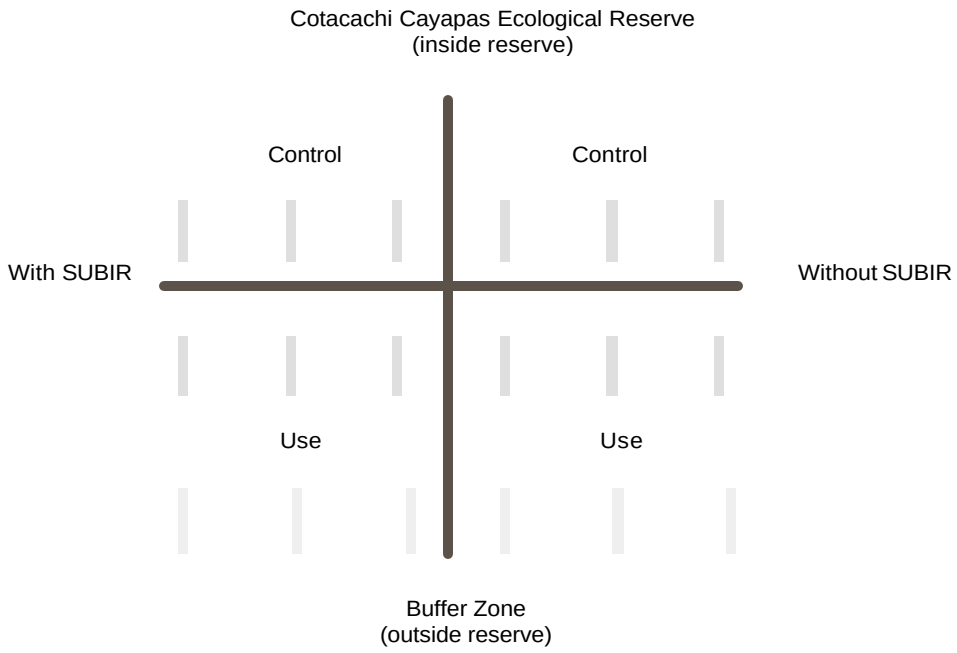
- How can we involve community members in the process of biological monitoring?
- What types of methods can we use to respond to the concerns of the community, the project and the donors?
- What is the future of biological monitoring in a conservation and development program?
- Can biological monitoring lead to the success of the SUBIR project as regards the protection of biodiversity?

In order to find answers to these questions, we began to work closely with interested community members. The initial goal was to propose activities to be carried out jointly within the context of the SUBIR project in the area of development. To this end, we started with an activity well-known, routinely practiced and important for the community: use of forest resources. We decided to propose that forest resource use involves an additional element: monitoring of the effects caused by use of forest resources in the surrounding natural environment. When the activity was posed in these terms, men and women from the communities involved raised a number of questions, such as:

- What will happen to the birds that live in the forest?
- How will water in wetland areas be affected by the felling of trees?
- What happens with plants that we use for medicinal, craft and other purposes?

It was evident that the process brought about a substantial change: an approach to the community based on their needs. This fact implied a significant change in the vision of conservation workers, taking men and women into account in their role as protagonist. The commitment and interest that arose as a result of this approach among residents of the area was impressive. They manifested a willingness to follow-up on the effects of the use of forest products, as these related to animals, insects, reptiles and other species. At the same time, the parabiologists (who had already participated in the early inventory process), were committed to their continued involvement in the follow-up phase.

Figure 3.2 Design for a Biological Monitoring Program



Two-way training

Biological monitoring is a tool that requires two-way training:

1. the community in terms of biologists, and
2. biologists in terms of the community (parabiologists).

Through their life experience, parabiologists aquire intimate knowledge of the natural landscape and interactions among its elements. They are familiar with the various classes of local animals and plants, and where they are found, as well as their local names, characteristics and uses. They also have knowledge of changes in biodiversity as a result of changes in the landscape, for example, the absence or presence of different animals, climate changes, flooding periods, seasons for the flowering of plants and the appearance of fruit, etc. This knowledge plays an extremely important role when applied in monitoring and transferred to the biologists involved. **Without local knowledge it is very difficult to design a model for monitoring.**

At the same time, the technicians train the stakeholder group in the elements of the comparative monitoring model, the validity of the model as a tool for

measuring effects and changes in the landscape, and the type of indicators selected (based on questions answered by locals and information on the presence or absence of specific animals and plants).

The two-pronged training model for the creation of a monitoring model leads to strengthening of cooperation between the parties involved and the implementation of the program and the biological monitoring model. It guarantees that planned conservation activities will remain alive in the area.

Team work

The degree to which proposed monitoring efforts are actually implemented is closely related to the amount community members are involved in the process. In order to assure that community residents are the protagonists in biological monitoring, the following steps are important:

Technical steps

- ❑ Pose the problem
- ❑ Design questions on the effects of human activity on the landscape
- ❑ Select indicators on the basis of local knowledge and the questions referred to above
- ❑ Create a model of the monitoring design, based on local knowledge of the natural and altered landscapes
- ❑ Identify possible methods for analysis
- ❑ Determine possible results

Practical steps

- ❑ Develop a mutual training agreement during the data gathering process
- ❑ Assure a commitment to the gathering of data
- ❑ Visit sites and apply the methods proposed
- ❑ Analyze jointly all results

Out of the four practical steps posed above, we believe that joint decision making based on monitoring results is the most important step. As this process cannot be carried out unilaterally, it requires the participation of technicians and community residents. Because community members will be those witnessing positive or negative changes in the natural landscape, it is important to empower local actors through the monitoring process.

During this process, it is worthwhile to involve a variety of stakeholders in decision making, including members of the community's board of directors, local technicians (parabiologists), school teachers, and residents who hunt or

gather plants and seeds from the forest. When leadership assumed by local actors, and the residents (parabiologists) "sell the idea" to their communities, monitoring is successful.

Returning information to the community is also very important in the biological monitoring process. Normally, community members are very interested in learning the results of the data gathering process, particularly when what is being reported involves the effects of specific activities on the area. In the SUBIR case, for example, locals showed high levels of interest in the use of forest resources.

Even though monitoring is a long-term process, it is worthwhile to periodically provide partial results. Continual dialogue guarantees community participation in research, and residents may come to their own conclusions on current and future effects of land use activities on biodiversity.

The importance of technicians and paratechnicians informing the community must be understood by work groups. In addition, members of work groups must clearly understand that all information generated belongs to the community. One of the advantages of returning information related to partial results is that mitigation measures will be designed jointly.

Ultimately, the importance of monitoring is that it provides the community a way to maintain control in the future on the effects of specific activities on the landscape. The fact that residents are being informed of results strengthens the decision making process related to the management of resources and biodiversity.

Results

The overall expected outcome of SUBIR's biological monitoring program run through the local initiative is the generation of key information on ecological impacts resulting from activities in the forested areas of the Cotacachi-Cayapas Ecological Reserve's buffer zone. However, to achieve this final goal, a series of intermediate results must be obtained:

- A detailed biological monitoring design that allows for rapid and efficient data collection
- Economically viable biological monitoring; cooperation of local groups reduces operating costs
- A trained local group whose members gather data independently (we currently have 20 parabiologists involved in the process)
- Representatives of private business who are interested in monitoring models for their activities

- A local group using monitoring information to make decisions related to the environment

Lessons learned

- Conservation is not a local problem that concerns biologists or conservationists or rural communities; it is a matter that affects all spheres of life in the nation and the world.
- The integration of local groups (parabiologists) in the biological monitoring process guarantees the protection of biodiversity through mitigation measures in areas in which development projects are being implemented.
- Biological monitoring involving local groups reduces project costs.
- Applied biological research facilitates measurement of the effects of anthropogenic activities on natural resources.
- The training of local technicians and paratechnicians is a tool for development projects with high standards; at the same time, the process leads to local residents acquiring the skills required by communities in order that they may design their own projects.
- The integration of community groups in conservation and development processes facilitates the sustainability of the process in the present and the future.
- It is necessary to have a vision of the future shared by stakeholders / actors involved in project implementation.
- Returning information generated to the various actors is essential.
- Biological monitoring is based on the results of biological research and local knowledge of the natural landscape.
- Local knowledge is strengthened through biological monitoring studies.
- Information generated should be published at the local, national and international levels.
- Biological monitoring is a long term activitity for obtaining information; thus, conservation and development projects should reflect this fact. In the final analysis, the goal is the protection of biodiversity.

Conclusions

Biological monitoring has become an effective tool for conservation and development. Without this activity, it is difficult to measure the effects of development on the landscape and / or guarantee the sustainability of natural resources in development activities.

Biological monitoring is not an ideal beyond the reach of ordinary individuals. It can be achieved by any group of persons with an interest in conservation and development programs.

References

Myers, N.

1988 Natural Resource Systems and Human Exploitation Eystems: Physiobiotic and Ecological Linkages, Environment Department Working Paper No. 12, 1st ed. Washington D.C.: World Bank.

Chapter 4

Environmental Assessments as Community-Based Adaptive Management Tools

Jim Tolisano

Many international donors require conservation projects to prepare Environmental Assessments (EA) or Environmental Impact Statements (EIS) as a measure of assurance that the development options being considered are environmentally sound and sustainable, and that any environmental consequences are recognized early and taken into account in project design (World Bank 1991). The intent of this review process is to 1) identify environmental issues early in the project cycle; 2) design environmental improvements into projects; and 3) avoid, mitigate, or compensate for adverse impacts which could result from proposed activities. In the United States the EA and EIS process emerged from the implementation of the National Environmental Policy Act (NEPA) passed by the U.S. Congress in 1969 (Burchell and Listokin 1975). NEPA represents a powerful national mandate to assess the potential impacts of proposed development activities on the natural and social environment. Over the years, many countries worldwide have adopted the principles inherent in NEPA and now require that an EA be carried out before proposed development projects are approved and implemented. EA documents are now typically prepared for those U.S. financed international, national, regional, and local projects that are likely to pose some environmental risk. Only projects whose proposed activities are unlikely to alter the physical, biological, or social conditions in and around the proposed project area are spared this EA review process.

Although the procedures used to carry out the EA vary among nations and institutions applying the review, in general they include the following parameters (Freeman 1992):

- A description of project activities to be carried out, and the problem(s) addressed by the project.
- An overview of the biophysical, ecological, and socio-economic conditions in the geographic area to be affected by proposed project activities.

- A detailed description of alternative solutions to the problems being addressed by the project, including in all cases a "No Action" alternative that represents no further participation or action by the project.
- A qualitative and quantitative assessment of the predicted impacts from each alternative on the biophysical, ecological, and socio-economic conditions in the affected area.
- A quantitative or qualitative ranking system for evaluating the consequences of each alternative and selecting a preferred alternative.
- A description and estimate of costs for any mitigative actions which may be required to ensure the environmental sustainability of the preferred option.

For most international projects, environmental assessment currently plays an important regulatory role. Typically, a concept paper is initially prepared to identify a problem to be addressed by the project, and to provide a general description of the activities or solutions to be applied to resolve this problem. Based on the range of activities outlined in the concept paper, a concise and qualitative Initial Environmental Examination (IEE) may then be prepared. The IEE will determine if any potentially adverse environmental impacts may result from the implementation of the activities proposed in the concept paper. If such impacts are identified, then an EA must be prepared as part of the full project design document.

For many agencies, the EA has simply become a procedure used to document potential environmental impacts, positive or negative, and to approve proposed investments. Once the project is approved, the EA is rarely consulted. My personal experiences in carrying out the EA process worldwide for a variety of donors and technical assistance providers suggests that it is rare for the EA to be used in any manner beyond project approval and documentation. In fact, the U.S. NEPA guidelines do not explicitly state that the EA must do anything more than identifying impacts. Although most EAs will include a section describing measures which can be used to mitigate adverse environmental impacts, there are no explicit mandates requiring implementing agencies to actually carry out these mitigative measures. It is merely *assumed* that mitigative measures will be incorporated into the project design.

In the U.S. the EA has largely been enforced through the rigorous monitoring and enforcement applied through non-governmental environmental organizations (NGOs). However, there are few such environmental NGOs operating outside of the U.S., and very few of these NGOs possess a sufficient understanding of the EA process to know how to evaluate and enforce EA recommendations. In some countries these environmental NGOs or citizen

groups may lack the legal or political right to participate directly in the EA process as a "watchdog" or enforcement mechanism. This use of the EA as little more than an approval document and source of recommendations to improve a project severely limits the value of what could and should be a process to provide continuous feedback and guidance throughout project evolution.

Another factor contributing to the low long-term value of the EA is the manner by which documents are actually prepared. Typically, an EA is prepared by a team of specialists who are fully independent of the project being proposed. These specialists usually represent highly trained professionals representing a range of disciplines in order to address the project's impact on social, biophysical, and ecological environments. The EA team will sometimes interact with the project design team, but more commonly works in isolation to accumulate relevant information about project goals and objectives, and the affected environment. The team will then identify project alternatives to the proposed project that could enable the project goals and objectives to be achieved, predict the probable environmental impacts which might result from implementation of each alternative, and then recommend a preferred alternative.

This independent team of specialists adds an element of impartiality to the EA process: an important factor to ensure accuracy in the findings. The use of highly trained specialists also enables the entire EA process to be carried out quickly and efficiently. However, the use of high-powered outside specialists provides for minimal input by the project management team, or the communities or other participants who may be the implementing agents or beneficiaries of project actions. The EA process does include scoping sessions, which enable the EA team to advise implementing groups and beneficiaries on EA procedures and solicit technical information and guidance on EA issues. However, this scoping process generally provides only limited participation, and does not build any significant long-term commitment by implementing agencies or beneficiaries to the conclusions drawn by the EA.

The Sustainable Uses for Biological Resources (SUBIR) project being implemented in northwestern Ecuador by a consortium of U.S. and Ecuadorian environmental organizations is applying an innovative approach to using the EA that attempts to incorporate the benefits of traditional EA procedures with greater participation by implementing agencies and affected peoples. The objective of this approach is to build a stronger investment in the EA process by those affected, and to encourage a long-term commitment to implementing the EA recommendations.

SUBIR engages professionals and technicians from each of the three project implementation organizations working together with participating communities to carry out the EA. The vast majority of the EA assignments currently being

carried out by the SUBIR teams address an assessment of the environmental sustainability of community forest management plans. However, the approach being used by SUBIR is fully applicable to any range of project activities that require an EA.

SUBIR reviews of proposed community forest management plans typically include an EA team comprised of a forester, a social scientist, and a biologist or an ecologist. The team is then supplemented in the field by parabiologists or other experienced individuals from participating communities. The community participants ensure that technical observations are supported by the wealth of personal experience inherent in local communities. They also ensure local input, guidance, and support for the EA process. Additionally, the participation of community members provides an extremely valuable opportunity to increase local awareness, understanding, and support for environmental accountability and sustainability.

This project based EA team collaboratively completes the following procedures:

1. The EA core team obtains a draft of the forest management plan in order to demarcate the area directly affected by proposed project activities.
2. Roles and responsibilities are defined for each team member, typically to address the following:
   - ❑ *Biologist or Ecologist* - Identify any possible adverse impacts to flora and fauna, and to biological and hydrologic systems, and determine mitigative measures that can be applied in order to avoid or minimize potential adverse ecological consequences as a result of the proposed project.
   - ❑ *Forester* - Supervise the evaluation and prepare the final document. This member of the team should provide primary technical oversight of the forest plan evaluation, and should also identify mitigative measures that can minimize potentially adverse changes in the sustainability of the forest ecosystem and forest products.
   - ❑ *Anthropologist or Sociologist*- Organize and facilitate public meetings carried out to solicit local opinions, observations or recommendations to the EA team; obtain all relevant social and economic data to enable the EA team to identify potentially adverse changes to the social or economic environment, and recommend mitigative actions which can minimize these potentially adverse changes.
3. The core EA team then identifies candidates from the affected community or communities to participate as technical assistants in the data collection and review process. These individuals may be members of trained parabiologist or other project groups, or they may simply be individuals

with a demonstrated interest in the EA review process and extensive knowledge and experience in the affected environment.

4. The EA core team, working together with community participants, determine alternative scenarios which can enable the project to achieve its goals and objectives. The alternative scenarios should be institutionally, administratively, and economically feasible; relevant to the long term goals and objectives stated for the project; and should, at a minimum, always include a no-action scenario in which no further project assistance is provided.
5. Carry out formal and informal scoping sessions enable people who may be directly or indirectly affected by the proposed project actions to be informed, and to express opinions and observations that can assist the EA.
6. Field visits are carried out in the affected environment in order to develop rapid qualitative or quantitative assessments of potential impacts from each proposed alternative. The field visits include the members of the EA team as well as community representatives or participants.
7. Follow-up scoping sessions are organized and presented in order to summarize findings and solicit additional information that can assist the final prediction of impacts and selection of the preferred alternative.
8. The EA core team, including community participants, develops a set of criteria to prepare a quantitative analysis of each alternative based on predicted environmental impacts. The scoring system for this analysis should demonstrate clearly the alternative that will result in the least adverse environmental consequences.
9. The EA core team prepares a written document that summarizes 1) the proposed project goals and objectives, 2) the affected physical, biological, social and economic environment, 3) the alternatives considered to achieve the project goals and objectives, 4) the predicted environmental impacts from the implementation of each alternative, 5) the preferred alternative, and analysis criteria used to select this alternative, and 6) mitigative measures which should be included to ensure the long term environmental sustainability of project activities. Mitigative measures should ensure that the potential impacts from proposed activities will be monitored, and that monitoring results will be used to enable the project to adapt to problematic or changing conditions.
10. All affected groups and individuals are provided with an opportunity to read or obtain the information contained in the draft EA.
11. All relevant comments received on the draft EA are incorporated into a final EA document. The final EA document is then used throughout

project implementation to guide planning, decision making, monitoring, and project adaptations.

The SUBIR project has developed a comprehensive training manual to guide the implementation of this EA process, and has carried out several field training programs for NGO staff and participating communities. The results have demonstrated that the EA process can be readily grasped and applied by technicians and community members with some basic orientation. More important, the results show that NGOs and community members who participate in the process develop a strong commitment to using the results of the EA to guide decision making, conflict resolution, and long term planning. The EA results surface in community meetings and other dialogues that occur throughout the project. In this way the EA becomes an important tool in adaptive management, which is what it should be.

The SUBIR project approach using the EA to engage communities in identifying, evaluating, and responding to environmental concerns can and should have broad applications for conservation projects worldwide. The EA can provide a baseline from which project goals and objectives are defined, and results are measured continuously throughout the project life. The findings of the EA can then be revisited periodically to determine if initial predicted impacts are, in fact, occurring or if more or less severe results are being observed. This further extends the usefulness of the EA by enabling those most affected by environmental impacts to directly identify potential problems, and enhance their understanding of the ecological implications of their actions. This often represents a weak or missing link in conservation projects, and one that can be easily and inexpensively remedied as SUBIR has clearly demonstrated.

References

Burchell, R. W. and D. Listokin

1975 The Environmental Impact Handbook. New Brunswick, New Jersey: Center for Urban Policy Research, Rutgers University.

Freeman, L. H.

1992. How to Write Quality EISs and EAs: Guidelines for NEPA Documents. Bountiful, Utah: Shipley Associates.

World Bank.

1991. Environmental Assessment Sourcebook: Volume 1 – Policies, Procedures, and Cross-Sectoral Issues. Washington, D.C: The World Bank.

Chapter 5

Integrating Biological Data into Development Projects: Threatened Bird Species and Management Plans for Sustainable Forestry in the Province of Esmeraldas, Ecuador

Olaf Jahn

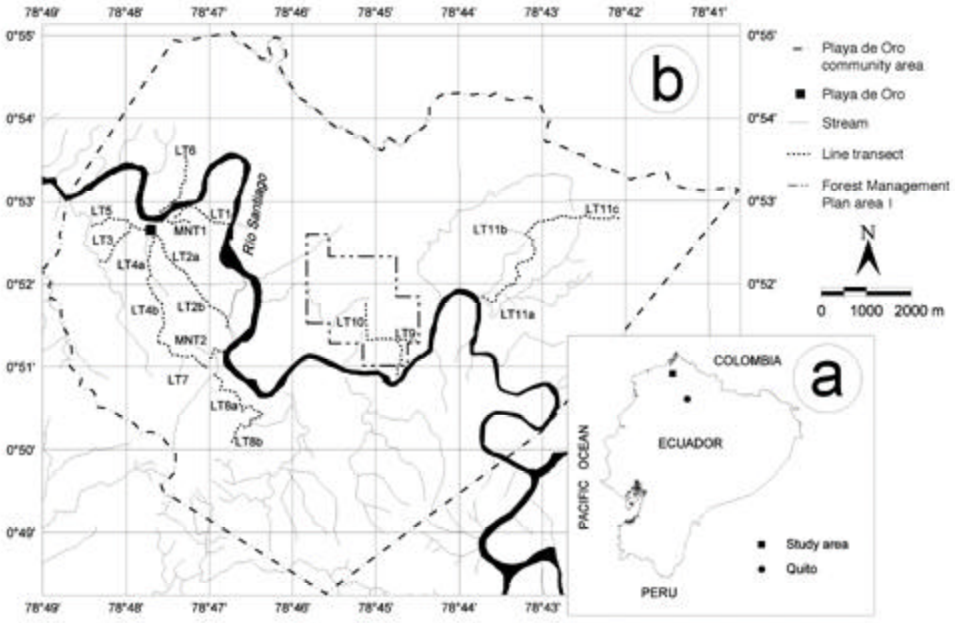
Two central ideas of the Convention on Biological Diversity (UNEP 1992) are (1) the sustainable use of natural resources and (2) the implementation of environmental impact assessments. These are precisely the precepts of Integrated Conservation and Development Projects (ICDPs) such as CARE Ecuador´s Sustainable Use of Biological Resources (SUBIR) Project. Although any project proposing the use of natural resources may have adverse effects on biodiversity, environmental assessment is an important instrument to avoid or at least reduce such results. In this context, recent and accurate biological diversity data are critical, for they are exactly what allow us to determine the ecological sustainability and environmental impact of a proposed project. Unfortunately, such environmental assessment is often limited by time and money, which makes the availability of effective and affordable rapid assessment methods imperative. The Multi Time-Window Transect Mapping (MTW) method was developed explicitly to meet this need in assessing tropical bird communities. In this paper I discuss how MTW data on threatened bird species improved the conservation efforts in SUBIR´s pilot Community Forest Management Plan, which was developed in the community of Playa de Oro. Furthermore, I present a scheme for the integration of avifaunistic data into conservation and development projects.

Study Area

The Afro-Ecuadorian community of Playa de Oro (0´´53'N, 78´´48'W), Esmeraldas (Figure 5.1, 5.2), is located 2-3 km west of the Cotacachi-Cayapas Ecological Reserve, the largest protected area in western Ecuador (204,420 ha; IUCN 1992). The community covers an area of 10,900 ha, at an elevational

range of 45 to 590 m. (See Jahn et al. (1999) and Jahn et al. (in revision) for information on the climatic conditions in Playa de Oro.)

Figure 5.1. Locations of (a) the study area in Ecuador; (b) the area of the initial Community Forest Management Plan [I], established in 1996 in the Playa de Oro community, and the line transects inside and outside this area.



The community consists mostly of lightly logged mature as well as primary forest (EcoCiencia 1996), and it is part of the last significant tract of about 300,000-400,000 ha of continuous forest in the lowlands and lower foothills of western Ecuador (Jaramillo et al. 1996). These last remaining forests form part of the Chocó biogeographic region, one of the most diverse terrestrial ecosystems in the world (Gentry 1986). The Chocó, which is inhabited by over 50 endemic species, supports the largest number of restricted-range birds of any Endemic Bird Area in the Americas (Stattersfield et al. 1998). About 48 percent of the national timber harvest from 1985 to 1991 was produced in the pacific lowlands (ITTO/INEFAN 1993). Over a period of 10 years, deforestation in northern Esmeraldas nearly tripled from about 56,500 ha in 1983 to 152,000 ha in 1993, at which point about 27.9 percent of the region had already been deforested (Sierra 1996). In the mid-1900s, two important

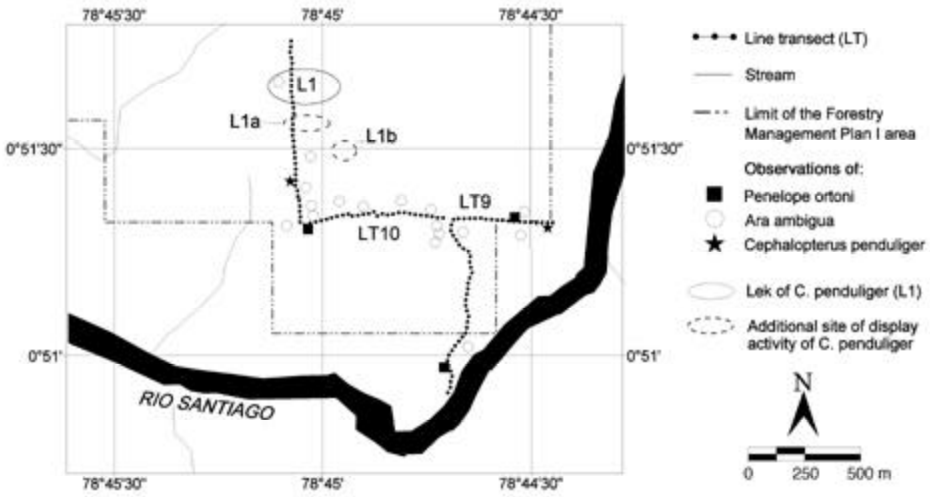
road projects were finished, and since then deforestation in Esmeraldas has accelerated to alarming rates (Jahn et al. in press).

Methods

In 1997 and 1998 I carried out inventories of the avifauna not only within the 500 ha of the management plan area of Playa de Oro (two transects), but also throughout much of the larger forest expanse (16 transects; see Figure 5.1). The total transect length was 24.15 km, and all transects were censused using the Multi Time-Window Transect Mapping (MTW) method, a rapid assessment technique for tropical birds (Jahn and Schuchmann in prep.). Local assistants (parabiologists) trained in bird identification and field methods participated in the field work. Nevertheless, all data presented here were gathered by the author.

The length of the particular transects varied between 550 and 1,700 m. The transects LT9 (1,300 m) and LT10 (1,500 m) were located within the initial management area, with the exception of the first 250 m of transect LT9 (Figure 5.2).

Figure 5.2. The locations of transects LT9 and LT10, the lek (L1) and additional sites of display activity (L1a and L1b) of the Long-wattled Umbrellabird Cephalopterus penduliger, as well as the sites of isolated observations of C. penduliger, the Baud— Guan Peneleope ortoni and the great Green Macaw Ara ambigua.



All transects were divided in 25 m sections with visible distance markers at both sides of the transect. In order to obtain not only a list of relative species abundances, but a detailed view of the species distribution pattern along the transect as well, we mapped the position of each bird with the help of the 25 m distance markers according to the fixed belt method (Bibby 1992). The width of the near belt was 25 m; the far belt was unlimited.

A complete MTW investigation of a transect consists of six individual censuses at different periods of the day and can be carried out in just two days, under optimal conditions. The exact time schedule for an MTW investigation depends on the length of the transect and the time of sunrise and sunset, but the mean observer effort per 100 m is about 53 min, irrespective of the total length of the transect. The average time effort per census varies with respect to the time of day (i.e. the level of bird activity) from 4 min per 100 m for night censuses (one after dusk, one before dawn) to 9 min per 100 m for the late afternoon survey and 12 min per 100 m for the three morning surveys. On each of the two transects within the area of the management plan, we completed four different MTW episodes, totaling 24 individual censuses and a time investment of 10 days per transect. For a more comprehensive discussion of the MTW method and its applications see Jahn and the colleagues (in revision), Jahn and Schuchmann (in prep.) and Jahn et al. (in prep.).

Results

From 1995 to 1998 about 315 bird species were recorded in the Playa de Oro area, in standardized mist-netting and line transect (MTW) surveys, as well as during additional observation hours (Jahn et al. 1999). Just the MTW study of the 18 transects alone revealed at least 240 bird species (Jahn et al. in revision). During the four complete MTW surveys of the two transects in the management area LT9 and LT10 (total n=48 censuses or 101.1 hours of observation in 20 days), I noted 149 bird species. Three more species were recorded during additional observation hours. This total bird list for the management area includes 10 species (Table 5.1) which are considered threatened in Ecuador (Granizo et al. 1997), five of which are also threatened at the global level (Collar et al. 1994). The MTW surveys led to two other important results. A lek (communal display area) of the rare Long-wattled Umbrellabird *Cephalopterus penduliger* was found in the transect LT10 (Figure 5.2; Jahn et al. 1999). Also, two other globally threatened species, the Baudó Guan *Penelope ortoni* and the Great Green Macaw *Ara ambigua*, were recorded within the management area. Given their behavior, it may also include breeding grounds of these very rare birds. These three species

have in common their high level of sensibility to deforestation and hunting pressure and, therefore, are considered Endangered in Ecuador (Table 5.1; Jahn et al. in revision).

Table 5.1: Nationally (Granizo et al. 1997) and globally (Collar et al. 1994) threatened bird species recorded within the area of the initial Community Forest Management Plan [I] for Playa de Oro. Near-threatened species are not considered, unless they are assigned to a threat category Vulnerable, Endangered or Critical) in at least one of the lists cited above.

Category	Species	Ecuador	World
01	*Leucopternis semiplumbea*	vulnerable	near threatened
02	*Penelope ortoni*	endangered	vulnerable
03	*Penelope purpurascens*	endangered	-
04	*Rhynchortyx cinctus*	vulnerable	-
05	*Ara ambigua*	endangered	vulnerable
06	*Capito quinticolor*	vulnerable	vulnerable
07	*Pittasoma rufopileatum*	vulnerable	-
08	*Cephalopterus penduliger*	endangered	vulnerable
09	*Tangara johannae*	vulnerable	near threatened
10	*Dacnis berlepschi*	endangered	vulnerable

The confirmed presence of threatened species (Table 5.1) in the planned area of the timber exploitation trials led to an assessment of ecological impact (Jahn et al. in revision) which convinced the SUBIR Project along with the community of Playa de Oro to restructure the area of the initial management plan and to create a community reserve in the area of the lek of *C. penduliger* (Figure 5.3).

Figure 5.3 The allocation of the community area of Playa de Oro in 1998, according to the draft of the new Community Forest Management Plan [II]. The final area of the new Plan will be a lot larger (up to 5,100 ha) than that of Plan I (500 ha). Moreover, it includes several community reserves in zones identified as important for the protection of threatened bird species or for ecotouristic activities. The total area of the reserves currently covers some 4,400 ha. The key transects (compare Figure 5.2) for the determination of the reserves, an additional trail for ecotouristic activities and the location of the lek of Cephalopterus penduliger (L1) are shown. The limits of the community reserves correspond to contour lines (not shown), which are visible in the field. Some of the limits are not yet well defined, but, taking into account that rough topography impedes low impact timber exploitation trials in some parts, it is quite probable that the reserves will eventually cover a larger area than shown in the figure.

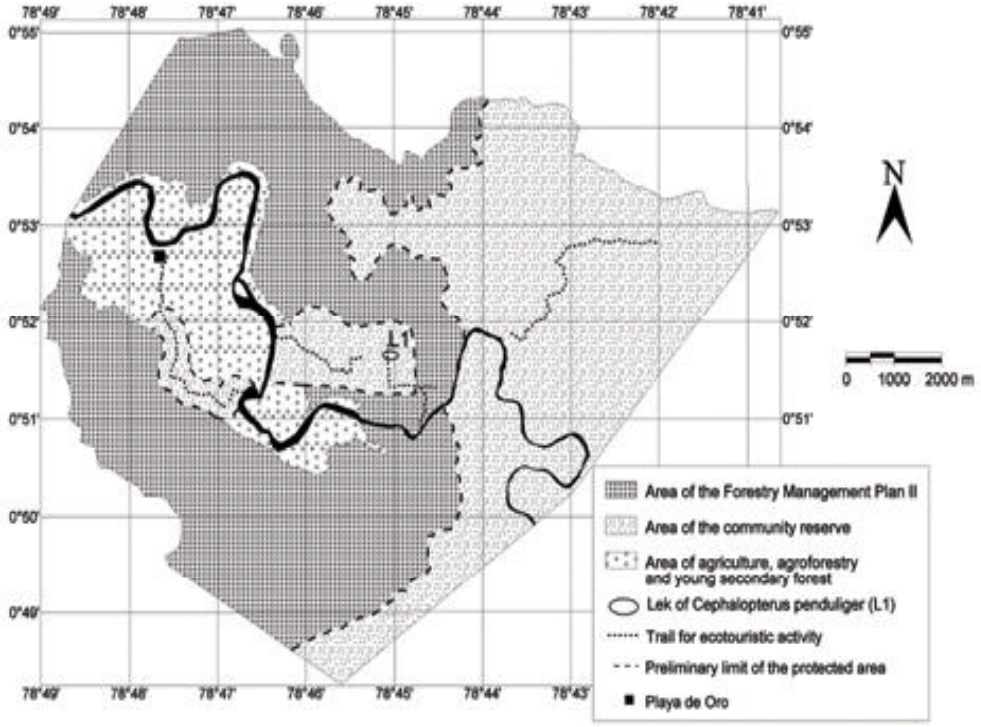
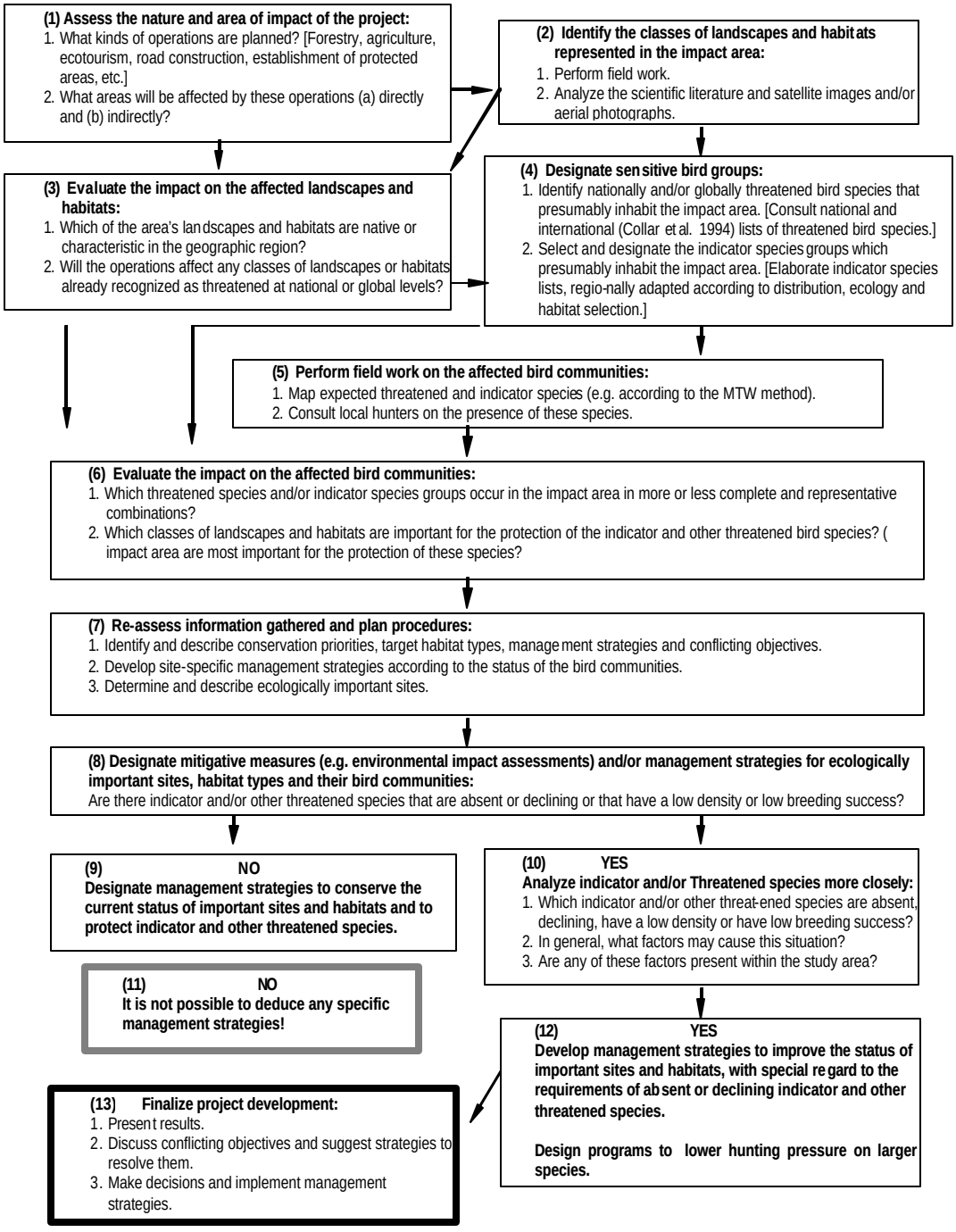


Figure 5.4 Investigation and planning scheme for the integration of afivaunistic data in conservation and development projects [adapted and enhanced on the basis of the Indicator Species Model: Investigation and planning scheme (Flade 1994, Figure 5.2).



This reserve covers approximately 360 ha and includes a trail for ecotouristic activities which ends at a beautiful waterfall. Additionally, the community agreed to change the limits of another, much larger community reserve, which was established in 1996 (EcoCiencia 1996). This reserve covers an area of some 3,800 ha and forms an important buffer zone for the Cotacachi-Cayapas Ecological Reserve (Figure 5.3). The current plan is to mark the limits of the community reserves and to include the lek of C. penduliger in the program of ecotouristic activities, helping to create an additional income for the local people (Jahn et al. 1999).

Discussion

The restructuring of the initial Forest Management Plan area in Playa de Oro gives us an excellent example of how avifaunistic data can be used to improve conservation efforts in development projects. An important prerequisite for this achievement was the availability of an effective rapid assessment technique, here, the Multi Time-Window Transect Mapping (MTW) method. For one, the most threatened bird species can be detected by MTW with good probability. Secondly, the location of each recorded species is mapped with the help of the 25 m distance markers, allowing for the identification of areas which are important for the survival and reproduction of threatened or otherwise sensitive bird species (e.g., Figure 5.2 indicates the sites where *Penelope ortoni*, *Ara ambigua* and *Cephalopterus penduliger* have been recorded). Third, the cost of an MTW study is as small as 5 percent of the cost of a comparable mist-netting study, and besides which performs with a greater accuracy of data (Jahn and Schuchmann in prep.; Jahn et al. in prep.).

In Figure 5.4 we find a general scheme for the integration of avifaunistic data in conservation and development projects. Let us consider the example of the initial Community Forest Management Plan for Playa de Oro (Management Plan I) in order to see how bird data can be used in a systematic way to improve the conservation efforts of such projects.

Box 1. The procedure starts with a few questions respecting the planned activities. Playa de Oro has proposed sustainable low impact timber exploitation trials according to a forest management plan which would affect 500 ha of lightly logged mature forest (Palacios et al. 1996; Figure 5.1).

Box 2. In the next step we catalog the landscape and habitat types represented in the impact area. The Management Plan I area embraces one landscape class, Chocó lowland forest, and at least two habitat types, wet tropical to wet premontane forest and small forest streams.

Box 3. Once we have identified the landscape and habitat types, we can evaluate the impact the proposed project would have on them. The landscape and habitat types found in the management area are native and characteristic within the geographic region. The question remains whether the proposed project will affect any class of nationally or globally threatened landscapes or habitats. According to Sierra (1999), only 18.3 percent of the original cover of humid and wet (evergreen) forests remains in the coastal lowlands of western Ecuador. Most of these remaining forests are located in Esmeraldas and contribute nearly 50 percent of the national timber production (ITTO / INEFAN 1993). Further, only a few thousand hectares of the Ecuadorian Chocó lowland forest are legally protected (Jahn et al. in press). Therefore, it is justified to consider the landscape type "Chocó lowlands" as critically endangered within Ecuador. On a global level the "Chocó Endemic Bird Area" has an "urgent" conservation priority (Stattersfield et al. 1998).

Box 4. Given this information on the landscape class and its current threat status, it is possible to designate the sensitive bird groups represented in the impact area. One certainly sensitive bird group is the threatened species, which must be surveyed whenever its presence in the study area is probable or known. Records of threatened species in the impact area are obviously an important argument for the implementation of mitigative measures which project or company managers, policy makers and local leaders can not easily ignore. Locally threatened species lists can be generated with the help of international and national "Red Lists" (e.g., Collar et al. 1994, Collar et al. 1992, Granizo et al. 1997), annotated checklists (e.g. Ridgely et al. 1998), field guides (e.g., Hilty and Brown 1986) and handbooks (e.g., Ridgely and Tudor 1989, 1994), as well as Stattersfield and colleagues (1998), whenever the study area is located in an endemic bird area. Using the information given in these references, we come up with a list of about 16 locally and seven globally threatened bird species which may inhabit the Management Plan I area in Playa de Oro (data not shown).

It is important to point out that there are some landscapes which are inhabited by relatively few threatened species, since large areas of their original vegetation cover remain. This is true, for example, in many areas of the Amazon tropical evergreen forest. In such landscapes, we must work with indicator species groups, that is groups of species that have a significantly higher frequency (and normally also a much higher density) in one or a few habitat types than in all others (Flade 1994). The presence or absence of these specialized species at a site gives more information on the habitat qualities than the presence / absence of species with a less specific habitat selection. It is beyond the scope of this article to explain in detail how to generate indicator species lists for a given site. However, in general, it is necessary to assess all the information available on

the habitat selection and ecology of the bird species that probably or certainly occur in the study area. In addition to the reference sources mentioned above, the work of Stotz et al. (1996) gives a lot of helpful information for the identification of ecologically specialized species in South America. In this example, I did not use indicator species groups for the identification of sensitive habitats in the Management Plan I area because the threatened species list for this site already contained a sufficient number of species.

Box 5. A critical step in the process of integration is the field work on the affected bird communities, particularly the mapping of expected threatened and/or indicator species. For the reasons mentioned above, I recommend the MTW method for collecting bird data in conservation studies. However, the successful application of MTW certainly requires a high level of training as well as advanced knowledge of the local avifauna, especially bird vocalizations at the study site (Jahn et al. in revision).

Box 6. On the basis of the field data, we plant a series of questions regarding the affected bird communities. In our example, these questions are answered as follows:

- A total of 10 nationally and five globally threatened species have been recorded (Table 5.1). In comparison with most of the other transects studied in Playa de Oro (data not shown), the threatened species group in the management area is relatively complete. The most important results of the MTW surveys were the discovery of the lek of the Long-wattled Umbrellabird *Cephalopterus penduliger* and the conclusion that the area most probably also includes breeding grounds of the Baud— Guan Penelope ortoni and the Great Green Macaw *Ara ambigua* (Figure 5.2; Jahn et al. in revision).
- Most of the threatened species (Table 5.1) inhabit the interior of poorly altered forest.
- The most important sites for the protection of threatened species are (a) the umbrellabird lek site itself (Figure 5.2), located within the most pristine forest patch along transect LT10 (Jahn et al. 1999), and (b) the areas with populations of the "Salero" tree *Lecythia ampla* (Lecythidaceae), since the fruits of the "Salero" are an important food resource for *A. ambigua* (Jahn et al. in revision).

Box 7. Once the most important habitats and sensitive sites for the protection of threatened and/or indicator species have been identified, all the gathered information has to be re-assessed, in order to designate and describe conservation priorities, target habitat types, management strategies and conflicting objectives. The end result of this step is a preliminary draft of the conservation project.

Obviously, it is beyond the scope of this paper to include such a document, but we may mention the following factors that are important in determining the conservation priorities and target habitat types for the management area in Playa de Oro:

- Only one lek of C. penduliger was discovered during the MTW study of the complete transect set of 24.15 km, despite the fact that the display call of the males is audible at a distance of up to 400 m (Jahn et al. 1999).
- From 1995 to 1998 *P. ortoni* was never recorded in the transects closer to the village (LT1 to LT8b; see Figure 5.2; Jahn et al. in revision).
- *ambigua* was recorded more frequently and regularly in transects LT9 and LT10 than in any other transect, and its total Ecuadorian population is now probably < 40 pairs (Jahn et al. in revision).
- The home ranges of the above mentioned sensitive species are relatively large; hence, a successful protection of these species should also ensure the maintenance of the less sensitive threatened species recorded in the management area (Table 5.1).

Final Boxes (8 to 13). In these final steps, the preliminary draft of the project is refined according to site-specific management strategies designed for sensitive areas. In most human-influenced areas, the answers to questions 8 and 10 (iii) is "yes". In Playa de Oro, the populations of*P. ortoni, A. ambigua* and *C. penduliger* are declining because more and more primary forest is being selectively logged. Moreover, due to hunting pressure, the mortality of larger species is higher than the reproduction rate.

The last step (Box 13) is certainly the most conflictive and difficult one; it is the decisive process within the project and the affected local community. In Playa de Oro, two objectives stood in conflict with each other. On the one hand, the SUBIR Project wanted to generate income for local people through the sustainable management of their biological resources. On the other hand, it was also important to protect and maintain the biodiversity of the region, including its threatened species. In the end, the SUBIR Project and the community of Playa de Oro decided to restructure the initial management plan area and establish three community reserves (with a total area of about 4,400 ha). This gave protection to important sites for threatened species and maintained valuable potential for ecotouristic activities in the community (Figure 5.3). Additionally, the area dedicated for sustainable forest management was extended to about 5,100 ha, in order to ensure a regular income for the local people. At present, the SUBIR Project plans to carry out rapid assessments of threatened

species in the parts of this Forest Management Plan II area not already covered by MTW study transects. This will help avoid the alteration of other important, not yet identified sites.

The implementation of a sustainable forest management plan is a time-consuming and expensive enterprise. The SUBIR Project´s decision to restructure the Management Plan I area in order to protect the most sensitive sites, including the lek of *C. penduliger* (Figure 5.3), serves as a model for the integration of biological data into development projects. This success would have been impossible without the parabiologists (local assistants), who played a critical role in negotiating conflicting interests within the community.

Conclusion

The degree to which a development project considers biological data practically determines its sensitivity and commitment to the conservation of biodiversity. For the SUBIR Project, the MTW technique has played a critical role in making such data available in a timely and economical fashion. Since 1998 the SUBIR Project has also used MTW for the assessment of threatened bird species in other proposed forest management plan areas, as well as for monitoring the impacts of sustainable and traditional timber exploitation trials. As we have seen in the example of Playa de Oro, this information can help direct projects in their efforts to achieve sustainable development. However, no project can reach this goal unless, through training and the provision of viable economic alternatives, it meets the long-term needs and conviction of the local people.

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Parabiologists: Edwin Vargas, Albino Corozo. Students: Paola G. Castaóeda, Martín Bustamante. Map design: Fernando Rodriguez, Guillermo Sanchez. Manuscript revision: Alyssa Luboff.

References

Bibby, C.J., N.D. Burgess, and D.A. Hill.
1992 Bird Census Techniques. London, U.K. and San Diego, USA: Academic Press.

Collar, N.J., M.J. Crosby, and A.J. Stattersfield.
1994 Birds to Watch 2: The World List of Threatened Birds. BirdLife Conservation Series. Vol. 4. Cambridge, U.K: BirdLife International.

Collar, N.J., L.P. Gonzaga, N. Krabbe, A. Madro–o Nieto, L.G. Naranjo, T.A. Parker III, and D.C. Wege.
1992 Threatened Birds of the Americas. Cambridge, UK: ICBP

EcoCiencia.
1996 Mapa de Uso Actual y Uso Potencial - Comuna Playa de Oro. Quito, Ecuador: EcoCiencia, INEFAN, USAID, SUBIR

Flade, M.
1994 Die Brutvogelgemeinschaften Mittel- und Norddeutschlands: Grundlagen fŸr den Gebrauch vogelkundlicher Daten in der Landschaftsplanung. IHW-Verlag, Eching, Germany

Gentry, A.H.
1986 Species richness and floristic composition of Chocó region plant communities. Caldasia. 15:71-91.

Granizo, T., M. Guerrero, C. Pacheco, R. Phillips, M.B. Ribadeneira, and L. Surez.
1997 Lista de Aves Amenazadas de Extinción en el Ecuador. Quito, Ecuador: UICN-Sur, CECIA, INEFAN, EcoCiencia and BirdLife International.

Hilty, S.L., and W.L. Brown.
1986. A Guide to the Birds of Colombia. New Jersey, USA: Princeton University Press, Princeton,

ITTO/INEFAN.
1993. Estudio del Mercado Internacional de Productos de Madera. Quito, Ecuador: Ministerio de Agricultura.

IUCN.
1992. Protected Areas of the World: A Review of National Systems. Gland, Switzerland and Cambridge, UK: IUCN,

Jahn, O., E.E. Vargas G., and K.-L. Schuchmann.
1999. The life history of the Long-wattled Umbrellabird Cephalopterus penduliger in the Andean foothills of northwest Ecuador: leks, behaviour, ecology and conservation. Bird Conservation International. 9:81-94.

Jahn, O., M.B. Robbins, P. Mena Valenzuela, P. Coopmans, R.S. Ridgely, and K.L. Schuchmann.
In press. Status, ecology, and vocalizations of the Five-colored Barbet (Capito quinticolor) in Ecuador, with notes on the Orange-fronted Barbet (C. squamatus). BBOC.

Jahn, O., E.E. Vargas G., and K.L. Schuchmann.
In revision. Los inventarios de especies de aves amenazadas y sus usos para modificar los proyectos de desarrollo y conservación: un ejemplo del Chocó ecuatoriano. Vida Silvestre Neotropical.

Jahn, O., and K.L. Schuchmann.
In prep. Two contrasting methods for censusing tropical birds in conservation studies: line transects and mist-nets.

Jahn, O., P. Mena Valenzuela, U. Wittmann, M.E. Jara Viteri, and K.L. Schuchmann.
In prep. The comparative effectiveness and efficiency of mist-nets and line transects for censusing tropical birds in conservation studies.

Jaramillo, H., A. Arvalo, D. Rubio, and U. Vollmer.
1996. Estrategia Regional y Plan de Acción Emergente para Promover el Desarrollo Forestal Sustentable en la Provincia de Esmeraldas. Esmeraldas, Ecuador: Unidad Coordinadora para el Desarrollo Forestal Sustentable en Esmeraldas..

Palacios, W., C. Peter, and I. Estupión.
1996. Plan Piloto de Manejo Forestal Comunitario (PMFC) en Playa de Oro, Provincia de Esmeraldas, Ecuador. Quito, Ecuador: Jatun Sacha / SUBIR,

Ridgely, R.S., P.J. Greenfield, and M. Guerrero G.
1998. An Annotated List of the Birds of Mainland Ecuador. Quito, Ecuador: Fundación Ornitológica del Ecuador CECIA.

Ridgely, R.S., and G. Tudor.
1989. The Birds of South America: The Oscine Passerines. Volume I. Oxford, UK: Oxford University Press

Ridgely, R.S., and G. Tudor.
1994. The Birds of South America: The Suboscine Passerines. Volume II. Oxford, UK: Oxford University Press

Sierra, R.
1996. La Deforestación en el Noroccidente del Ecuador 1983-1993. Quito, Ecuador: EcoCiencia,

Sierra, R.
1999. Vegetación Remanente del Ecuador Continental. Quito, Ecuador Proyecto INEFAN / GEF and Wildlife Conservation Society.

Stattersfield, A.J., M.J. Crosby, A.J. Long, and D.C. Wege.
1998. Endemic Bird Areas of the World: Priorities for Biodiversity Conservation. BirdLife International. BirdLife Conservation Series 7. Cambridge, UK: BirdLife International,

Stotz, D.F., J.W. Fitzpatrick, T.A. Parker III, and D.K. Moskovits.
1996. Neotropical Birds: Ecology and Conservation. Chicago, USA and London, UK: The University of Chicago Press.

UNEP.
1992. Convention on Biological Diversity, 5 June 1992. United Nations Environment Programme. Na. 92-7807.

Chapter 6

The Use of Geographic Information Systems in Planning and Prioritizing Actions in a Biogeographical Unit

Grettel Vargas Vargas

Fundación para el Desarrollo de la Cordillera Volcánica Central (FUNDECOR) is a non-governmental organization based in Costa Rica. Its geographical sphere of action is the Central Volcano Range Conservation Area, one of the eleven biogeographical units established by the Ministry of the Environment and Energy. Our activities take place within a 300,000 hectare area, divided into what we call nucleus areas (national parks and other protected areas) and buffer zones in which private properties are located. These latter are the sites of a variety of activities and uses, including forests, plantations, agriculture and livestock activities, crops, pastures and scrub.

In implementing its activities, monitoring changes in land use and selecting areas in which FUNDECOR should focus its efforts, we have made use of the Geographic Information System (GIS) as a decision-making tool. As is well known, access to reliable information is one of the basic requirements of decision makers. This is particularly true in the field of natural resources.

Major activities involving the geographic information system

Land use maps

To determine changes in land use in the Central Volano Range Conservation Area (ACCVC - Area de Conservación Cordillera Volcánica Central), FUNDECOR's staff has developed soil use maps based on LANDSAT (TM) satellite images created by remote sensors on a NASA satellite. Land use maps have been created for three time periods: 1986, 1992 and 1996 (see figures 6.1, 6.2, and 6.3). The image classification process has been carried out by specialists

from the Tropical Agronomy Center for Research and Teaching (CATIE - Centro Agronómico Tropical de Investigación y Enseñanza), an international organization based in Costa Rica, well known for its research and training activities in the field of natural resources.

The classification of images was achieved with ERDAS-IMAGE software. At the same time, we have collected data from 250 field sites and superimposed the results on the images in order to determine training sites or spectral signatures. The creation of soil use maps includes the following soil use categories:

- Primary Forest
- Secondary Forest
- Pasture with Trees
- Croplands with Pastures
- Scrublands
- Bare Soils
- Water
- Reforested / Recovered Lands
- Clouds / Shade

These categories facilitate FUNDECOR staff's activities, including measurement of land area and determining the current location of forests. Additionally, the categories allow us to estimate the land area that has been deforested in the course of a specific time period. This provides a clear idea as to where we should concentrate our efforts. Thanks to this planning tool, FUNDECOR has implemented agreements with 400 owners of forests and plantations, including 30,000 hectares located primarily in areas identified as critical.

According to maps for the 1986-1992 period, we have calculated a deforestation rate of 6,684 hectares per year. On the basis of this information, FUNDECOR has confirmed the need to use the GIS as a tool for establishing areas in which efforts should be concentrated to reduce the rate of deforestation.

Critical areas model

Given the extent of the territory included in the conservation area and FUNDECOR's goal to implement a sustainable development program that would contribute to reducing deforestation, we created a critical areas model (see figure 6.4). The model was applied primarily to threatened forests, with the goal of implementing reforestation activities. For purposes of the model, critical areas are defined as "those areas which, in light of their physical, social and economic characteristics, have become areas whose natural resources are

Figure 6.1

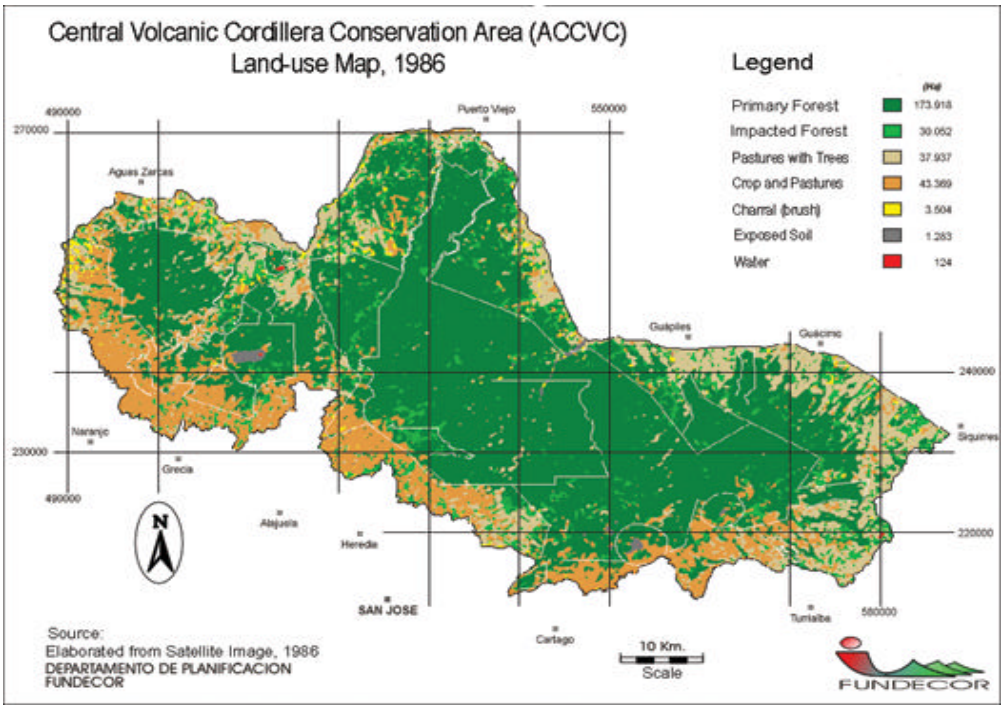


Figure 6.2

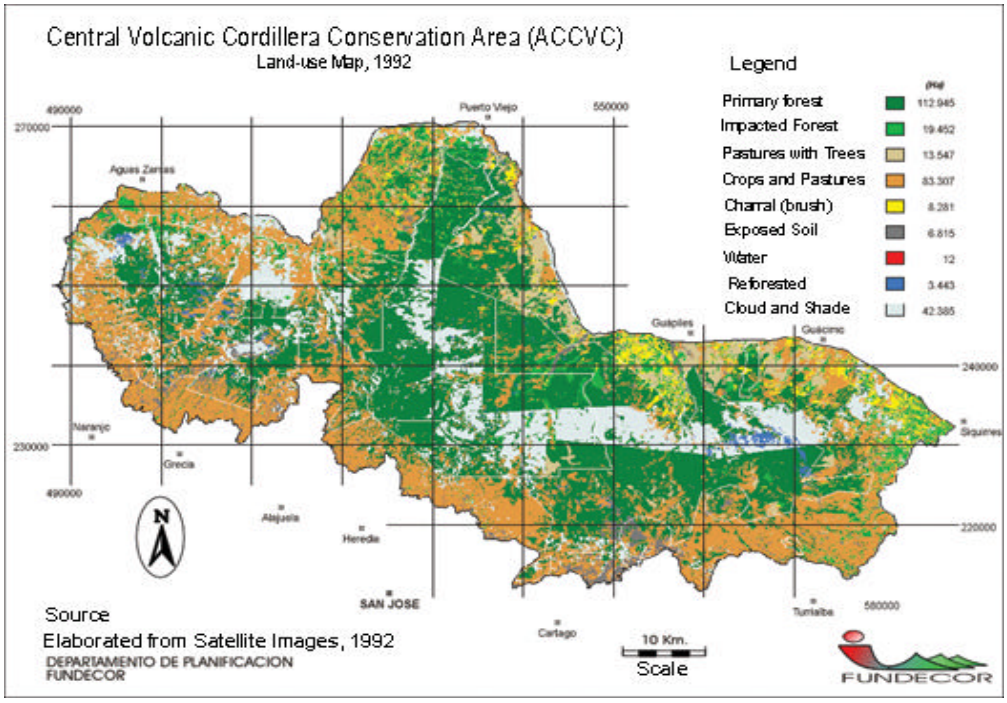


Figure 6.3

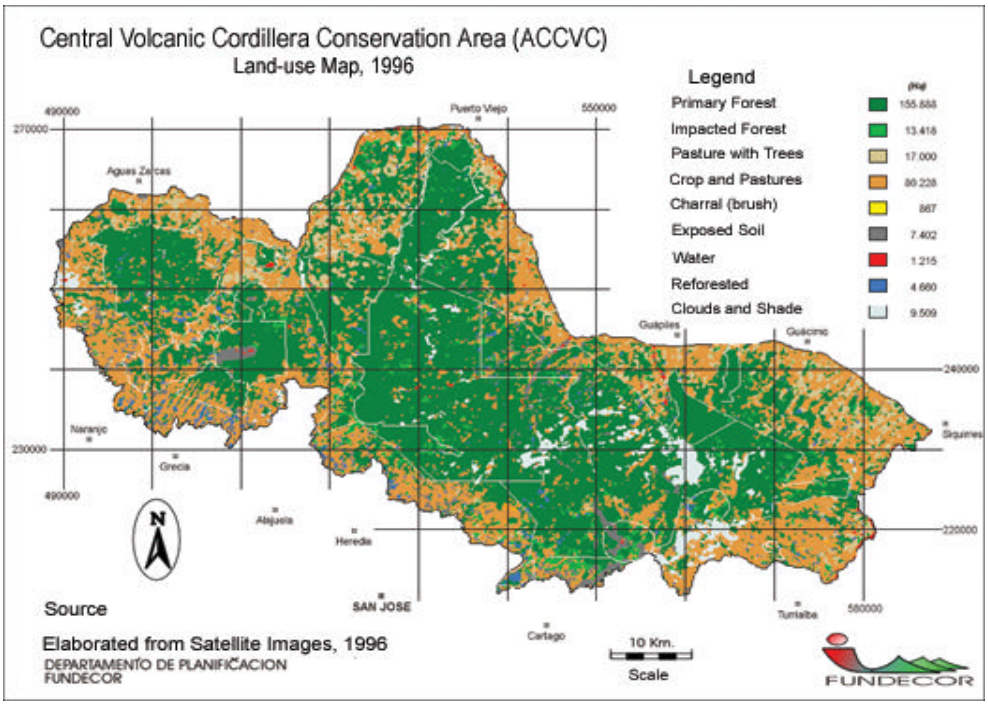
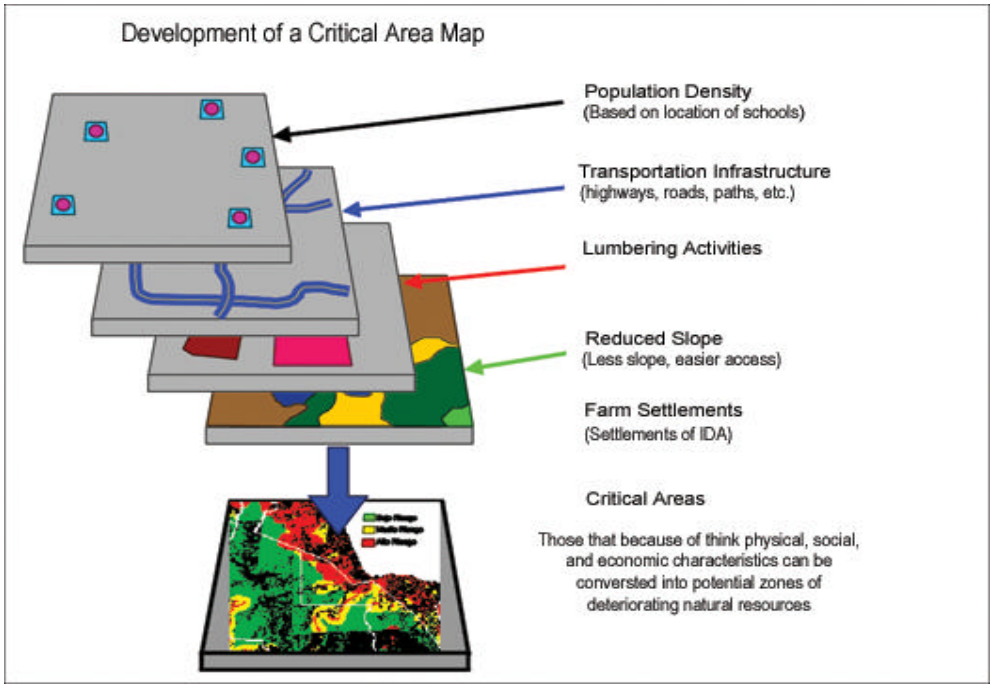


Figure 6.4



in danger of deteriorating. In these areas, development activities will be implemented to minimize the impact of human activity on natural resources."

On the basis of the Geographic Information System (GIS), IDRISI used geographical criteria to combine factors producing pressure on forest resources, and further combines those factors with information obtained on different degrees of pressure, or "threats". The result was a Critical Areas map. This map indicates the degree of threat experienced by a given resource and has thus become, in qualitative terms, an index of land use change.

The creation of resource priorities is the first step in evaluation. The forest resource is the top priority, given that it is the principle natural wealth of the area. In the second stage, we identify specific threats, and to each of these a relative weight is assigned.

Threat priorities

The criteria or variables taken into consideration because they create pressure on the forest are as follows:

- Population Density
- Roads
- Reduced Slope
- Logging Activities (Use Plans)
- Nearby Populations (IDA Settlements)

The above factors were taken into account in order to provide a panoramic view of the area and to determine which sectors were most in need of attention. Ordering criteria in terms of priorities based on threats to the forest was the goal of the Strategic Team created within the institution for decision-making purposes. The information contained in each of the variables was as follows:

Population Density

Population density is based on the premise that the greater the population, the greater the threat to natural resources, given that human populations tend to 1) extend the agriculture frontier and 2) create urban centers. To create this variable, we took into account the number of children in schools in the year the analysis was carried out, as well as census data at the national level to determine aggregate data at the district scale.

The population map was created based on digitized maps at a scale of 1:50,000. Schools and corresponding enrollment figures were included for 1991.

Roads

It is well known that the opening of a road in Latin America leads in short order to increased human settlement along the roadway. This, in turn, increases and grazing lands since farmers can now transport their products to market with greater ease.

There is no doubt that this development process improves the living standards of people in the area. In order to understand the impact of the opening of roads, this information was incorporated into the geographic information system. Maps at a scale of 1:50,000 were digitized for all existing roads. The roads / threats to forest relationship indicates that the closer to a road an area is located, the greater the pressure of changes in land use.

Use Plans

Logging activities in the zone are carried out through the establishment of what are known as "Use Plans." These plans are required by the state, as specified by forestry laws. Given the existence of the large number of use plans being implemented in the zone, this is an important variable.

To gather information for this variable, FUNDECOR undertook a study of use plans for the zone. The variable is significant because the presence of a use plan increases the possibility of land use change in the zone. The results of this study reveal that a large percentage of use plans are those involving logging interests. As a result of contracts signed with loggers, land owners are required to cede forest to the logger who eventually fells the trees after having exploited other areas in the zone. At the time of the study, there were forests scheduled for felling during the course of the coming five years under this scheme.

In order to simulate pressure around an area being used, we created simple buffer zones measuring one kilometer. Management plans will be strictly applied, and it is hoped that this will eliminate the danger of changes in use. The threat of such changes is considered to be negligent assuming that the sustainable management plans developed by FUNDECOR are applied. However, when a road is opened the area becomes more susceptible to changes. FUNDECOR's task is to remain alert to changes that could be generated by the opening of roads.

Slope

This variable was taken into account because steep slopes are a natural barrier to the spread of human populations toward the forest. Consequently, with a reduction in slope, the threat to the forest grows, given the facility of access to these lands. Relative threat based on degree of slope was estimated by taking into account the inverse relationship between the two factors; the figures were then compared to areas in the zone which exhibited the characteristics in question.

Institute of Agrarian Development Settlements

An important variable for measuring the threat to the forest resource is the legal distance separating natural resources from peasant settlements that was created by the Institute of Agrarian Development. In Costa Rica, this state entity is in charge of granting land to peasants. Usually, land with forest is granted and peasants then proceed to fell the forest in order to plant pastures for livestock and/or other crops, both annual and perennial. Expansion has demonstrated an upward movement, that is, from lowlands to highlands, with forests in the lowlands or on river banks and around other water sources being the most affected. Crop failures, due to the lack of improved production techniques or the marginal quality of soils in what were forested lands, have led to gradual changes in soil use which have affected the forest. Studies have indicated that the distribution of land to peasants has been a major, though not the only, cause of the destruction of forests in areas that are, and should remain, forested.

In order to simulate the results of locating new settlements through the Agrarian Development Institute near already existing settlements, we created a simple buffer zone extending for one kilometer around each existing settlement. It must be kept in mind that all information was gathered for the years 1992, 1993, 1994 and 1995. We then constructed a model of critical areas up to date for the year 1996.

Critical areas map

The map of Critical Areas is the result of combining or superimposing the various layers of information considered to be factors causing some type of pressure on natural resources (figure 6.4). That is, based on the data explained above, we place one map over another in order to generate a new map which

contains the various values represented by each pixel or information cell, according to the weights assigned to each.

After calculating the critical nature of each real value, we performed a reclassification to obtain a quantitative scale, simple in design, which would allow for a rapid visual and statistical evaluation. This classification was evaluated and it was decided to create a simplified classification defining three categories of criticalness: low risk, medium risk and high risk for land use change.

Validating the model

With the map of soil use change generated by soil use images from 1986 and 1992, we performed a co-validation of the Critical Areas model. In order to determine how well changes in soil use were predicted by the model, we divided the ACCVC into seven sectors and established 20 risk categories.

When the data were graphed, it was clear that in the very low risk categories the model is imprecise. In the intermediate risk categories, the model's predictions improve considerably, providing a greater degree of accuracy in predicting areas more susceptible to changes in land use.

In the high risk areas, the model's predictions do not provide an accurate reading of what is happening in the field. That is, the model predicts higher levels of deforestation whereas in the field, the average rate of deforestation has remained constant or has been reduced.

With the creation of the 1996 land use map, we determined that for the 1992-1996 period, the new rate of deforestation was 4,259 hectares per year, which indicates that FUNDECOR's efforts at focusing on critical areas has resulted in a reduction in deforestation.

Lessons learned

- Land Use and Critical Area Maps are fundamental tools used by FUNDECOR in the development of its activities.
- Reducing expected deforestation depends not only on the efforts of a single institution, as in the case of FUNDECOR, but on a series of elements which include:
- Civil society should recognize the services offered by the forest.
- Policies need to be developed for increasing the value of the forest.
- Laws which prohibit changes in soil use and the implementation of novel financial schemes for the forestry sector.
- Protection activities should involve civil society.

- The use of Geographic Information Systems has been a very important decision-making tool as implemented by FUNDECOR.
- The development of a critical areas model depends on particular factors and parameters. These are not static, nor can they be considered is isolation. Rather, they must be changed with changes in situations in the field, and be brought up to date on a regular basis.
- A model must be based on accessible information and transformed to a digital format. In many cases, unnecessary information, irrelevant to the creation of the model, is collected.
- The Critical Areas model is not a recipe. It is a methodological process involving layers of information. These are based on the situation in the field which is being analyzed. The true challenge is to identify the various factors which constitute a threat to the forest and to combine these appropriately on the basis of need.
- A model should not be considered a fixed product but must be based on the singular characteristics of the activities taking place in the area under study.

Part

2

Resolving Conflicts and Creating Strategic Alliances through the Integration of Conservation and Development

Game hunter and his dogs in the buffer zone of the Cotacachi-Cayapas Ecological Reserve, Ecuador

(*Photograph by R. Rhoades*)

Chapter 7

Incidence of Community Land Fragmentation in Conservation and Development: The Ecuadorian Case

Manolo Morales Feijóo

Current socio-economic conditions in Ecuador are characterized by a series of contradictions which directly affect the quality of life of the population and seriously threaten the continued existence of natural resources. One of these contradictions involves the sale of community properties at an increasing rate after said properties, under the jurisdiction of agrarian and communal legislation, have been divided by means of pressure put on communities to sell their lands to agro-export or forestry concerns.

This practice is not carried out in a legal fashion, nor with even the most basic natural resources management criteria, especially those related to biological management. The majority of efforts to divide community lands are carried out by third parties, and designed to lead to the eventual sale of part or all of the property in question. This process contributes very little, if anything, to local community development. Examples of this process are illustrated by an article published in *El Comercio (*1999) entitled "African Palm Gets Ready to Go to San Lorenzo." According to the article, the arrival of palm companies has produced concerns in the Esmeraldas area communities. Shortly after their arrival, the sale of lands, through middlemen, revealed their true purpose: the planting of huge African palm plantations. The number of hectares sold, and the number that will be used for African palm, are a mystery in San Lorenzo. According to a former governor of the province, Marco Estupiñán, there is talk of 15,000, 60,000 and even 100,000 hectares, but the Provincial Office of the Ministry of Agriculture has no information on this matter. Nor does anyone have information on native or secondary forest cover, nor the extent of protected areas. However, the trees are falling to chainsaws, and are being turned into logs, boards, blocks, rafters and furniture. The companies, in their effort to acquire property, are buying up communal

lands which, by law, cannot be sold. And this is leading to conflicts among residents. The African palm enterprises offer to open roads and build schools, to supply communities with teachers and electricity (*El Comercio* 1999).

The land sale process taking place in some regions of Ecuador, especially in the north of Esmeraldas, leads to disastrous social, economic and environment consequences, for the following reasons:

- In many cases, communities do not freely decide to sell their lands. Instead, community leaders or groups of residents are pressured, and this leads to divisions in the communities.
- Communities who sell their lands do not receive support for production projects. Rather, with no investment plan, their soon find themselves without land or money.
- This situation contributes directly to an increase in migration from the countryside to the city or to the occupation of new lands with new social and environmental consequences at the national level.
- Those who buy community lands do not do so for the purpose of contributing to the development of local communities or to the conservation of natural resources. Rather, they fell the forests and use the soils for monocultures, contrary to any criteria for the sustainable management of resources.
- Virtually all lands acquired in the north of the province of Esmeraldas have been converted to a single crop, in spite of the fact that these are lands appropriate for forests according to zoning criteria developed by the Ministry of Agriculture and Livestock through its National Office of Non-renewable Natural Resources.

The consequences of mono-cropping are well known in Ecuador and throughout the world. However, it must be emphasized that while all activities that generate production and development in Ecuador should receive the support of the entire population, the price of development should not be the sacrifice of local populations and of national ecological resources. Niassa Lichinga, from Mozambique, has written an article entitled "Private lands or communal lands: A question of values," in which she asks:

> Can a system of social organization and land tenancy that guarantees the peasant equitable access to land, and that is based on community solidarity and cooperation, that takes care of members who are no longer able to work, that is deeply rooted in cultural and religious traditions, survive in this new scenario? Existing evidence is contradictory and provides little reason for hope. Traditional systems are disappearing, and with them, the social justice they guarantee… (Lichinga 1997).

Lichinga's insight, combined with the Political Constitution of Ecuador, which is the principal law of the land, led us to question the situation described. The first task was to inform the Minister of the Environment of the problem, suggesting to her the possibility that in her role she bring our concerns to the Attorney General as one of his functions is to "represent the State in legal matters." Our goal was to get a legal interpretation of the problem. To that end, we had meetings with members of the business sector, while presenting to the Attorney General the following questions:

- Do Article 84, section 2, and Article 85 of the Political Constitution of the Republic of Ecuador, tacitly repeal Article 24 of the Agrarian Development Law, specifically, Articles 25 and 25 of the General Regulations of the Agrarian Development Law; Articles 17, section f, and Article 21 of the Law for the Organization and Rules for Communes, and Article 8 of the Statues for Peasant Communities?
- In the event that the laws cited above have been repealed, what is the legal situation for sales transactions based on acts that lead to the division of communally held lands, undertaken after the publication of the Political Constitution of the Republic of Ecuador in *Official Registry* number 1 of August 11, 1998?
- Does the obligation to "conserve the imprescriptable property of community lands, which will be inalienable, not subject to seizure and indivisible," as stated in Article 84, section 2 of the Political Constitution of the Republic of Ecuador, apply to all community lands, without regard to their organizational form or to the form of land tenancy, whether that be individual or collective?

Legal criteria

Question no 1:

In effect, Article 84, section 2, and Article 85 of the Political Constitution of the Republic of Ecuador repeal the articles mentioned above for the following reasons:

1. Article 84 of the Political Constitution of the Republic of Ecuador states that:

> The State will recognize and guarantee to indigenous peoples, in conformity with this Constitution and the law, the respect for the public order and human rights of its members, through assuring the following collective rights... 2. Conservation of imprescriptible

> possession of community lands, which will be inalienable, not subject to seizure and indivisible, except when the State sees fit to declare these apt for public use...

Further, Article 85 of the same law states that "The State will recognize and guarantee to Afro-Ecuadorian peoples the rights specified in the pervious article, in all respects to which these are applicable."

The most important aspect of this article is the fact that it incorporates into the law of the land limitations which are in fact guarantees designed to protect communally held lands from loss through prescription, i.e., default: "This is a form for acquiring things not possessed, or for extinguishing the actions and rights of others who have possessed the things in question, or who have not exercised said actions and rights during a specific time period, when such acquisition complies with all other legal requisites. An action or right is said to be prescribed when it is repealed through default (Article 2416 of the Civil Code). In addition, the article established the inalienability, the exemption from seizure and the indivisibility of community held lands.

Inalienability prevents transfer, that is, the passage of property rights from one person to another, in this case, the rights to land. Article 618 further states, in this respect, that "territorial possession (also called property) is the real right to a corporal thing, to enjoy and dispose of said entity, in compliance with the law and respecting the rights of others, be these individual or social..."

Freedom from embargo prevents the seizure of community property through guarantees or sureties. In this respect, Article 1481 of the Civil Code states "a contract or an agreement is an act through which one party is obliged to another, to give, do or not do some specified thing. Each party may consist of one or many persons." And the same body of law, in Article 1485, establishes that "a contract is accessory when its object is to assure compliance with a principle obligation, so that there is no way to prescind with said instrument."

Indivisibility prohibits the division of community land, regardless of the purpose for which this is intended. That is, section 2 of Article 84 protects community lands from prescription, prohibiting the following:
a) that possession of community lands be transferred to another party;
b) that taxes or mortgages be established on community lands (Article 2333 of the Civil Code states that "A mortgage is the right to provide as security real estate which does not, as a result, cease belonging to the

debtor"); and c) division of community lands, whether for profit or not. These guarantees and limitations are enjoyed by Afro-Ecuadorian peoples, according to Article 85 of the Constitution of Ecuador.

2. The Constitution is the supreme law of the land, as stated in Chapter 1, Title XIII, which refers to the "supremacy, control, and reform" of the Constitution, in accord with the following articles:

> Article 272. The constitution shall prevail over all other legal norms. The dispositions of organic and ordinary laws, laws-decrees, statutes, ordinances, regulations, resolutions, and other acts by persons in positions of public authority, will be in accord with the dispositions of the Constitution] and will have no value if, in any way, they are in contradiction with or alter these prescriptions.
>
> In the event of conflict between norms of distinct hierarchies, the courts, tribunals, judges and administrative authorities will revolve said conflict through the application of the norm hierarchically superior.
>
> Article 273. Courts, tribunals, judges and administrative authorities will be obliged to apply the norms of the Constitution which are pertinent, even though the interested party does not specifically refer to said norms."
>
> Article 274. Any judge or tribunal, in the cases being heard, may declare inapplicable, *ex oficio* or at the request of the interested party, a juridical precept contrary to the norms of the Constitution or to international treaties and conventions, without prejudice of erring in the controversial matter.
>
> This declaration will not be obligatory except in those causes in which it is made explicit. The judge, tribunal or court will present a report on the declaration of unconstitutionality to the Constitutional Tribunal where the matter will be resolved in a general and obligatory fashion. According to the dispositions cited, the authorities who approved the community land sales were in violation of the Constitution.

3. The articles which are repealed relative to the constitutional precepts cited are as follows:

3.1 The Codified Law of Agrarian Development, Article 24, which states that:

> The division of community lands: Communes, legally constituted, whose members want to divide all or a portion of their commonly held lands, may proceed with the division of said lands, after a resolution to that effect is approved in a general assembly by two-thirds of the members. However, the division of highlands (páramos) is forbidden, as is the division of lands destined to the planting of forests...

This article, as it provides for the division (synonymous with breaking up, cutting up, disintegrating, parceling, dividing, fragmenting, segmenting, compartmentalizing), is in violation of the Constitution, according to the analysis presented.

3.2. General Regulation of the Agrarian Development Law, Article 25, which states that the transferring title of ownership by the commune to the beneficiary will consist of a certified copy of the resolution referring to the act of division and partition duly protocolized and inscribed in the Property Register." And Article 26, which states that

> The resolution will include a history of ownership, extent, boundaries and names of the beneficiaries, duly approved by the assembly. In the act the signature or fingerprints of the members present will be included. A certificate from the Registrar of Properties and maps or plans, duly approved by the general assembly, will be annexed.

These articles are repealed as they consist of regulations for Article 24 of the Codified Law of Agrarian Development, and since the portion of the law referring to the act in question has been repealed, all those assessory laws referring to how to do it in the regulations are also repealed as there is no longer any reason for a procedure for matters not contemplated in the law.

3.3. In the Law for the Organization and Regulation of Communes, Article 17 refers to

> Attributes of the community council. The attributes of the community council [include]...e) acquire goods for the commune, through commercial transactions, and contract for this purpose, with prior approval of the Minister of Agriculture and Livestock, obligations, over time, through the mortgaging

of those goods acquired or those possessed by the commune; f) study the division of commonly held goods which the commune possesses or acquires, the possibility or convenience of their transfer, and the procedures of civil courts with jurisdiction over said goods, or come to another arrangement in these disputes; and resolve these matters, with prior agreement of the general assembly and approval of the Ministry of Agriculture and Livestock.

Article 21 refers to the "Prohibitions for notary publics and property registrars" as follows:

> No notary public may extend public title in relation to the collective goods of a commune, without prior proof that all dispositions contained in Article 17 have been complied with. If public title has been granted in violation of these prescriptions, said instrument will be null and void, and the costs assumed by those who have intervened in its granting, including the notary public and the property registrar, if the title has been registered.

In this case, section e of Article 17 is repealed, which states "...and contract for this purpose, with prior agreement of the Ministry of Agriculture and Livestock, obligations over time, by mortgaging the goods acquired or possessed by the community."

At the same time, section f of the same article will be applied only and exclusively to moveable community goods. Said section states:

> Study the division of commonly held goods which the commune possesses or acquires, the possibility and convenience of their transfer, and the procedures of civil courts with jurisdiction over said goods, or come to another arrangement in these disputes; and resolve these matters with prior agreement of the general assembly and the approval of the Ministry of Agriculture and Livestock.

Article 21 is repealed because the requirement of a public title and the obligation to inscribe said title in the Property Registry refer exclusively to real estate included in Article 721 of the Civil Code, which states, "The ownership of real estate will be recorded by means of the inscription of the property deed in the corresponding book of the Property Registrar."

3.4. Article 8 of the Statutes for Peasant Communities refers to the "Authority to mortgage communal goods," and states as follows: "If

communities have the need for capital to invest reproductively in agricultural activities, they may mortgage, with authorization from the Ministry of Agriculture and Livestock, those communal goods to banking institutions. The mortgages constituted in this way will lead to all the effects indicated in the common laws." Article 8 is repealed because the constitutional norms cited establish the freedom from seizure of communal lands.

Question no. 2:

Article 1776 of the Civil Code establishes that "all corporal or incorporal things, whose transfer is not prohibited by law, may be sold." If, on the basis of our analysis of Article 84, section 2, and Article 85 of the Constitution in force, we conclude that the norm on which said transactions is based has been repealed, and as a result, there exists a prohibition on the transfer, division and seizure of the property in question, the sales carried out after August 11, 1998, are null and void for the following reasons:

1. The Civil Code, Article 1724, states: "Any act or contract which lacks some legal requirement for it to be valid, based on its nature, and the quality or state of the parties, is null and void. Nullification may be absolute or relative."

   Article 1724 states that "the nullification produced by an illicit object or cause, and the nullity produced by the omission of some requirement or formality prescribed by the law in order that certain acts or contracts be valid, in consideration of the nature of these and not the quality or state of the persons who execute or agree to them, are absolutely null and void."

   The case we are analyzing here, that is, the sales contracts undertaken in violation of constitutional norms, involves an absolute nullification because there exists an illicit object, according to Article 1507 of the Civil Code which states: "There is an illicit object in the transfer:

   a. Of things that are not for sale;

   b. Of rights and privileges that can not be transferred to another person..."

   As we have noted, community lands are not in the market, and thus their transfer to third parties is prohibited.

   Thus, in order that the spirit of the law become operative, the State, through its duly empowered organs, should begin, *ex oficio*, legal procedures

in order to declare null and void community property sales already undertaken, in accord with Article 1724 of the Civil Code which states: "Absolute nullification should and must be declared by the judge, even without a petition from the party involved, when it appears manifest in the act or contract; this can be alleged by all who have an interest in the matter, except for the party that has executed the act or celebrated the contract, although he/she knew, or should have known, the defect that invalidated the act; nullification may also be requested by a public authority, in the interest of morals or the Law; and it may not be corrected by ratification of the parties involved, nor for a period of time not to exceed fifteen years."

2. At the same time, absolute nullification applies to transactions undertaken prior to the coming into effect of the current Constitution and after June 14, 1994, the date of the first publication of the current Agrarian Development Law, at which time what was then referred to as Article 22, referring to the "division of commonly held lands" went into force, today known as Article 24 after the codification of the law published in *Official Registry* No. 55, of April 30, 1997. This applies if and only if two conditions are simultaneously present:
    a. the sale of community lands took place under the guise of the article of the Agrarian Development Law cited; and
    b. The divided lands in question will be devoted to the planting of forests.

Question no. 3:

The constitutional prohibition cited applies only to lands owned by an organized or ethnic group under a global or collective title, without regard to the organizational form of said group. This conclusion is based on the following considerations:

1. Article 38 of the Codified Law of Agrarian Development states as follows: Legalization. The State will protect the lands of INDA which will be destined to the development of coastal rural (*montubios*), indigenous and Afro-Ecuadorian populations, and the lands will be legalized through adjudication free of charge to the communities or ethnic groups for whom these constitute ancestral lands under the condition that traditions, cultural life, and the social organization characteristic of the group be respected, incorporating, under the responsibility of INDA, those elements that will lead to improved production systems, the

reactivation of ancestral technologies, the acquisition of new technologies, the recovery and diversification of seeds, and the development of other factors that will result in improvement in well being. The procedures, methods and instruments employed should conserve the ecological system. The limitation included in Article 83, section 2 of the Constitution, applies to all lands.

Article 38 of the Forestry and Conservation of Natural Areas and Wildlife Law establishes that: "Aboriginal communities will have the exclusive right to use of forest products other than lumber, and to wildlife, in those lands under their domain or possessed by them, according to the Regulations. The Ministry of Agriculture and Livestock will mark the boundaries of said lands and will provide the communities with technical assistance."

Regulations for the Forestry and Conservation of Natural Areas and Wildlife Law state that: "In order to guarantee the rights of aboriginal communities, the Ministry of Agriculture and Livestock, through the National Forestry Program, will establish free of charge the boundaries of the land possessed by these groups, and said lands will not be subject to possession or adjudication in favor of third parties."

In both the agrarian and forestry legislation, reference is made to communities or ethnic groups, as a result of that provided for in the Constitution in order to conserve the imprescriptible possession of community lands, which will be inalienable, indivisible and not subject to seizure, provisions which apply exclusively to those lands whose current adjudication or tenancy is under a collective or global title. This definition coincides with the definition provided by Leopoldo Tobar in his *Dictionary of Agrarian Rights*:

> **Possession of land**: The possession of land involves economic, political and legal aspects. Possession is not a legal tie between the owner and the land, but implies possession, by natural or legal persons, of the land and its fruits resulting from working said land, constituting, essentially, a relation of production between owners or title holders and those who are not, the landless (both as individuals and as a class)... In short, in the course of human history, there have been three types of capital based on land ownership, that is, communal, private and state (or collective), each with its own characteristics.

We are interested specifically in the first of the three categories mentioned by Tobar, that is, communal land which refers to both common and communal property. The first, **common property**, is joint or co-

ownership of an undivided rural property. **Communal property** is owned by the commune, and worked together by all commune members or in parcels assigned to families, as is the case in the indigenous communes of the Andes and some regions of Africa. In some cases, only certain areas—páramos, forests, water sources and others—are communal property which all members of the community have the right to use for livestock grazing, firewood collection, etc.

2. The organizational form of the ethnic group or community has no bearing here, since Article 1 of the Law of Communes states the following:

> Establishment and definition of communes: All populated centers which are not classified as parishes, which already exist or will be established in the future, and which were designated hamlet, rural district, neighborhood, district, community, or any other designation, will be called a commune, as well as the name which was originally established or which shall be assigned to the area.

Thus, any form of organization, be that commune, center, association, committee, and so on, but that is not a cooperative, civil society or company, which has collective title to land, is subject to the limitations and enjoys the guarantees of Article 84, section 2 of the Political Constitution of the Republic of Ecuador.

Resolution

In May of 1999, the Attorney General issued resolution 05030 in which he stated:

> Consequently, I conclude that the precepts cited have tacitly repealed dispositions...related to the division of properties... In view of this repeal, beginning with the date the current Constitution went into effect, the division of rural communes is prohibited. The transfers that have been made are null, their nullity absolute, since community lands are beyond the purview of sale and may not be transferred...

When this decision was issued, we immediately organized workshops and presentations in communities and government offices, and then contacted the press. On Friday, June 18. 1999, *El Comercio* published an analysis of the decision entitled "Ecology: The Sale of Lands Prohibited since Last Year. The Law Forbids the Division of Community Lands." The article emphasized

that the decision to protect communities from the free land market was effective. It did not take into account cultural and economic differences.

In practice, the decision halted the division of lands, so that groups with ancestral title to lands would not become easy prey for large-scale investors who have no interest in social organization or the conservation of natural resources. Their goal instead has been to buy land for the purpose of felling forests and planting African palm, with the resulting loss of countless opportunities for research and conservation.

References

Código Civil. Registro Oficial 15, 10 February 1961.

Constitución Política de la República del Ecuador. Registro Oficial 1, 11 August 1998.

El Comercio. 1999. Ecología: La ley impide fraccionar las tierras comunitarias. 18 June 1999, Quito.

——. 1999. La palma se alista para ir a San Lorenzo. 30 March 1999, Quito.

Estatuto Jurídico de las Comunidades Campesinas. Registro Oficial 570, 10 May 1974.

Ley de Desarrollo Agrario. Registro Oficial 55, 30 April 1997.

Ley de Organización y Régimen de las Comunas. Registro Oficial 668, 8 January 1976.

Linchinga, N. 1997. Desarrollo agroforestal y comunidad campesina, No. 32, Mozambique.

Reglamento General de la Ley de Desarrollo Agrario. Registro Oficial, Suplement 524, 12 September 1994.

Tobar Salazar, L. 1993. Diccionario de Derecho Agrario. Quito: PUDELECO.

Chapter 8

Should the State regulate the Local Commons? Lessons from Economic Experiments in the Field

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Strategies that integrate conservation and development are especially critical in regions where ecosystems provide direct and indirect benefits for local users and others, and where because of institutional conditions there is a commons dilemma. State intervention is sometimes thought necessary and desirable to correct the externalities arising from the conflict between short-term needs to extract a resource from the common-pool and the long-term need for preserving the ecosystem for its renewability and its capacity to provide other indirect ecological services.

In this paper we question the assumption that state intervention will always improve what a group of users may achieve through self-governing institutions— even when users do not coordinate their individual actions. State intervention, we will argue, may also generate other unexpected changes in human behavior that may work against the goals of balancing conservation and development, and eventually do more harm than good. Through an analysis of economic experiments in three villages of Colombia we explore such arguments and derive some results that can contribute to the challenge of designing better policies and institutions for the effective management of ecosystems. Further, the results will provide grounds for an emerging literature on the possibilities of conservation through community institutions and mitigation of the so-called 'tragedy of the commons' (Hardin 1968). Combined, these two results, on social losses due to state regulation, and the potential of community management, may be important for the design of policies in regions like Latin America where states have been unsuccessful in enforcing conservation mechanisms in protected areas and where traditional

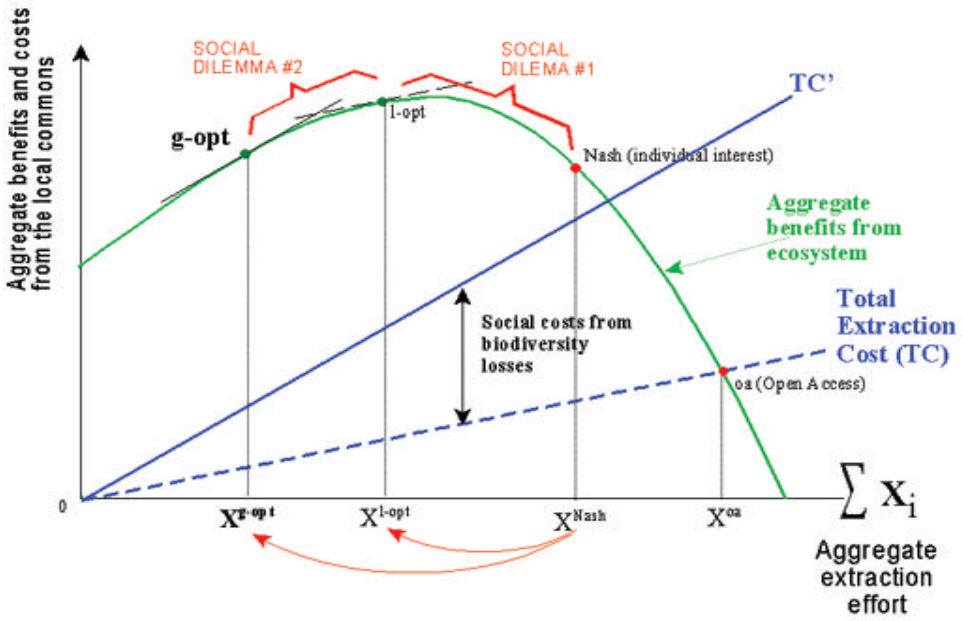
community mechanisms and organizations still exist for coordinating social relations in many rural settings.

The problem of the local commons

Regardless of existing *de jure* property rights, many ecologically rich areas in developing countries suffer from the two basic conditions, non-excludability and subtractibility, that distinguish common-pool resources from those which are private or purely public goods (Ostrom 1998). These conditions impose serious difficulties in designing a policy that achieves social efficiency. Non-excludability makes it is very difficult or costly to exclude users from extracting or benefiting from the goods and services provided by the ecosystem. But as in private goods markets, subtractibility implies that a unit extracted from the commons and used by an individual is no longer available for use by others. Furthermore, if too many units are extracted, the resource's natural capacity to renew itself is affected. These problems are similar in private and state owned areas where weak enforcement of the property rights allows for levels of occupation and extraction of resources, whether by the rural poor or commercial loggers.

These conditions, along with the ecological features of many ecosystems, create the situation illustrated in figure 8.1. The horizontal axis represents the level of aggregate extraction of a resource (e.g., logging) by a group or a community. The vertical axis represents the costs and benefits derived from the use and non-use values of the ecosystem that produces the resource (e.g., logging values, water regulation, biodiversity preservation, erosion control). From a social standpoint we obtain the best result by maximizing the difference between total benefits and total extraction costs. Benefits include the non-market services provided by the natural environment and, therefore, the positive value for the aggregate benefits at a zero extraction level. The concavity of the total benefits function emerges from the nature of most renewable resources and fragile ecosystems in which the ability to renew and to provide other services is reduced, as the volume of biomass extracted goes beyond its maximum sustainable yield. As for extraction costs, for the sake of simplicity, we can assume that these remain constant for each additional unit of extraction and therefore can be depicted by the line TC. Clearly we maximize the net social gains at the l-opt point, achieved at a total extraction level of $X^{l\text{-}opt}$.

Figure 8.1: Two dilemmas of local commons with global benefits.



However, the resource might not be extracted at this optimal ($X^{l\text{-}opt}$) level. It is difficult to exclude users from extracting one more unit of the resource since, from the standpoint of each of them, this is rational behavior given that the average gain from one unit is still greater than the average cost of extraction. If all users acted on their self-interest, the sum of their actions would drive aggregate extraction to much higher levels, and aggregate benefits to much lower levels. The result would be the predicted "tragedy of the commons" (Hardin 1968) represented by the (oa) point for open access equilibrium. This prediction has been called into question by game theorists such as Cornes and Sandler (1983) who consider the possibility of strategic behavior by community members, that is, where agents form conjectures about the behavior of other commons users. These models basically predict that for many cases of non-coordinated actions by users, their behavior would still create a socially inefficient level of extraction somewhere between the socially optimal and the open access prediction. We label this point "ñash' in the graph, using game theory jargon; this simply refers to the results of each player maximizing individual payoffs based on their conjecture of what the others will do.

The problem of common-pool resources that provide global benefits

In a further step we can include in the problem the issue of external benefits from conservation in the form of biodiversity benefits lost as aggregate extraction increases. This refers to benefits foregone by other individuals who may benefit from conservation of this ecosystem though they live outside the community. In the model we can include these by adding an additional portion of costs as extraction increases, shifting the TC curve to TC' in the graph. This additional problem transforms our original benchmarks from l-opt to g-opt and therefore calls for a lower level of aggregate extraction effort $X^{g\text{-}opt,}$ where social welfare would be maximized. We now have two dilemmas to solve. One is a local dilemma where the individual interests of users may conflict with the outcome that will affect the group, and a second dilemma that is global in character, in which the needs and interests of the community will be in conflict with the needs of the rest of society. In a sense, these two dilemmas synthesize the challenge of conservation and development, the focus of this conference.

The challenge is a question of creating a new set of rules that induce individual users to change their behavior so that in aggregate it results in values closer to $X^{g\text{-}opt}$. For that to occur, we need first to solve the local dilemma, i.e. getting to $X^{l\text{-}opt}$. One of the most 'popular' ways of dealing with such dilemmas in the public policy and conservation literature is to have the state intervene by constraining behavior in some way. The usual argument for such intervention is that, due to the lack of individually assigned property rights to the resource, the tragedy of the commons is the most likely outcome. Restricting the number of users and the individual quota of resource extracted has been a conventional approach, albeit a costly one to monitor and enforce. Similar problems accompany restrictions on resource extraction technology. Imposing Pigouvian taxes or applying subsidies that correct the externality may also achieve improvements in social efficiency.

A field experiment

Based on the expanding field of experimental economics and inspired by the existing literature on public goods and common-pool resources experiments (Ledyard, 1995; Ostrom, Gardner and Walker, 1994), we designed a simple experiment and brought it to the field in the summer of 1998 to learn from the behavior of actual users of common-pool resources. Our experiment is a simple decision-making exercise involving groups of eight participants who make economic decisions that have clear economic incentives (in kind and

cash) and involve the kind of externalities discussed above. We performed the experiment between June and August of 1998, with about two hundred residents from three villages in Colombia.

In the village of Encino, located in the eastern Andean region, residents extract firewood, log timber on a small scale, and hunt in local tropical cloud forests. Like all of the sites we visited, water for consumption and irrigation comes virtually untreated from nearby rivers. Of the three areas that we visited, the relationship between forest cover and water quality is most critical in Encino, and the residents of this village are acutely aware of the problem. Though water quality degradation caused by forest cover loss is less severe in the villages of Circasia and Filandia in the Quindio coffee region in the mid-Andes, it remains a significant problem. In Quindio, subjects for our experiments were drawn from a group of families whose livelihood is related to the extraction and processing of natural fibers from local forests. As in Encino, water is drawn from local rivers and residents are aware that extracting forest products can lead to lower water quality. In Nuqui, located on the Pacific coast, villagers harvest coastal mangroves for firewood and other wood and food products, but their water comes from further inland; hence, they do not experience a direct link between exploitation of local wood sources and water quality. However, they face a similar dilemma because exploitation of the mangroves for wood adversely affects coastal fish populations upon which they also depend.

In short, the population is made up of rural households whose members depend heavily on local forests for wood products. In each location, exploitation of local forests affects another aspect of their livelihoods adversely: water quality in Encino and Quindio, and fish populations in Nuqui. Hence, the subjects face social dilemmas in their daily lives similar to the dilemma present in the experiments. In each of the three settings, the participants generally knew each other well, having lived in the same village for most of their lives. Schooling, age and income levels varied significantly among participants in each group. Most had fewer than 6 years of schooling, roughly half were between 30 and 50 years old, and all were 16 or older.

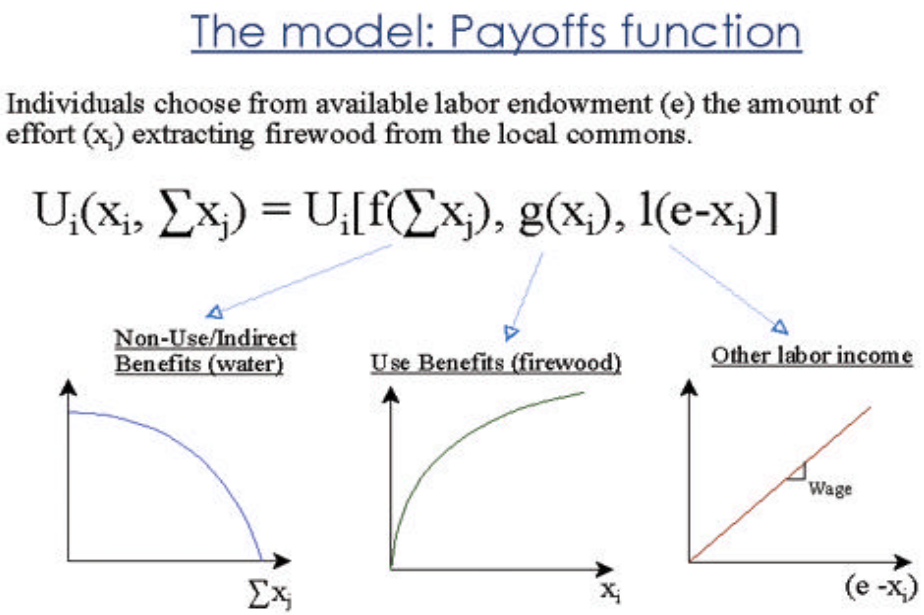
Studying institutions and human behavior through experiments

We are interested in examining the effects of external institutions (rules and regulations imposed from outside a group) on behavior in an experimental setting, in particular the effects of external control of local environmental quality. We designed our experiment to approximate the common-pool resource dilemmas that rural villagers in developing countries are likely to face.

Specifically, subjects were asked to decide how much time they would spend collecting firewood from a surrounding forest, realizing that this activity has an adverse effect on local water quality because it leads to soil erosion.

Each individual's decision generates points translated into cash earnings; the number of points depends on the individual's decision as well as the aggregate decision of other members of the group. The payoffs for our experiments were determined by a simple model of a fixed number of homogenous individuals exploiting a local forest for firewood. In each round of the game, players are given an endowment of time (8 months) that can be allocated to collecting firewood or to providing labor to an unrelated market. The payoffs earned by an individual are therefore the sum of three components, shown on the following three graphs in Figure 8.2. The first component is individual benefits due to conservation of the commons; these decrease as the group extracts more of the resource. The second component is individual gain from extracting the resource. The third is the amount of effort (labor) not allocated to the commons; this generates income for the individual[1].

Figure 8.2 Components of Income for Local Commons Users



Notice how the group externality is generated. The self interest driving extraction by individuals (the second component) conflicts with the first component, which depends on what the others do. To determine payoffs, we created the basic source of information that participants had to use when making decisions -the payoffs table shown in Table 8.1, which includes both individual choices (columns) and the choices of all other participants (rows). The values in the cells are Colombian pesos earned by each player in each round of the game. Participants played about 18 rounds each. At the time of the field exercises the exchange rate was around USD 1,350 pesos/dollar. The values in the table were generated through the payoffs function described above in Figure 8.2, for the purpose of differentiating clearly what the social optimal and the Nash solutions should be in the experiment according to the general common pool resource model described in Figure 8.1.

The payoff table 8.1 shows the benchmarks discussed in the following way. The shaded cells (which were not shaded in the tables provided to participants) indicate what we call the Nash strategy, that is, what each player should choose if only payoffs were driving a player's decision, with no thought to the effects of their choice on others. Suppose, for example, that there are eight players and, on average seven choose to spend three months collecting firewood from the surrounding forest. Since the sum of the seven players' choices is 21 months, Table 8.1 indicates that the eighth player's payoff-maximizing response – the individual's best- Nash response – is to spend eight months collecting firewood. This choice is based purely on self-interest, without regard for the welfare of the others in the group. Note that player eight's payoff in this outcome is 630 points, while other seven receive 453 points each [for each of them, the sum of the others' choices is 26 months, when they choose 3 months].

Now imagine that the eighth player chooses 3 months instead of 8, while the other seven players continue to choose 3 months. We consider this to be a significantly more group-oriented choice – it is costly because that player's payoff is now 544 points instead of 630: however, each of the other players' payoffs increase from 453 points to 544 [for each of them, the sum of the others' choices is now 21 months, when they choose 3 months].

It is easy to show that in our exercise for maximizing the groups' gains the optimal amount of time each individual should spend collecting firewood is 1 month, yielding 645 points to each player. On the other hand, since a pure strategy Nash equilibrium requires that every player's choice be a best-response to every other player's best-response, in this context the Nash equilibrium is reached if every individual decides to spend 6 months collecting firewood from the nearby forest. Notice that if all seven players choose 6 months, it

would be unwise for the eighth player to choose 7 or 8 months. It is worth noting that at the Nash equilibrium, subjects earn USD 155, only about 24 percent of the payoffs attainable in the efficient outcome. Our statistical analysis will focus on how the distribution of decisions by players will be around these two benchmarks, and how this affects group and individual earnings.

External Regulation vs. Group Communication as Governing Institutions

Given that pure self interest, with no coordination of choices by players, yields an inefficient outcome, with each player earning 155 points by choosing 6 months in the forest, for a group total of 1240 points, any new rule that aims at reducing the sum of months in the forest should improve social efficiency towards the desirable point where the group's earnings equal 5,160 points when each player chooses 1 month.

We consider two treatments to examine the effects of institutions on changing users' behavior. Each group of eight subjects plays a number of initial rounds of the game without regulation and without communicating with each other. A subset of groups which we label (REG), goes on to play additional rounds in which players are confronted with a government-imposed regulation and sanction that, theoretically, will induce more efficient behavior. The other groups also play additional rounds, but instead of facing an external regulation, individuals are allowed to communicate with others in their group between rounds. We label these groups (COM).

One form of external regulation introduced involved the possibility of an audit. Players found in non-compliance with socially efficient rule X=1 would see their gains reduced in an amount proportional to the excess of extraction above the rule. Specifically, in each round participants faced a 1/16 probability of an audit and the penalty imposed was 100 points for each month in the forest above the 1 month rule imposed by the external regulation. This enforcement regime is rather weak in that the expected marginal penalty is not sufficient to induce risk-neutral players to comply with the quota. We chose a relatively weak enforcement protocol because we believe that weak enforcement best characterizes the state-imposed regulations our subjects actually encounter. In rural communities of developing countries, like those where our experiments were conducted, monitoring and enforcement of local and national regulations is likely to be lax because of high monitoring costs and limited budgets. Since the expected penalty is an additional cost of collecting firewood, individuals should choose to spend less time collecting

firewood than they would in the absence of any regulation. Given the payoffs and the expected penalty, players should choose fewer months in the forest.

For another set of participants, we did not introduce the external regulation; instead, we allowed them 3 to 5 minutes of conversation before each decision round. We allowed some groups to communicate because self-governance institutions have historically persisted alongside, or as an alternative to, external regulation in developing countries. In addition, relatively more is known about the role of face-to-face communication in enhancing levels of cooperation in experiments of this general type as reported by Ledyard (1995), Ostrom, Walker and Gardner (1992) and Ostrom, Gardner and Walker (1994).

At the end of each session, total points for each individual were calculated. Subjects were paid that number in pesos for their participation. For the villages in which the experiments were conducted, the daily minimum wage was around 7,000 pesos (about USD 5.20 at the time). Including practice rounds, most participants engaged in 20 rounds of decisions. If all subjects made the efficient choice in each round, they would have each earned about 12,900 pesos (approximately USD 9.55) in the experiment. Average earnings for the experiments was 7,884 pesos which, as planned and announced, was intended to compensate for the opportunity cost of time devoted to participating in the study.

Experimental results

Consistent with findings in the experimental literature on contributions to public goods and exploitation of commons [Ledyard (1995), Ostrom (1998)], we find that when subjects do not face external restrictions and cannot communicate with each other, their decisions tend to be neither pure Nash strategies nor efficient choices, but somewhere between these extremes. Absent regulation, the simple ability to communicate allows individuals to make more efficient choices. However, our results about the effects of external regulation are new, regulatory control caused subjects to tend, on average, to make choices that were closer to a more self-oriented behavior, and further from a socially efficient outcome, than when individuals made unregulated decisions without communication. Consequently, average individual payoffs in regulated situations were lower than in the absence of regulation, in spite of the fact that the regulatory institution was designed to induce more efficient choices and much lower than the payoffs of those subjects who were allowed to communicate with each other.

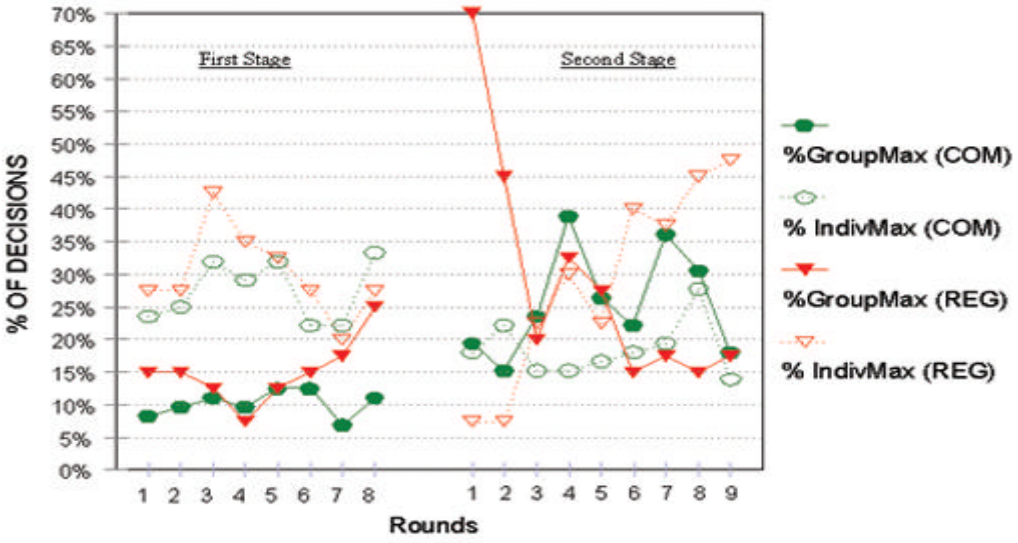
Group vs. individual maximization strategies

We have mentioned before the two benchmark points from Table 8.1 for the analysis of the results. In the first of these, the group maximizes payoffs when each individual chooses "1 month in the forest," yielding 645 points. We call this the GroupMax strategy. The other strategy of interest is when an individual maximizes her own payoffs on the basis of what others do, which we call IndivMax; it is indicated by the individual's months along the shaded cells in Table 8.1. As the learning process continues in two stages, players choose the time they will spend in the forest. In the case of players facing the regulation, the expected cost of the penalty should induce players to shift their Nash best response to the left at least one month.

We will use two concepts described, IndivMax and GroupMax, to study the effects of the two types of institutions presented (REG and COM) on individual behavior. Consistent with most experimental behavior from social psychology and economic studies, in situations involving a group externality, individual behavior within groups varies along a range of possible choices. Some players make their decisions closer to the social optimum and others closer to the individual maximization strategy. Depending on the number of choices closer to either benchmark, the group's outcome will vary. We concentrate here on those players who attempt strategies close to the IndivMax and GroupMax described, under the assumption that they are more clearly reflecting individualistic and cooperative behavior, respectively. As the number of players who choose months closer to the GroupMax increases, group earnings should increase and the forest be better conserved. On the other hand if more players make choices closer to the shaded cell benchmarks, group earnings decrease, i.e. the commons is over-exploited.

To perform an analysis[2] of the data we estimate the percentage of decisions in each round within 1 month of the social optimal solution (i.e. when players chose between 0 and 2 months), and the percentage of decisions within 1 month of the Nash strategy (i.e. when players chose a number of months within one column to either side of the shaded cells). With these measures we can analyze the fraction of population in each group displaying individualistic behavior and the fraction cooperating. Figure 8.3 provides a summary of the experimental results analyzed below.

Figure 8.3 Fractions of IndivMax and GroupMax decisions per round



During the first stage of the experiment (rounds 1 to 8) we do not expect differences between the COM and REG groups as they face the exact same rules and economic incentives and do not know the new rule they will face. Such result can be observed in Figure 8.3, where the %IndivMax oscillates around less than 30 percent and the %GroupMax at lower ranges less than 15 percent[3]. The remaining fraction of players makes choices that cannot definitely be classified as either individualistic or group oriented. The effect of this behavior is that on average the COM and REG players were earning respectively USD 370 and USD 377 per round at the end of the first stage, a statistically insignificant difference.

When the new rule (communication or regulation) is introduced in each group, we expect differences in behavior since the new "institutions" introduce new incentives and information to the players. Players in REG groups now face an expected cost if they are inspected and found in non-compliance with the behavior that produces the social optimal result. On the other hand, those permitted face-to-face communication, although not allowed to impose through discussion any transfers of points during or after the experiment, still might use the discussion to introduce other kinds of non-material incentives that groups adopt to induce changes in behavior.

Using the same indices of percentage of players using the IndivMax and GroupMax strategies, we can analyze the effects of these institutions. Let us

start with the COM groups, represented by circles (filled and empty) in Figure 8.3. Notice how the group discussion achieves a dual positive effect on social efficiency by reducing the fraction of IndivMax players to under 20 percent, and by increasing the %GroupMax to levels around 25 percent, and in some rounds above 35 percent, including rounds 4 and 7. This change in behavior induced a positive and significant change for COM players who saw their earnings go from an average of USD 377/round during the first stage to an average of USD 471/round during the second stage, a 25 percent net increase.

The institution of external regulation, however, had a more surprising and interesting effect on individual behavior. When the new rule is introduced, a large fraction of players complies with the 1 month regulation, i.e. a high GroupMax percentage (70 percent in round 1 of the second stage), while a much smaller fraction of players choose the IndivMax strategy (around 8 percent in round 1, second stage). The effectiveness of the new rule, which increased earnings dramatically in the first round of the second stage, diminishes after just a few rounds. As players feel more comfortable with the probability of being inspected (1/16 in each round), and given the incentives to choose more months in the forest while others comply with the rule[4], players who were choosing the GroupMax begin to switch to more individualistic behavior which can be seen by the increasing %IndivMax(REG) from less than 10 percent up to almost 50 percent by the end of the second stage. The %GroupMax(REG), meanwhile, decreases from 70 percent to 15 percent. Again, a dual but negative effect on behavior creates an overall decrease in social efficiency which results in much lower earnings for REG players at the end of the second stage, an average of USD366/round for the last 3 rounds. We performed statistical parametric and non-parametric tests for these comparisons across both stages and across treatments (COM, REG); the results support the analysis presented here (See Cardenas 2000). in addition, given that the selection of the buffer zone (one month around the Nash and social optimal benchmarks) for the IndivMax and GroupMax choices could be seen as ad-hoc, we estimated the same fractions for buffer zones of 2 months, yielding very similar results, namely, a decrease in the fraction of cooperators and an increase in the fraction of individualistic choices with the regulation, and an increase in cooperative behavior with communication.

We can thus see how the effect of regulation at the end of the second stage disappears after a few rounds. The fraction of group-oriented choices was back to the level reached before the introduction of the rule; what's more, the fraction of individually oriented choices increased considerably, a phenomenon we attribute to the new institution. In the meantime, the self-governing institution, with individuals discussing during each round, not only

improved social efficiency but that efficiency was sustained over time. Notice that while the groups allowed to communicate were never told what the social optimal solution (1 month) was, this had to be explicitly explained to the REG groups when the rule was introduced. The mechanisms through which communication induces more cooperative behavior has been analyzed in the social psychology and experimental economics literature with different behavioral explanations. In very general terms, what we observe in our experiments, in the video and audio tapes of the group discussion, is that the discussions allowed these groups to reinforce the negative consequences to the group of choosing the IndivMax strategy; this included assigning negative labels to players attempting such behavior and, in some cases, identifying who seemed to be imposing negative externalities on the group. Recall that the participants are members of the same village and have know each other for significant periods of time. On the positive side, the discussions focused on the reinforcement of individual and group gains resulting from GroupMax behavior.

Ostrom, Walker and Gardner (1992) discuss and test assumptions from the Hobbesian world according to which covenants without the sword will not lead to changed behavior which enhances the common good. With a similar experimental design, they found in the laboratory with college students what we later found in the field lab regarding the power of communication. In our design nothing could be better for a player than to agree publicly to only a few months in the forest and then choose 8 months, expecting others to stick to the number agreed upon (See Table 8.1). Yet group results improved with non-binding communication. It was under the regulation institution that we observed the individualistic rationale predicted by "cheap talk" and "tragedy of the commons" arguments. With each new round, the best strategy for each player was to choose more months in the forest, expecting the others to follow the externally imposed rule; given the low probability of getting caught, most individuals in each of the 5 groups followed this socially inefficient path.

Final discussion

Many areas rich in natural resources are located where, on the one hand, the State has a weak presence and limited capabilities to enforce formal rules to protect ecosystems that provide goods and services to local communities and beyond. Fiscal constraints by governments, and political and social conflicts associated with frontier agriculture and migration combine to make the state solution a difficult one to enforce. Many of these ecosystems are used by rural communities that have traditionally constructed their own informal

institutions for governing individualistically oriented behavior that may harm the common good. Examples of community participation and self-governance in several other sectors of rural life have been well documented under different labels such as social capital (31994), collective action in the case of India (Wade 1988), and self-governance of common-pool resources (Ostrom 1998). In Colombia, a recent study indicates that the decentralization process has led to greater efficiency and equity in the production and provision of public services to rural areas where newly elected mayors have found an environment of community participation through different forms of cooperation and collective action (World Bank 1995).

Also consistent with other areas of research are our findings on the negative effects of external regulation. Bruno Frey recently compiled a body of empirical evidence (Frey and Jegen 1999) on his 'crowding-out' proposition, according to which material incentives aimed at changing behavior towards socially efficient outcomes may in fact 'crowd-out' the implicit incentives individuals may have inherited (Frey 1997, Frey and Oberholzer-Gee 1997, Weck-Hannemann and Frey 1995, Cardenas et al 2000). Documentation also exists for the failure of state imposed formal rules for protecting natural resources. Lutz and Caldecott (1996) discuss the failure of central governments in managing biodiversity conservation and the trends towards decentralized systems. In a series of case studies from experiences in 10 countries worldwide, they show how the involvement of communities becomes a key issue in making governance of biodiversity conservation feasible and effective, and compatible with development. Recent experimental testing of the negative effects of external regulation of the commons provides similar results (Ostmann, 1998; Ostmann, Wojtyaniak and Beckenkamp, 1999; Cason and Kahn, 1999)

Our field work and experimental designs were aimed at exploring these two types of institutions (community and state) for governing social dilemmas involving common-pool resource and the compatibility of individual and social objectives in light of the institution present. Some lessons can be derived from our results, along with the new developments in the literature about human behavior in collective action situations. And the key points presented below should be considered in the design of policies aimed at balancing conservation and development in areas where natural resources are affected by the local commons dilemma. Individuals do not behave according to pure free-riding behavior. Instead, they willing to cooperate in a collective action situation. Therefore, the 'tragedy of the commons' should not be used as a starting point for designing a policy to improve the management of such resources.

- Given that individuals may have group-oriented as well as self-oriented preferences, all institutional designs must consider effects on both. Therefore, a state intervention should be analyzed with respect to the negative effects it may have in 'crowding-out' possibilities for group-oriented behavior[5].
- The potential of self-governing institutions must not be underestimated. Policy designers should recognize the capacity of groups to organize, and provide the legal environment for groups to overcome collective action dilemmas through different types of mutual monitoring and non-material incentives well-known in the field setting, documented by social scientists but usually ignored in conventional top-down policy design.

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Table 8.1: Payoff Table Used for the Experimental Design.

THEIR MONTHS IN THE FOREST	MY MONTHS IN THE FOREST									
	0	1	2	3	4	5	6	7	8	
0	619	670	719	767	813	856	896	933	967	0
1	619	669	717	764	809	851	890	926	959	1
2	617	667	714	760	804	845	883	918	950	2
3	615	664	711	756	798	838	875	909	940	3
4	613	660	706	750	792	831	867	900	929	4
5	609	656	701	744	784	822	857	889	917	5
6	605	651	695	737	776	813	847	877	905	6
7	600	645	688	729	767	803	836	865	891	7
8	595	638	680	720	757	792	824	852	877	8
9	588	631	672	711	747	780	811	838	862	9
10	581	623	663	700	735	768	797	823	846	10
11	573	614	653	689	723	755	783	808	830	11
12	565	605	642	678	711	741	768	792	813	12
13	556	594	631	665	697	726	752	775	795	13
14	546	583	619	652	683	711	736	758	776	14
15	536	572	606	638	668	695	719	739	757	15
16	525	560	593	624	653	678	701	721	737	16
17	513	547	579	609	636	661	683	701	717	17
18	501	534	565	594	620	643	664	681	696	18
19	488	520	550	578	603	625	645	661	674	19
20	475	506	535	561	585	606	625	640	653	20
21	461	491	519	544	567	587	605	619	630	21
22	447	476	502	527	548	567	584	597	608	22
23	433	460	485	509	529	547	563	575	585	23
24	418	444	468	490	510	527	541	553	561	24
25	402	428	451	472	490	506	520	530	538	25
26	387	411	433	453	470	485	498	507	514	26
27	371	394	415	434	450	464	476	484	490	27
28	355	377	396	414	430	443	453	461	466	28
29	338	359	378	395	409	421	431	438	442	29
30	322	341	359	375	389	400	409	415	418	30
31	305	324	341	355	368	378	386	392	394	31
32	288	306	322	336	347	357	364	368	371	32
33	272	288	303	316	327	335	341	345	347	33
34	255	270	284	296	306	314	319	323	324	34
35	238	253	266	277	286	293	297	300	300	35
36	221	235	247	257	265	272	276	278	278	36
37	205	218	229	238	245	251	254	256	255	37
38	189	200	211	219	226	231	233	234	233	38
39	173	184	193	201	206	211	213	213	212	39
40	157	167	175	182	188	191	193	193	191	40
41	142	151	159	165	169	172	174	173	171	41
42	127	135	142	148	152	154	155	154	152	42
43	113	120	126	131	134	136	137	136	133	43
44	99	106	111	115	118	119	119	118	115	44
45	86	92	96	100	102	103	103	101	99	45
46	73	78	82	86	87	88	88	86	83	46
47	61	66	69	72	73	74	73	71	68	47
48	51	54	57	59	60	61	60	58	55	48
49	40	44	46	48	49	48	47	45	43	49
50	31	34	36	37	38	37	36	34	32	50
51	23	25	27	28	28	28	27	25	23	51
52	16	18	19	20	20	19	18	17	15	52
53	10	12	12	13	13	12	11	10	8	53
54	6	7	7	7	7	7	6	5	4	54
55	2	3	3	3	3	3	2	2	1	55
56	0	1	1	1	1	1	0	0	0	56

Notes

[1] For a detailed description of the mathematical derivation of the model see Cardenas, Stranlund and Willis (2000) and Cardenas (2000).

[2] For a more detailed and rigorous statistical analysis of the data using parametric and non-parametric statistics see Cardenas, Stranlund and Willis (2000) and Cardenas (2000), comparing other variables, such as the choice variable X (months in the commons) and Y (individual earnings). The results reported are consistent with the analysis presented here.

[3] Notice that for the last 3 rounds of the first stage the %GroupMax for the REG groups is slightly higher than for the COM groups. However, a Wilcoxon rank sum (non-parametric) test fails to reject the hypothesis that players COM and REG choices were statistically different during the first stage (Cardenas 2000).

[4] Looking at Table 8.1, if all seven players comply with the rule of 1 month in the forest, and the eighth decides to choose 8 months and is not inspected, her earnings go up to 891 instead of the 645 that would produce everyone's compliance. A penalty would cost her, however, 700 points, if audited.

[6] During this conference Georg Grunberg mentioned the case of the Peten Biosphere Reserve in Guatemala where the participation of villagers was key in controlling damage caused by recent forest fires to ecosystems and settlements. He pointed out that in those villages where external aid was higher in terms of technology and support, people responded less rapidly, while those areas where external aid was not expected witnessed much stronger involvement of villagers and more effective control of fires. His observations are consistent with the arguments presented in our analysis.

References

Cárdenas, J. C., J. K. Stranlund and C. E. Willis.
2000 Local environmental control and institutional crowding out. World Development. September, 2000.

Cárdenas, J. C.
2000 Rural Institutions, Poverty and Cooperation: Learning from Experiments and Conjoint Analysis in the Field. PhD. Dissertation. University of Massachusetts at Amherst: Department of Resource Economics.

Cason, T. N. and F. U. Kahn
1999 A laboratory study of voluntary public goods provision with imperfect monitoring and communication. Journal of Development Economics 58: 533-552.

Cornes, R. and T. Sandler.
1983 On commons and tragedies. American Economic Review 73: 4.
Frey, B.
1997 Not just for the money. An economic theory of personal motivation. Edward Elgar, Cheltenham/Brookfield.
Frey, B. S. and R. Jegen.
1999 Crowding Theory: A Survey of Empirical Evidence. Mimeo, University of Zurich.
Frey, B. S. and F. Oberholzer-Gee.
1997 The cost of price incentives: An empirical analysis of motivation crowding-out. American Economic Review 87: 746-755.
Hardin, G
1968 The tragedy of the commons. Science 162: 1245 1248.
Ledyard, J. O.
1995 Public goods: A survey of experimental research. *In* Kagel and Roth (editors), Handbook of Experimental Economics. Princeton University Press.
Lutz, E. and J. Caldecott.
1996 Biodiversity and Decentralization. World Bank Papers Series, The World Bank.
Ostmann, A.
1998 External control may destroy the commons. Rationality and Society 101: 103-122.
Ostmann, A., B. Wojtyniak and M. Beckenkamp.
1999 Comparing and explaining the success of a common endowed with different degrees of sanctioning. Paper presented at Workshop, Bloomington, Indiana.
Ostrom, E., J. Walker and R. Gardner
1992 Covenants with and without a sword: Self-governance is possible. American Political Science Review 86: 2.
Ostrom, E., R. Gardner and J. Walker
1994 Rules, Games and Common Pool Resources. Ann Arbor: University of Michigan Press.
Ostrom, E.
1998 A behavioral approach to the rational choice theory of collective action. American Political Science Review 92(1): 1-22.
Putnam, R.
1993 Making Democracy Work: Civic Traditions in Modern Italy. Princeton, N.J.: Princeton University Press

Wade, R.
1988 Village Republics: Economic Conditions for Collective Action in South India. New York: Cambridge University Press.
Weck-Hannemann, H. and B. Frey.
1995 Are incentive instruments as good as economists believe? Some new considerations. Chapter 8 *in* Lans Borenberg and Sijbren Cnossen (editors), Public Economics and the Environment in an Imperfect World. Boston: Kluwer Publishers.
World Bank
1995 Local Government Capacity in Colombia: Beyond Technical Assistance. A World Bank Country Study. The World Bank.

Chapter 9

Social and Environmental Consolidation of the Maya Biosphere Reserve, Peten, Guatemala

Georg Grunberg

The Maya Biosphere Reserve (MBR) is an agrarian region with 90,350 inhabitants who live in 196 permanent settlements within the reserve—the largest protected area in Central America. The 21,000 km^2 reserve area is located in a Mesoamerican province that contains a particularly rich collection of remains from the Maya culture. There are a wealth of reasons for avoiding the destruction of this area, and efforts to this end must include an understanding local experiences. People living in the region share the reserve with myriad other species in an environment threatened by the expansion of livestock raising, the oil industry and their own limitations in finding ways to use natural resources in a sustainable fashion.

The peasant in El Petén

A brief analysis of *El Petén* which, with a surface area of 36,000 km^2, is the largest department of Guatemala, reveals two *Peténs*, one real and the other fictional. The latter refers to the fact that 68 percent of the department has been declared a protected area via decrees signed in 1989 and 1990; this area includes the Maya Biosphere Reserve, the largest in Central America. The real Petén, however, with its current migratory dynamic and agrarian structure, reflects the fact that during the last three decades, the area has become a refuge and the primary destination of poor Indians and peasants from throughout the country. Thus, it is an escape valve, providing a way around the traditional limits to access to land for poor peasants. A majority of the population is made up of Ladinos (*mestizos*) peasants from the *Oriente*, along with the *Maya Q'eqchi'* from *Verapaces* and *Izabal*; however, especially in the north of *Petén*, the most dynamic agriculture frontier in the nation, there are entire communities of Mayas, groups as distinct from one another as the

Q'anjob'al from *Huehuetenango*, the *Achí* from Baja *Verapaz* and the *Ch'orti'* from *Chiquimula*.

The major interest of peasants who have occupied extensive areas of the northern lowlands during the last thirty years is not a desire to become members of "the rich," a synonym for cattle ranchers, but to consolidate themselves within their ethnic and social categories as indigenous Mayan peoples and as "farmers." What they are looking for, and what they have found, in large part, is a place where they can permanently settle, where they are assured both a greater degree of freedom and a higher level of material well being for their children and grandchildren. This process of adaptation to a new environment, which seeks to reinterpret a new reality within a set of well-defined cultural, ethnic and social categories, is what we call **socio-environmental consolidation.**

The empirical base for the hypotheses and conclusions presented in this paper includes general data compiled for the 196 settlements within the MBR in 1997 and 1998 (Grunberg and Ramos 1998), participation in a study carried out by the World Bank to evaluate land tenancy in relation to sociocultural factors in Petén (Schwartz 1998), more detailed participatory community

Table 9.1 Demographic and Ethnic Summary of Petén, 1998

Municipality	Population 1990 (a)	Population 1994 (b)	Population 1998 (c)	Mayas (d)	%	Ladinos (e)	%
Flores	24,940	17,878	50,000	10,000	20	40,000	80
San Benito	15,116	17,000	25,000	2,500	10	22,500	90
San José	2,515	2,567	3,100	1,830	59	1,270	41
San Andrés	11,434	9,965	22,000	7,700	35	14,300	65
San Francisco	3,335	5,064	10,000	2,000	20	8,000	80
La Libertad	34,483	42,539	75,000	22,500	30	52,500	70
Santa Ana	8,486	6,569	15,000	3,000	20	12,000	80
Dolores	41,195	23,336	62,700	12,540	20	50,160	80
Melchor de Mencos	22,134	16,505	40,000	4,000	10	36,000	90
Poptún	29,513	21,641	60,510	36,300	60	24,210	40
San Luis	73,111	34,225	90,000	72,000	80	18,000	20
Sayaxché	45,053	28,394	60,000	54,000	90	6,000	10
Total	311,300	225,000	513,310	228,370	44.5	284,940	55.5

Sources: (a) Análisis demográfico y sociológico AHT/APESA, Plan de Desarrollo Integrado del Petén, Vol.1 p.67; 1992. (b) 1994 INE national census, compiled by PMS (Proyecto Manejo Sostenible de Recursos Naturales MAGA/GTZ), 1997. (c) Estimates by CARE-Petén, based on data from GIS (CARE/CEMEC), SEGEPLAN, SNEM, municipal census (Dolores, Poptún, San Luis) and parish census (Sayaxché, Poptún, La Libertad). (d) Correspond to 90% of the Maya-Q'eqchi' people; the remaining 10% to the Achi', Mopán, Itaá, Chorti', Poqomchi', K'iché, Mam, etc. peoples. (e) Correspond to both Ladino residents of Petén and to "Southerners" from the Oriente and the Southern Coast, including Salvadorans.

diagnoses for 42 communities, and semi-structured interviews with informants selected during the period I worked as advisor for the CARE Tierras project, from 1997 to 1999, summarized in the Manual de Comunidades de Petén (Macz and Grunberg 1999).

Peasants and indigenous people living on the agricultural frontier are not a homogeneous mass: depending on their specific cultures, which exhibit marked differences, their colonization strategy is either more communal or more family-based, a fact reflected in their different settlement patterns, their various ways of using natural resources, and their distinct forms of managing local power relations and insertion in the market. The articulation of ethnic diversity defines a new social and material space that emerges in the rain forest and which transforms that space into a complex agrarian region, combining elements of agroforestry, subsistence agriculture with surplus that is marketed, and small, family-based livestock operations along with large cattle ranches run by outsiders, this last being the principal obstacle to the creation of an ecologically sustainable peasant economy.

According to the most recent data available for the North of *Petén* (Grunberg and Ramos 1998), it is possible to distinguish among indigenous and peasant cultures in the various agrarian micro-regions:

- Ladinos from the East, with a peasant culture based on livestock traditions combined with horticulture (managed by women) and subsistence agriculture (managed by men), in addition to a high degree of versatility in the sale and transport of products and in the use of income to provide services;
- Ladinos from *Petén*, with a culture well adapted to the environment of *Petén*, based on livestock raising in natural pastures on the savannahs, on agriculture located on the fertile lands of the "mountain", or in the forest ecosystem where peasants work as *chicleros*, *xateros*, etc.; members of this group share much knowledge with the "maestros of the mountain," the Maya-Itzá.
- The Maya-Itzá, the only native residents of the north of *Petén* and experts in the sustainable management of forest and agricultural resources, as well as a high degree of skill in fields related to the use of natural resources (carpenters, fishermen, *chicleros*, guides, healers, etc.);
- *Q'eqchi'*, a Maya people with the largest ethnic territory, whose members are skilled in the management of resources in the tropical rain forest, with a rich Mesoamerican agriculture tradition as well as a solid community tradition which facilitates the application of strategies to achieve the common good even in the face of discrimination; together with the *Q'eqchi'*, the most numerous Maya group in the *Petén*, representing approximately

40 percent of the total population, there are other Mayan peoples, including the *Achi* of *Baja Verapaz*, the *Chorti'* of *Chiquimula*, the *Mam* and the *Q'anjob'al* of *Huehuetenango*, the *Poqomam* of *Jutiapa*, etc.

CARE Guatemala's TIERRA project

Since 1994, CARE Guatemala, in cooperation with CARE Austria, with financial aid from the European Union, USAID and the government of Austria, has been carrying out a project called TIERRA through which a new methodology of socio-environmental consolidation is being applied in lands "taken over" by peasants in the buffer zone of the Maya Biosphere Reserve. Project activities include:

- legalization of land tenancy;
- technical assistance in agroforestry and the development of peasant organizations;and
- grass roots environmental education.

Table 9.2 Demographic Summary by Protected Area Zones in the MBR in 1998

Type of Management	Area km^2	Area % of MBR	No. inhabitants	% total pop. of MBR	Pop. density - inh./km^2	% area Petén	% pop Petén**
National Parks*	7,670	36	20,472	22.7	2.7	21.4	4.0
Multiple Use Zones	8,484	40	19,714	21.8	2.3	23.7	3.9
Buffer Zone	4,975	24	50,162	55.5	10.1	13.9	9.8
TOTAL	21,130	100	90,348	100.0	4.3	59.0	17.7

Source: CARE/CONAP (CEMEC) data base, 1997/98, CONAP: El estado de la RBM en 1996

* Includes the Laguna del Tigre and El Zotz biotopes, in addition to the population bordering on the Sierra del Lacandón National Park (on the route to Naranjo and the route to Bethel) with occupied areas within the nucleus zone.

** An estimated 510,000 inhabitants have been taken as the base.

During the first phase of the project, data was collected on population, land tenancy and the environment in the MBR, resulting in the statistics for the 196 human settlements in the reserve presented in Table 9.2, below:

For a better understanding of the number of people living in the Maya Biosphere, it should be noted that due to an error in designing the park, the town of Melchor de Mencos has been included in the Multiple Use Zone. The town is the municipal seat of the county, also called Melchor de Mencos, with a stable population of about 11,000 residents. More than half of the total population is within the Buffer Zone, in which peasants have a legal right to own property and, in practice, unrestricted use of the natural resources found there.

Within the context of zoning and land legalization activities carried out by the CARE project, various inter-communitary groups of peasants and indigenous people were formed:

- The Oxlajú Tzuul taq'a Maya Q'eqchi Civil Association, based in La Libertad, with 21 Q'eqchi' communities from the municipality of La Libertad, Petén;
- The Committee of 45 Communities, based in El Naranjo, bringing together the Ladino communities on the route to El Naranjo, in La Libertad municipality;
- The Committee of 8 Communities, based in Vista Hermosa (Los Chorros), bringing together the communities on the route to Bethel in the municipality of La Libertad;
- The Association for the Protection of the Itza Biosphere, based in San Jose Petén, representing the Maya Itzá community involved in the management of the Municipal Forest Reserve of San José, known as the Bio Itzá;
- The Association of Forest Communities of Petén - ACOFOP - based in San Benito, bringing together the 15 communities on the Melchor de Mencos, Uaxactún and Carmelita routes, involved in the management of community forest concessions in the Multiple Use Zone of the MBR.

By the end of 1999, the boundaries of 3,200 parcels had been established. These included a total of 220,000 ha belonging to 54 peasant communities located in the Buffer Zone (BZ) of the Maya Biosphere Reserve, in the microregions known as the Route to Naranjo, the Route to Bethel, the Route to Tikal and the Route to Celchor de Mencos. By the end of the year 2000, zoning and legal title for the remaining 2,500 parcels will be complete, covering approximately 110,000 ha in 40 additional communities. The total surface area involved in the CARE, INTA, Tayasal, Poptún Parish and PROSELVA involves approximately 500,000 ha belonging to peasants who represent a

new category of farmers in Guatemala, significantly changing the obsolete agrarian structure of the country: these individuals are not the owners of small properties living at or below the subsistence level, nor are they agro-industrialists, but, rather, owners of mid-size properties (an average of about 40 ha per farm) with the right to technical assistance and credit from BANRURAL.

This de facto "agrarian reform" is the first large scale attempt to reverse land concentration since the failed agrarian reform of 1954 and could be the beginning of a new type of peasant, ethnically and culturally differentiated, but united in the desire to be a winner and not the eternal victim in the rural poverty drama and the environmental deterioration of the agricultural frontier in the lowlands of northern Guatemala.

On the basis of recommendations from an external evaluation that took place in October of 1998, the final phase of the TIERRA project will concentrate on:

- strengthening technical assistance and environmental education activities on lands in the Buffer Zone of the MBR whose owners have legal title in order to guarantee the sustainable and culturally appropriate use of available natural resources as a basis for socio-environmental consolidation in protected areas;
- organizational development of local groups of peasants and indigenous residents to strengthen their capacity to act in the political, economic, social and cultural spheres based on their legitimate interests and through active participation in the management of protected areas;
- increased participation by women and indigenous peoples at all decision making levels and in rural development project activities.

The major problems we see to reaching socio-environmental consolidation in the Petén are as follows:

- Although Petén is the only region in Guatemala with a specific agrarian law (Decree No. 38-71), guaranteed access to land tenancy has been all but impossible for peasants. In general, the paperwork is unnecessarily complicated and marked by illegal procedures created by government agrarian entities (FYDEP, from 1959 to 1990 and INTA beginning in 1990), and, in some cases, in spite of efforts that have gone on for up to 25 years, those involved have not been able to obtain land titles. At the same time, peasants have been obliged to legitimate their claims by demonstrating that they have "improved" the land, said improvement invariably involving felling the forest (*montaña*). This requirement exists

up to the present, much to the distress of many farmers. In the words of one Q'eqchi' farmer: "I like to take care of the forest, that's what my parents and the parents of my parents taught me, and that is what I want to teach my children. I know that in that way we will also have water, because the trees call to the water. But along comes INTA and they write down the improvements I've made and they ask me: How much land are you going to plant? And if I don't plant crops on all the land, they take it away from me. My customs tell me that I have to respect the forest, that I have to take care of it, not cut it down, but that doesn't constitute `working the land' as far as INTA is concerned. So those are their laws. So what am I supposed to do?" However, it is the FYDEP/INTA system for granting parcels that, up to now, is the only real option peasants have for turning the land they've claimed into legal parcels, since other legal forms, communal in nature, such as cooperatives, collectively owned grazing lands (municipal *ejidos*), communal lands, etc., were discouraged by authorities during the armed conflict and are considered "precarious." It is essential that the Peace Accords be implemented. Said accords require that municipal and national lands with a clear communal tradition be granted titles, that indigenous communities be granted legal status, and that national lands granted to others illegally be returned to their rightful owners, especially in the Petén.

- In some cases, we have observed the accumulation of family parcels (on average 1cd = 45 ha) in the hands of Ladinos who have attempted to reproduce the land tenancy system and the livestock-based economy found in the Oriente, but this clashes with the expectations of neighbors interested in greater economic and social equity in the new communities. At the same time, there have been attempts by certain individuals to get legal title to parcels in different squatter areas simultaneously, as part of business deals, which is possible as a result of lack of control by INTA and the absence of up to date property registries.

- There are large livestock ranches (100 cbs and more), within the same nucleus zone of the Maya Biosphere Reserve, and others in the Multiple Use and Buffer Zone areas. These are presumably titled properties but usually extend beyond their legal boundaries and their owners do not respect legal requirements for the management of natural resources in protected areas.

- The Ladino peasant population on the border of the Sierra del Lacandón National Park consider the park a "strategic reserve" in which they hope to convert valleys into grazing land for livestock, while maintaining their houses and corrals outside the park. Only through recognition of their actual economic space, based on agreements and the rezoning of the park, will communities be able to consolidate their presence as neighbors and participants in the management and benefits of protected areas. These areas will be truly protected when residents realize that this is due simply required by law but also that said protection is in the interest of the local population.

- The hope to turn all indigenous and peasant residents living in the Maya Biosphere Reserve (some 90,000 persons) in supporters of sustainable forestry management is not viable, and is based on an erroneous notion of the peasant cultures in question, their ability to adapt, and the possibilities for generating sufficient income and benefits for such a large popuulation. There are communities with a forestry vocation and the necessary knowledge and abilities to appropriately manage community forest concessions. But the large majority of the peasant population is looking for other ways to adapt to the new environment, based on diversified agriculture and legal land tenancy. Satellite photos from the 1986 to May 1997 period indicate a significant reduction in deforestation in those areas in which CARE's TIERRA project in Guatemala has made a systematic effort to establish boundaries and obtain legal title to peasant lands.

- The oil industry in the Laguna del Tigre National Park, with 14 wells currently in production, is not only a contradiction of the essence of an off-limits zone or nucleus of a national park, but has also become a magnet for poor peasants who have moved to the larger settlements in the heart of the park. And in fact, they have found a very favorable economic situation, combining family subsistence agriculture with wage labor in the oil sector, and hopes for a future as small livestock producers, increasing their small herds which represent a sort of walking savings account.

- During the forest fires of March and April of 1998, the greatest density of large fires in the MBR were in the new agricultural settlement zone, in which two situations coincide: the need for more intensive slash and burn activities on the part of subsistence farmers and tensions/conflicts with CONAP related to legal tenancy and the adequate use of resources. The map indicating the age of settlement within the MBR, in the data base

mentioned above, indicates that the three most sensitive areas were the Carmelita Route, with 12 settlements; the Laguna del Tigre / Santa Amelia Route with 12 settlements; and the southeast of the Sierra del Lacandón National Park with 11 settlements. Confirming this interpretation was the absence of large forest fires in the Melchor Route, a consolidated agriculture and livestock raising zone, with a homogenous peasant population that has been in the microregion for more than 20 years. The three areas with the largest number of fires are, at the same time, the areas most susceptible to new invasions due to the lack of socio-environmental consolidation by peasant communities whose members are in latent conflict with the authorities charged with the administration of the parks. We can thus conclude that the viability of extensive protected areas in peasant settlement zones depends on the active participation of the local population in the management of these areas, and on the generation of benefits for the neighboring population, turning these residents into "good neighbors" on the basis of conviction and convenience, and establishing a "culture of negotiation" through which conflicts with CONAP, the governmental entity charged with coordinating the protection and management of protected and wildlife areas, can be managed and resolved.

In spite of the problems mentioned, and the virtual lack of progress in the creation of a new agrarian and environmental policy, it is no exaggeration to say that the Petén has been transfored into a region with a de facto agrarian reform, characterized by improved well being for the indigenous and peasant population considered "very poor," which, in Guatemala, includes 40 percent of the total rural population. As a consequence, the Guatemalan state selected the Petén as a pilot area for the Land Registry Support Program, financed by the World Bank, designed to provide indigenous and peasant communities access to legal land tenancy. The state also created the Land Fund to finance the acquisition of new lands and the productive organization of these.

Cultural intermediation

An innovative aspect of CARE-Guatemala's TIERRA Project is the formation of a multi-ethnic field team, with training in Spanish and Maya-Q'eqchi', using, among other materials, the *Manual de Comunidades de Petén* in both languages, for the purpose of increasing acceptance of sustainable development in protected areas through specific notions and practices of the four different cultures involved in the process (Maya-Itza', Maya Q'eqchi',

Ladinos of Petén and Ladinos from the eastern region of the country), thus encouraging an inter-ethnic, inter-community dialogue.

The experience on the agricultural frontier of the Petén suggests the very important, and perhaps decisive, role played by the acquisition and dissemination of specific knowledge of the relationship between the environment and peasant economy and social organization appropriate to guaranteeing the subsistence of residents and increasing benefits to levels beyond the guarantee of food security, and to establishing patterns for the permanent use of resources in the new conditions in the Petén. It appears that socio-cultural factors, rather than outside incentives and "aid," are vital to strategies for the use of resources. If we compare peasant communities that result from spontaneous migration (the squatters of rain forest lands from the 1970s to the 1990s) with settlement planned and supported by assistance from government and international organisms (for example, the riverside cooperaties of Río de la Pasión, Machaquilá and Usumacinta, and the settlements of returnees and refugees), results for the spontaneous settlements are far better, both in terms of the selection of settlement sites and the subsequent economic situation of the settlers.

A soil quality map demonstrates a settler preference for deep, well-drained soils, creating relatively prosperous micro-regions such as the communities on the Bethel Route (from Palestina to Bethania), the El Naranjo route (from La Gloria to La Casaca) and the Melchor de Mencos Route (from El Zapote to La Pólvora).

The major factors leading to the socio-environmental consolidation of new settlements include:

1. Social and ethnic cohesion of homogeneous groups forming new communities, said cohesion expressed in solid social organization recognized by settlers, in both cultural and political terms.
2. The absence of outside regulating bodies, almost always taken as authoritarian intervention foreign to the interests of the group, or, in the best of cases, as constant paternalistic intervention which de-motivates settlers and leads to progressive dependence on outside factors.
3. Knowledge of diversified agriculture in tropical rain forests and the management of the most precarious resource in the Petén which is surface water available constantly, including during the "summer" months from January to April.
4. Interest in intercultural and inter-community communication, based on the self-esteem of "winners" who want to share their "conquests" and successful practices with "neighbors."

5. Secure and legal land tenancy, at the point at which the community has achieved a degree of stability and zoning of economic space they consider their own, with the outer boundaries fixed.

Surprisingly, factors such as "environmental education," in the traditional North American sense of conservation, massive material support in the colonization process, and the proliferation of "training workshops" led by persons foreign to the reality of El Petén and unfamiliar with the local language, have had little impact on changes in attitudes and practices among members of the migrant population and are often mentioned as "fancy talk," "a waste of time," or a frustrating experience for the community ("Some people came and they said a lot of things and then they left and we haven't seen them since..."). In addition, we noted a degree of saturation as regards courses on "Human Rights" and "The Peace Accords," courses related to the 1996 peace process, since there exists an enormous distance between the ideals presented and the daily existence of residents, with no effort made to bring together "deeds" and "words."

Rather, it is the participatory methods of cultural intermediation based on successful local practices that have contributed to effective socio-environmental consolidation in the area. These include the planting of beans as fertilizer, mixed gardens, living fences, poly-cropping with crops indigenous to El Petén, forest fire prevention, and so on. In the Ladino peasant squatter area of the Naranjo Route, with marked pressure on the land, 68 percent of all farmers are planting bean fertilizer crops, 58 percent have mixed gardens, and 42 percent have permanent crops, primarily fruit species (Shriar 1999). Twenty examples of cultural and economic adaptation by peasants in El Petén, including primarily Ladinos from the east and south of the country, were presented in a permaculture manual for El Petén prepared by Edgar Palma, CARE-Petén consulant, with the suggestive title: *How to Live Better on Our Parcels (Cómo vivir mejor de nuestras parcelas).*

The achievement of an incipient socio-environmental consolidation, evident on the agricultural frontier of El Petén, is not due to a defined rural development policy but, rather, to a free environment with limiting structures that allowed decades of spontaneous migration leading to the occupation of spaces and the recreation, based on cultural characteristics and with the support of projects like that of CARE-Guatemala, of economies increasingly adapted to the environment. From communities of "mountain peasants," such as Uaxactún, whose members are Q'eqchi' farmers who recreate their sacred landscape based on devotion to Tzuul Taq'a, the God of Hills and Valleys, to the prosperous eastern Ladino residents on the border with Belize, we have

witnessed the tremendous capacity of the Maya and Ladino peasant communities of Guatemala to create a space for multi-ethnic life, free of extreme poverty and with very little conflict.

References

Clark, C.
1994 Seeking legitimacy: The Story of Land Tenure in the Petén, Guatemala. Manuscript. University of Montana, Missoula.

CONAP
1995 Plan Maestro de la Reserva de la Biosfera Maya, CATIE, Turrialba.

———
1999 Memoria de Labores 1998. Guatemala.

CONAP/USAID/Fondo Peregrino.
1997 El Estado de la Reserva de la Biosfera Maya en 1996. Guatemala.

Grunberg, G. and V.H. Ramos.
1998 Base de Datos Sobre Población, Tierras y Medio Ambiente en la Reserva de la Biosfera Maya - Petén - Guatemala. Guatemala: CARE/CONAP.

Macz, N. and J. Grunberg.
1999 Manual de comunidades de Petén. CARE, Guatemala. Edition in Q'eqchi': *Xch'uuthuhil re li Komonil Peten*. CARE, Guatemala.

Palma, E.
1993 Diagnóstico y Estrategia Agroforestal para Cada Zona de Amortiguamiento de la Reserva de la Biosfera Maya. Petén: CARE/AID.

——.
1999 Cómo vivir mejor de nuestras parcelas. Manual de Permacultura Petenera. Ms. Guatemala: CARE.

Schwartz, N.
1990 Forest Society: A Social History of Petén, Guatemala. Philadelphia.

——. Reprivatización y privación: Sistemas tradicional y contemporáneo de tenencia de la tierra en El Petén, Guatemala. *In* Revista Mesoamérica 29:215-232. Guatemala: CIRMA.

Shriar, A.J.
1999 Agricultural Intensification and Resource Conservation in the Buffer Zone of the Maya Biosphere Reserve, Petén, Guatemala. Ph.D. dissertation. University of Florida.
Sílvel, E., G. Gellert.
1997 Evaluación de la Sostenibilidad - El Caso de Guatemala (Part II: El Petén y los retos para el desarrollo sostenible). Guatemala: FLACSO.
UNEPET (Unidad Ejecutora del Plan de Desarrollo Integrado de Petén)
1990 Diagnóstico general de Petén. Sta. Elena Valenzuela de Pisano, Ileana.
——
1996 Agricultura y Bosque en Guatemala. Estudio de Caso en Petén y Sierra de las Minas. URL Guatemala.
World Bank.
1994 Preliminary Report on Factors Associated with Tenure Insecurity among Smallholders in Guatemala (draft by Ronald Strochlic). Guatemala.
——
1995a. Tenancia Agraria y Manejo de los Recursos Naturales. (Elizabeth Katz). Washington.
—— 1995b Estudio Sobre Tenancia y Uso de los Recursos Naturales en la Franja Transversal y Departamento de El Petén. (C. Cabrera). Guatemala.
——1998 Socio-ethnographic Evaluation of Land Tenure and Land Legalization Problems in El Petén. (Ms. by Norman Schwartz).

Chapter 10

Monitoring and Evaluating Internal and External Changes in ICD Projects

Brian Hayum

The Sustainable Uses of Biological Resources (SUBIR) Project began in 1992 as a pilot flagship ICDP. Now, seven years two phases and two external evaluations later, the project has achieved considerable integration among objectives, strategies, activities and partners, such that it is often difficult to discern where one element ends and another begins. Such integration, a key element in ICDP development, poses particular challenges to monitoring and evaluation practitioners. This paper will address some of those challenges: reconciling donor interests and community needs; evaluating processes of integration; information flows among Project stakeholders; and addressing conservation and development issues in strategic management will be discussed.

Integrating conservation and development involves compromise: conservation imposes limitations on development; development will cause (at least some) biodiversity loss. We cannot determine what is an "acceptable" loss of biodiversity, nor can we precisely determine where the limits to development should be set in order to achieve such an "acceptable" loss, and no more.

In ICDP then, we find ourselves continuously negotiating and renegotiating compromises based on incomplete information and a wide variety of highly subjective multidisciplinary perspectives. Project monitoring and timely evaluation thus become critical to filling the current information gap, determining what information will be necessary for improved future decision making, and sharing lessons learned. Information is the fuel that drives processes of integration of conservation and development

To be effective, ICDPs in particular need to facilitate negotiations among a wide range of stakeholders (See Table 10.1), including the donor community, national, regional and local governments, and other NGO's involved in the project target area. The Project Team can also be considered a stakeholder, depending on the degree to which the Project goals are shared and contributed to by all the Team members.

These five stakeholder groups[1] have some shared, but mostly distinct, priorities and expectations for the Project, all of which will shape their informational needs throughout the life of the Project. Often these priorities will be in conflict with one another - an emphasis on process versus results, for instance. The key in reconciling these differences is maximizing the common elements and positive aspects of each group's priorities and minimizing the differences and negative consequences among them.

The SUBIR Project counts these five groups as principal stakeholders, whose priorities have been reconciled with varying degrees of success. Donors have seen quantified and verifiable results— operational targets met—during fiscal year reporting periods. Trimestral team meetings were established to focus on those targets and the means for achieving them. While the explicit purpose of these meetings is to report and share information on activities and progress to date, these meetings also serve a variety of other purposes as well: they are team-building exercises and orientation sessions for new or adjunct members to update their information on Project strategy and tactics: they are brainstorming sessions where strategy and tactics are often adapted to reflect changes in the external Project environment - activities of other NGO actors for instance, or climatic conditions such as a severe *El Niño* effect. From these meetings, strategy is translated at the community level into Letters of Understanding with each community participating in the Project. While these agreements serve for planning, monitoring and evaluation purposes—showing the changes that communities so urgently want—they also serve as a focal point for dialog with participating communities regarding project objectives, strategy and tactics.

In spite of these multiple dimensions of stakeholder analysis and interaction, all occurring in a dynamic environment, it is essential to establish and maintain a focus on hypothesis testing and learning. In addition to strengthening the institutional capacity for executing ICDPs, such a focus places logical parameters on a project's goals and activities that ensure its manageability and long-term sustainability. SUBIR began field activities in 1992 without a viable M&E plan. A complex and detailed plan was established late in the year, but had to be shelved because it was impossible to effectively monitor and evaluate the wide range of activities proposed in the original

Project design. Monitoring and evaluation proved even more difficult than implementation. If a functional, logical M&E plan had been in place by the end of the design phase, it is highly likely that the first phase of the project would have 1) been reduced in scope; 2) been more focussed on the original project objectives; 3) been more focussed geografically; 4) generated a wider range of valuable lessons learned and applied to the subsequent phases.

However, the systematic approach promoted by many theoreticians will tend to break down at the high level of integration required for ICDP management, due to the impossibility of attributing cause and effect with absolute certainty. In the process of establishing a regional strategy for sustainable resource management of the Ecuadorian Chocó, the SUBIR project is currently testing at least ten major hypotheses related to conservation and development (see table 10.2). None of these hypotheses can be effectively tested independently of other variables or hypotheses. But the process continues, based on the best information available: aerial photos, GIS imagery, maps, technical field reports, community testaments, publications, and donor and private sector input. Effectively managing this volume of information would be impossible without a logical framework. This tried and true project management tool still serves to this day as a compass for guiding project management in the highly dynamic environments that ICDPs often find themselves. SUBIR´s logical framework (see Figure 10.1) was developed well after the project's design was completed and approved: USAID's ¨results-oriented¨ focus made the logical framework approach seem unnecessary. Yet, after a year of execution, it became clear that a logical framework would be necessary: one that brought together the various elements of the original project design, information available from the field, and expected results according to USAID's Performance Monitoring Plan. In a 3-day workshop facilitated by the International Institute for Rural Reconstruction, SUBIR staff integrated these elements in a clear, concise Magna Carta for Project implementation, monitoring and evaluation. Now, annual work plans are designed, monitored and evaluated according to the project's logical framework, which is also reviewed trimestrally and often adapted for coherence and relevance to the dynamic situation at hand.

The diversity of external actors creates considerable internal dynamism. In the case of SUBIR, for example, the project is addressing unsustainable logging practices promoted by private-sector timber interests, through a combination of advocacy, economic incentives, forest management training, and participatory ecological impact monitoring. All of these activities have been confronted by timber interests, either directly or indirectly, as their profit margins stand to be affected if the current status quo is changed. Timber companies have placed considerable pressure on communities to sell standing

Table 10.1: SUBIR Project Principal Stakeholders, Their Information Priorities and Consequences

Stakeholder	Priorities	Consequences	
		+	-
Donors	The Results: ❑ Immediate; ❑ Quantifiable; ❑ demonstrative	High degree of motivation, Focus on products/results	Short-term focus, less interest in process
Governments	The Process: ❑ High Profile; ❑ High degree of participation	Focus on Process	Focus on Process
Households	Change: ❑ Immediate ❑ High return on investment ❑ Low cost (time, $$$, learning, etc)	Desired changes are practical and readily identified.	Sustainable management practices do not currently offer immediate benefits, or high rates of return.
Other NGO's/External Actors	Provide incremental benefits to existing strategies (not reinvent the wheel)	Reduced costs, avoid duplication of efforts.	Risk aversion
Project Team	Efficiency, achievement of expected results	A high degree of structure can provide direction in ambiguous situations	A high degree of centralization can foster risk aversion and slow decision-making

Table 10.2: SUBIR Project Hypotheses

Increased local participation in NR policy development will enhance policies in favor of conservation.
Stabilizing land tenure will promote long-term regional management of natural resources
Timber produced through community-based management plans will fetch a higher price than timber sold through traditional schemes (community > intermediary > timber industry)
Increased timber prices provide an incentive to actively manage forests which in turn will result in reduced biodiversity loss.
Agrosilvopastoral systems offer an acceptable alternative to indiscriminate hunting and fishing, thereby reducing the rate of biodiversity loss
With the right skills and information, communities will be willing to sacrifice perceived higher immediate gains for perceived lower but sustained returns
Changes in biodiversity can be attributed to project activities.
Building local capacity will ensure sustainability of conservation and development initiatives after Project assistance is terminated

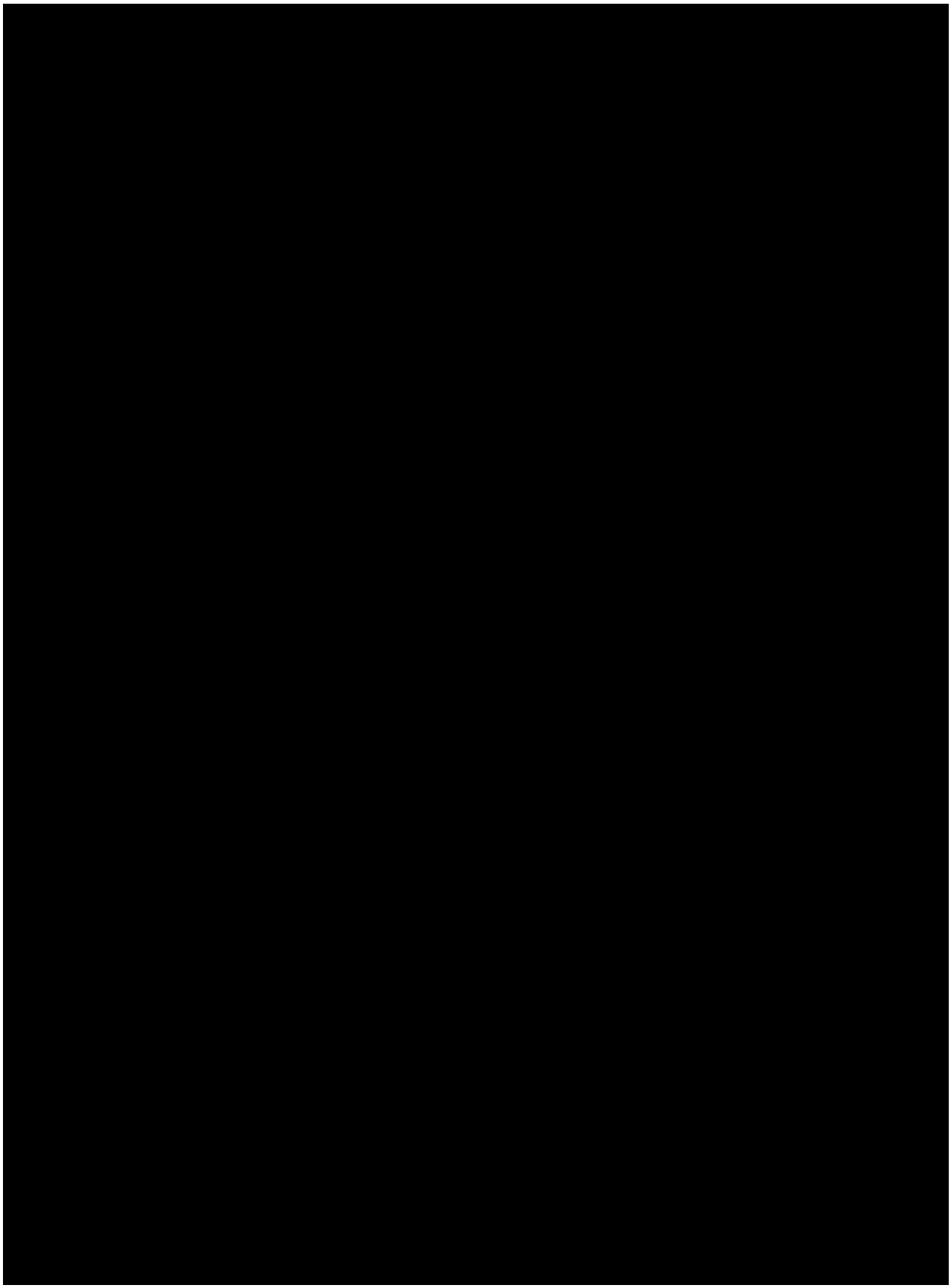
timber, often in spite of the community's interest in working with SUBIR or even the existence of a standing agreement between SUBIR and the community. Targets appearing in the donor's monitoring plan have had to be revised downward due to a community's choosing to work exclusively with the private sector. SUBIR has also withdrawn participation in communities where duplication of activities among various NGO's has taken place. On the other hand, this dynamism can also produce positive, synergistic results. By consistently being on the vanguard of community forest management, a paradigm embraced by the International Tropical Timber Organization and the donor community, SUBIR has managed to lead the NGO community and the private sector toward a consensus on technical aspects of sustainable community forest management in Ecuador.

Minimizing the negative impacts and maximizing the synergistic effects of these changes requires that they be anticipated as much as possible at the most decentralized level that can implement effective alternatives. In a community meeting, for example, where an extensionist or forester is explaining the benefits of diversified agriculture community forest management, a participant might mention that he or she was approached the same day by a timber company representative about building a road through community lands. There are two paths to follow here: one is that the extensionist could be without the information and decision-making authority to immediately respond to the situation. He or she would have to return to the Capitol, discuss it with his/her supervisors, and return several days later with a response, by which time road construction might well have begun. Alternatively, she or he could have the authority and the knowledge in situ to explain how further involvement with SUBIR would be affected, and its implications for community development.

In sum, monitoring and participatory evaluation provide the fuel for compromise and integration of conservation and development in ICDPs. Theoretical approaches are important, but have their limitations as hypotheses cannot be independently tested. Practical approaches based on the best information available form the most effective basis for dialog and progress in reaching a consensus on sustainable use in areas of high biodiversity.

Notes

[1] This is a representative and not all-inclusive list for illustrative purposes. Other stakeholder groups may be identified depending on the Project's operational parameters.



Chapter 11

Community Paralegals and Land Tenure

Manolo Morales Feijóo

Ecuador is characterized by high levels of both cultural and biological diversity. Cultural diversity is expressed not only in clothing, art and music, language and behavioral norms, but also in concrete social realities that include competing interests. The result is a process of questioning and confrontation. That process, however, must be followed by one of negotiation, that is, the clear possibility that the state and its institutions will incorporate the voices of stakeholders belonging to marginalized groups. Conflicts emerge with greater force in times of crisis, and the current situation in Ecuador encourages alternative solutions based on consensus. This task, however, is extremely difficult in light of the diversity of interests involved.

The conservation of diverse biological resources is essential to the survival of many human groups. Unfortunately, in many cases the State itself sponsors the irrational exploitation of limited resources (e.g., oil production or the obligation to fell forest to prove that the land is being worked, as stipulated by the former Vacant Lands Law).

Local communities suffer in areas where major economic activities of the country are in progress—these are also the areas where the majority of Ecuador's biological wealth is located. Unfortunately, despite new proposals for "Sustainable Development", current forms of action are mainly unrealistic because, as has been widely demonstrated, the exploitation of natural resources always causes impacts to the environment. Thus, the current concept of sustainable development is limited to minimizing impacts and mitigating damage.

After a long process involving the formulation of agrarian law projects, the executive sent to congress a new body of laws, which the latter approved

on June 2, 1994. The wide ranging reforms included in the law can be grouped in two categories:

1. Solutions to old conflicts, such as:

- changes in the reasons for expropriation of lands, when use of land is inconsistent with the conservation of natural resources;
- definition of the INDA-INEFAN relationship (though not developed thoroughly enough) in terms of jurisdiction over land holdings by each entity;
- incorporation of Afro-Ecuadorians as a group with traditional territory, in order to assign to members of this group lands free of charge;
- detailing of agrarian policies as regards training, credit and markets, a trilogy basic to agricultural development;
- establishment of civil and penal courts through which land controversies will be settled.

2. Inappropriate innovations, in light of the nation's socio-economic reality:

- registration of water concessions in the Property Registry, which would seem to transfer property rights over this resource to those granted concessions;
- creation of a mechanism for breaking up communally held lands, without establishing any exceptions to this article.

In response to the new Agrarian Reform Law proposal, a number of affected sectors made public statements, some in favor, others against. The majority of those stakeholders who expressed an opinion agreed that the law needed to be reformed, and thus began a dialogue which ended in the presentation of a packet of reforms approved by congress. The reforms established the following changes and new elements:

- In the introduction to the law, a clause was added regarding the importance of providing food security to the people of Ecuador and respecting culture values, and the need to bring agrarian legislation up to date.
- Agrarian activities were defined as those based on land, involving production and/or exploitation, as well as survival.
- The law makes reference to the fact that training is to be made available to Afro-Ecuadorians. In addition, both agro-business and systems of production based on ancient traditions are included in the law, which further states that investment will be made in areas of production, exploitation and survival based on the land.
- Training, according to the law, should incorporate ancestral knowledge regarding the use of the land, and not be confined to modern technology-

based approaches; the Ministry of Agriculture (MAG) is directed to rely not only on private businesses for training but also on private entities (NGOs). The law further stipulates that the 1995 National Budget must establish line items for these activities.

- The Banco Nacional de Fomento must provide credit to small and medium producers, through savings and loan cooperatives in rural areas, in order that these benefits be accessible to those most in need.
- Marketing, both direct and indirect, must be facilitated through a system of markets and storage facilities generated through initiatives from indigenous and peasant organizations and communities.
- Criteria for soil use, management and zoning are to be established, as are germ plasm banks.
- Among the state's obligations regarding property rights, Article 48 of the Constitution is to be implemented. This article is intended to protect property rights as long as these fulfill their social function and contribute to a redistribution of wealth.
- The land fulfills its social function when ecosystems are protected, when Ecuadorians are guaranteed access to food, and when a surplus for export is produced. In order to guarantee the integrity of small holdings, both the Agriculture and Livestock Promotion and Development Law and constitutional requirements will be applied.
- In terms of the division of communally held lands, among the most controversial topics, the reform states the following: Communally held lands may be divided when two-thirds of the members of the General Assembly agree; however, paramós and lands destined for the planting of forests are excepted. The law further permits the transformation of communes to other forms of association stipulated in the Law of Cooperatives and the Law of Companies.
- Lands under the jurisdiction of INDA will not include those under the jurisdiction of INEFAN, as stipulated in the law under which the latter was created.
- Four District Offices are created, to be located in Quito, Guayaquil, Cuenca and Riobamba; the directors of these will be designated by the Governing Board.
- The Governing Board of INDA will include the following members: a representative of the Banco Nacional de Fomento and two representatives of grass roots organizations.
- According to the grounds for expropriation, the period allowed for a property to remain unworked is reduced to two years, and a property will

not be considered unworked if it is being handled within a plan for sustainable management.

- Population pressure on a property will also be considered grounds for expropriation, if the neighboring peasant populations require the land in question for their maintenance.
- District Directors will be responsible for declaring the expropriation of properties, which can be appealed to the Executive Director of INDA, without prejudice to the actions by the Board of Administrative Conflicts.
- Payment for expropriation will be in cash; in the event of disagreement, the civil courts will act in accord with the Code of Civil Procedures.
- Concessions for purposes other than agrarian, such as mining, for the exploitation of construction materials, will be allowed with the express authorization of the owner granted by means of a title transfer.
- The process of legalization proposed to assure the continued existence of traditional cultures requires the promotion of ancestral technologies, the acquisition of new technologies and the diversification of seeds.
- Other owners will submit a management plan for the area as a requirement for approval of ownership. The adjudication of other lands will no longer be restricted to natural persons, cooperatives or businesses, but will also be open to indigenous groups, associations or other organizations which will first be required to present a management plan for the area; payment of the entire value of the land will take place within a ten-year period.

The following provisions are related to access to and use of water:

- Projects that permit the irrigation of lands without access to water will be promoted.
- A water concession concept is introduced, according to which said concession "is an administrative act through which the state grants to an individual the use of water according to conditions determined in this law and in the Water Law and its regulations.
- In the new law, the right to benefit from water is no longer granted; rather, concessions to water are granted, and these are based on management plans which must include the cultural aspects of local populations. In addition, protocols for water concessions are permitted, but the law makes clear that these are not property rights nor do they represent the sale of the resource.
- In transferring land to a new owner, the water concession is also transferred.
- Agrarian conflicts not under the jurisdiction of INDA will be heard in ordinary courts.

In general, the reforms introduce or modify eleven aspects of the agrarian law:

- Agrarian production must be linked to the food needs of the Ecuadorian people.
- Tasks involving the supervision of agrarian tasks are considered agrarian activities.
- The value of ancestral techniques is recognized.
- A credit program is introduced for rural sectors traditionally barred from access to this source of financing.
- Direct marketing, through storage centers, is facilitated.
- Aspects related to the use, management and zoning of soils are introduced.
- The division of communally held lands is not allowed in *paramos* or lands destined for the planting of forests.
- District Offices are created in Quito, Guayaquil, Cuenca and Riobamba.
- Grounds for expropriation, based on the non-exploitation of land, are reduced from three to two years; if non-exploitation of the land is part of a sustainable development plan, expropriation will not proceed.
- For the first time, a link is established with the mining law, in terms of concessions of land for the exploitation of construction materials, which can be authorized by the owners of the land in question.
- The word adjudication is replaced by concession, in regard to water, with the clarification that a concession is granted for the purpose of benefiting from, but not owning, the resource.

A major problem with the Agrarian Development Law is the absence of a definition of the phrase "Ancestral Possession"; this is a cultural gap which has legal consequences linked to land holding.

The resulting Law of Agrarian Development abolished IERAC and created INDA; it further replaced the Agrarian Reform Law, the Law of Vacant Lands and Colonization, the Dispositions of the Agriculture and Livestock Development Law, the Consumer Defense Law, and those portions of the Law of Agrarian Proceedings still in force.

The current Law of Agrarian Development, summarized above, contains certain elements related to natural resources and local communities. This is due to negotiations with grass roots groups whose members sat down with representatives of the central government to work out reforms after a nationwide strike organized to protest the law closed down the country. However, the law remains very general, and its regulations do not contain norms necessary to deal with specific land tenancy problems. This is the case

because in Ecuador, cultural and biological diversity are intimately related to forms of land tenancy. Below, we have presented the various forms of land tenancy on the basis of jurisdiction:

- Types of property under the jurisdiction of INDA:
  - Communal or family properties subject to legal adjudication.
  - Legitimate property owners with old titles.
  - Ancestral possession in autonomous lands.
  - Ancestral possession in *haciendas* or *latifundios*.
  - Possession for more than five years.
  - Possession of the same property by two or more groups.

- Types of property under the jurisdiction of INEFAN:
  - In protected areas:
    - Ancestral possession.
    - Possession for more than 15 years.
    - Legitimate land titles prior to declaration of protected area.
    - Possession of the same property by two or more ethnic groups.

  - In the state's forest patrimony:
    - Communal or family properties legally adjudicated.
    - Legitimate title prior to declaration of state patrimony.
    - Ancestral possession.
    - Possession for more than 15 years.
    - Possession of the same property by two or more groups.

- Forms of property under the Commune jurisdiction:
  - Ancestral possession.
  - Old legitimate title.
  - Territorial conflicts between communes.
  - Conflict between a community and an entity of a different nature.

- Types of property in other state patrimonies:
  - In mangrove areas.
  - In coastal areas and on peninsulas.
  - Properties of local governments.
  - Public urban properties.
  - State properties due to expropriation.

This is a partial list of the landholding arrangements in Ecuador. There are no doubt more than the 24 types listed here. At the same time, we have made a survey of the arrangements covered in legislation:

- 4 types in the Agrarian Development Law
- 3 types in the Forestry and Natural Areas Law
- 3 types in the Law of Communes
- 1 type in the Municipal Regime Law
- 1 type in the Civil Code

As is evident above, only 12 landholding arrangements are covered by the law, though most do not have a corresponding set of regulations covering norms, procedures, requirements and other necessary elements.

And what of the 12 forms of tenancy in our inventory not covered by the law? To say nothing of another dozen arrangements, related to water concessions or the exploitation of renewable and non-renewable natural resources as a result of which communities who have for centuries occupied territories have found themselves landless. However, even those arrangements in our inventory lack mechanisms to resolve conflicts in an objective and concrete fashion.

All of the above demonstrates that Ecuador's cultural and social diversity are not reflected in the current legal structure, in spite of the many attempts we have made to provide state entities with the necessary information. In other words, we have a long way to go before our bodies of law coherently reflect our social reality.

In light of this evident divorce between the law and the world we live in, we need to organize events to analyze, formulate and present policy proposals in order to initiate the reform, repeal or creation of legal and administrative norms that will contribute to the solution of existing problems.

But how can grass roots organizations contribute to the formulation of policies if they do not have the information needed for that purpose? There are two approaches available: 1). Hire professionals to develop proposals; and 2). train our own human resources who will be able to guide us in this activity. The first option could generate inappropriate proposals and the professionals in question have to be paid for their services. The second option requires preparation at a number of levels, including university training, training of leaders, and training of paratechnicians. Many communities already have paratechnicians in health and other social areas, as well as those who provide community consulting services. However, until recently, no such professionals existed in the legal field. Our project involved satisfying this need.

In conjunction with its Policy and Legal Affairs Component, CARE's SUBIR project in Ecuador created and developed the Program for the Formation of Community Paralegals. The first, and obvious, question is: What is a paralegal? He or she is an individual from a community organization who is trained in legal matters related to the environment, agrarian reality, and community organization in order to provide the community with legal guidance in all matters concerning the relationship between said community and GOs (Governmental Organizations) and NGOs (Non-governmental Organizations).

Paralegals are trained in order to provide community organizations with access to their own consultants. This service is needed in spite of the fact that GOs, NGOs and Second Level Organizations (SLOs) have been viewed as conduits through which information will be transferred from the point of emission to communities. Even when intentions of good, this seldom happens because most community groups do not have the skills required to process and apply said information.

In light of this reality, SUBIR decided to design a training program, in spite of the difficulties inherent in deciphering legal language. The purpose of the program would be the conservation of biological resources. Beneficiaries would be rural populations whose relations with state institutions left something to be desired. As there was no precedent for this type of program, the challenge was tremendous.

The experience

The first step was identifying the content of the training course. To that end, we analyzed the legal problems most typical in rural communities, identifying as a result six major themes: Community Organization, Legal Land Titles, Protected Areas and Forestry Resources, Petroleum and Mining, Community Tourism, and Biodiversity. At the same time, we prepared selection criteria which would define the profile of future paralegals, in order to identify a group with similar academic, community and personal backgrounds. Requirements were as follows:

Academic level

- Completion of elementary school, the minimal academic requirement
- Participation in at least two previous training workshops or events
- Ability to read and write Spanish with ease
- Ability to verbalize ideas

Community level

- At least three years of residence in the community
- Experience on the community board of directors or in a specific position within a community organization
- Selection by the Community Assembly at the complete community board of directors meeting

Personal level

- Desire to learn
- Ability to reflect on social matters
- Previous demonstrated interest in representing the community

Through the project's regional offices, we presented and discussed the Paralegal Proposal with beneficiary organizations, along with the conditions and responsibilities which the individuals selected would be required to fulfill.

Tasks of paralegals

Those selected to be paralegals must fulfill the following functions:

- Attend training events and meetings, about which those selected receive prior notice
- Analyze the laws presented in each unit of study
- Contribute information on the legal situation and the conflicts in communities as a basis for analysis
- Implement legal activities required by the community

Central workshops (CWs) and regional workshops (RWs)

After identifying individuals to be trained as paralegals, a series of workshops was begun. The CWs were held in Quito. Trainees attended workshops for six days per month on six occasions to analyze selected themes. The workshops were held in Quito as this is where legal-administrative conflicts are eventually resolved.

The RWs were held in the communities in which the trainees lived. There we reproduced the experiences and contents of the CWs. However, the trainees themselves facilitated these events in order to practice their skills with their own organizations, transferring the information learned and increasing the receptivity of the community.

In both the CWs and the RWS, participants go from the general to the specific. Thus, after we introduced a problem for analysis, the legal consequences were discussed, with emphasis on the legislation related to the problem. Then we visited the public entity under whose jurisdiction the problem was dealt with. Finally, we conducted a critical analysis of the matter studied and proposed solutions to the various problems involved.

Training techniques

Informal training processes are based on alternative methodologies which break with the canons of formal education so that knowledge may be more easily acquired by trainees. This is the concept underlying the Paralegal Program. However, I believe it was the first time the technique was used to train community legal consultants.

In our workshops, we used puppets, sociodramas, improvisations, corporal expression, gestalt techniques, observations, collages, painting, talking maps, and so on. These same materials were used by the paralegals in the RWs.

Topics analyzed

The topics analyzed and the legislation we dealt with in our studies can be divided into six groups: laws governing organizations, land, protected areas, exploitation of non-renewable resources, community tourism and biodiversity.

1. Community organizations: The majority of peasant organizations do not have legal recognition (recognition granted by the state to legal entities), either because no one has done the necessary paper work or because the community cannot fulfill certain requirements. The Ministry of Social Welfare (MBS) recognizes organizations called “centers,” which are legal persons (groups of natural persons) for the purpose of granting legal title to land; however, Ecuadorian law requires that the Ministry of Agriculture and Livestock (MAG) grant this status to organizations. The community of Playa de Oro in the province of Esmeraldas, for example, cannot get commune status because, in terms of jurisdiction, it is a parish and the law forbids that parishes be declared communes. Thus, we discussed other legal options with the community, including that of agricultural association recognized by the MAG or center recognized by the MBS. Legal status is important in that is confers legal title to land, and enables the entity to apply for credit and receive technical assistance from the state.

2. Land, water and irrigation: Some peasant organizations do not have legal title to their land. This is due not only to paper work difficulties but also to ignorance of their right to land they have occupied for generations. But until recently, laws covering agrarian matters did not recognize ancestral possession of land by Afro-Ecuadorians, as this was a right restricted to indigenous communities. However, with the new Agrarian Development Law, this situation has changed, and paralegals have held a number of workshops to provide communities with information on this reform and to help them with applications for obtaining legal title to their lands.

3. Protected areas and forestry resources: A number of peasant organizations are located within protected areas. Thus, it is necessary to find an alternative to the legalization of land tenancy for organizations which have existed in these areas prior to the change in their status. We have analyzed alternatives that would allow for state recognition of these organizations. However, in spite of the reality, there is no process that would lead to recognition of organizations representing human settlements. In light of this situation, we have proposed a process and identified the administrative entities which would handle it.

4. Exploitation of non-renewable natural resources: Protected areas, and the human populations who live in or near these areas, have suffered the consequences of mining and oil activities, which result in contamination and illnesses. The state has dealt with these problems in a bureaucratic fashion, with long delays and little progress. Consequently, we have systematized the steps of the process for communities in order that they may defend their two most important resources: life and the environment. To that end, we practice with paralegals in the Amazon region the writing of complaints, identify the authorities in charge of dealing with these, and the rights which Ecuadorian citizens have as regards an environment free from contamination.

5. Ecotourism and other economic activities: Community lands often include elements attractive to tourists. Thus, we worked with communities to identify ways to turn tourism into a sustainable economic alternative for local populations. A number of communities, including Añangu (Quichua), San Miguel (Chachi) and Sinangué (Cofán) attempted to develop ecotourism. However, they came up against legal barriers, such as the fact that tourist operations can only be carried out by legal persons classified as companies. In light of this, we have proposed a legal alternative to obtain the necessary

permits in order to develop community tourism complexes with the approval of governmental entities with jurisdiction over tourism and protected areas.

6. Biodiversity and intellectual property: The Convention on Biodiversity, signed and ratified by Ecuador and almost every other nation in the world, imposes clear obligations as regards the management of biodiversity. However, Ecuador has yet to create legislation related to the topic that would allow for the application of the principles included in the convention. This legislation is currently being developed, and there are norms for Access to Genetic Resources, developed by the governing body of the Cartagena Agreement (JUNAC), as well as a national law entitled Law for the Protection of Biodiversity in Ecuador, which identifies the rights of local communities related to intellectual property and access to genetic resources in general. Thus, paralegals have to be knowledgeable about the relationships of communities with companies, universities, and other entities interested in their ancestral knowledge about the biodiversity in their area.

Benefiting organizations

The beneficiaries of this process have been first and second degree organizations among the Amazon and Andean Quichua communities, as well as the Shuar, Achuar, Cofán and Chachi indigenous nations, Afro-Ecuadorian communities, and settler communities, all of whom live within, or in the buffer zones of, three natural areas, which are also within the project's work area; the areas in question are the Cotacachi-Cayapas Ecological Reserve, the Cayambe-Coca Ecological Reserve and the Yasuní National Park.

The cultural interaction produced during the process of training paralegals has been tremendously interesting, in view of the backgrounds of the paralegals. Since the program began, we have trained two classes of paralegals, among whom there are a number of women. Paralegals in the public sector have also been included in training events so that the newly trained paralegals will have allies in public offices in the future.

Additional information

To assure the harmonious development of the proposal, we called upon the College of Lawyers in Quito. Its members studied the proposal and the analyses we produced in the course of training. In addition, various state entities provided personnel to present talks on the themes analyzed in the course of

training, and also opened their offices to visits from trainees so that the latter could learn about administrative steps involved in various legal procedures.

The topics studied have served as a base from which to understand the cosmovision of the trainees, as well as the legal status of their communities. Both of these areas have been analyzed for the purpose of formulating policies, in order to narrow the gap between legal norms and reality.

Policy proposals, as well as the experience of training paralegals, will be included in a book. We hope this work will serve as a tool useful to the various sectors involved in this area.

Prior to receiving their certificates, community paralegals are evaluated in order to measure the changes they have undergone. Evaluation includes not only knowledge of the law but also the ability to analyze legal issues in conjunction with community problems. During training, we prepared and administered questionnaires in order to understand in detail the legal problems included in each subject studied and to create a data base for the Network of Community Paralegals we have established. Members of the network work part-time in the project's regional offices and receive a modest salary for their efforts. The purpose of this network is to identify, process and solve legal problems in the areas described above.

We have also created a series of six educational handbooks, in which the subjects of paperwork, requirements and laws are analyzed. These have been distributed among community members.

The program has been presented in a number of forums and meetings, and has proved of interest to different national and international entities who intend to replicate the model in order to strengthen citizen participation throughout Latin America. We are in the process of replicating the program at the national level, with emphasis on indigenous and African communities in Ecuador.

Paralegals and the management of land conflicts

This private effort to transfer legal information is extremely important, as the law is the major tool in Ecuadorian institutions, and in many cases has served to usurp the lands of communities, deepen conflicts, and prevent just solutions. Thus it is imperative that organizations know how to use the law to assure that their rights, as well as their obligations, are respected and complied with.

With trained human resources from our own organizations, we can provide proposals to solve our conflicts. Basic land holding conflicts have a variety of connotations and a variety of actors. For example, our experience brought us

into contact with a land conflict between two ethnic groups in the province of Esmeraldas in the northwestern region of Ecuador. This conflict involved a dispute over land tenancy and the forest resources vital to both groups' survival. History indicates that one of the groups was in the area first, but that both have been there for more than three hundred years, that is, ancestral possession is a fact for both of the groups. Various attempts were made to solve the conflict, without success. Then, with the participation of trained paralegals together with community leaders, we were able to sit down with both parties and to establish a strategy for the solution of the problem. This involved a population census to determine the number of families involved, the measurement of community centers in order to determine how many hectares each possessed, and finally the definition of criteria as to how to divide the land in conflict and to acquire legal title to the areas in question.

At the same time, we worked on a policy initiative to create "Instruction on the Adjudication, Possession and Tenancy of Lands for Communities with Ancestral Possession Rights," the basic objective of which was harmonizing procedures for the acquisition of land title in the various state entities involved, especially INDA and INEFAN, whose jurisdiction in the matter had yet to be defined in the area of ancestral possession in lands under the jurisdiction of INEFAN.

This activity became even more important when, in the course of our efforts, the timber industry presented a proposal for adjudication of forested lands which included norms that could have been applied to the same ancestral possessions when these have been declared within the Forestry Patrimony and communities do not have legal title to the lands in question.

This matter ended with the approval of two sets of instructions clarifying jurisdiction and areas subject to adjudication. The Administrative Resolution that emerged is important because, since its approval, we have been able, together with the paralegals, to support communities in forested areas in obtaining legal title to their ancestral land holdings. This activity continues and, day by day, we observe new evidence of the importance of trained paralegals.

Efforts like this one are needed to strengthen our organizations and empower community members in decision-making processes in order to achieve a greater degree of independence. Said independence is important not only in the implementation of production projects and the generation of economic resources for the community, but also and above all, in the ability to analyze and propose alternatives from our own point of view, based on our own reality and our own unique characteristics, in order to have an impact on the state so that our problems are considered part of the nation's reality rather than land and organization conflicts restricted to a particular region. Only in this way will be able to become actors in the working out of our own destiny.

Part

3

Creating Social and Economic Incentives for the Conservation of Biodiversity

A Chachi family in Northwest Ecuador

(*Photograph by Eric Jones*)

Chapter 12

Creation of Social Initiatives for the Conservation of Biodiversity

Cornelia Butler Flora

Social initiatives for the conservation of biodiversity are part of a complex bio-social system. In order to provide people with incentives, it is essential to begin with their resources, not with their needs. Resources open the possibility for negotiation, while a focus on needs condemns the recipient to charity status with no control over their existence. By using resources as a starting point, people are empowered, whereas when needs become the starting point, people become victims. Resources make possible the building of a common future; needs leave gaps that must be filled.

The conservation of biodiversity requires that we work at the level of the community rather than that of the individual. Biodiversity depends on communities of flora and fauna, interactions between individuals and species beneficial to both. Without this mutual feedback, there is no life. Like biological communities, human communities experience a tension between competition and cooperation. Conservation of biodiversity depends on the latter.

Community resources

Community resources can be used in various ways:

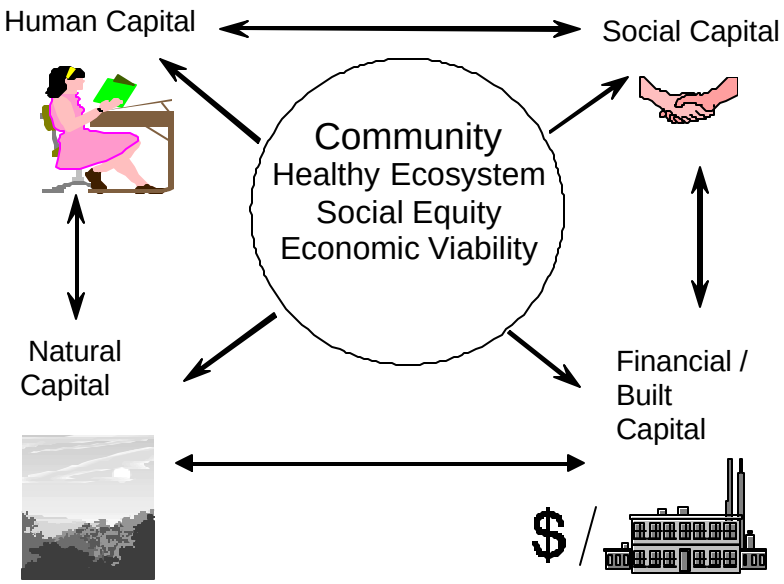
- through consumption, finally using up the resource;
- leaving the resource untouched which may mean that it decomposes;
- through investment, creating new resources.

When people invest in a resource, capital is created. Too often we think of capital as money. But every community has multiple forms of capital, and

there must be investments in all of these to create a sustainable system. If one form of capital takes precedence over another, those which have been neglected may deteriorate. For example, in structural adjustment politices focused on development, the creation of financial capital is the only goal. In many countries, this has led to a deterioration of human, social and natural capital, as well as constructed capital (see Figure 12.1).

A sustainable community, watershed or region involves a healthy ecosystem, social equity and a viable economy. A healthy ecosystem has a high level of biodiversity, clean air and water, and productive soils. Social equity is based on access, by all citizens, to the resources of an area, including education, the means of production, food and water, and community respect. However, while no one should be excluded from access to these elements, this is not to suggest that everyone will have an equal quantity of goods. In order to achieve the conditions described, it is useful to think of four types of capital.

Figure 12.1: Forms of Capital in Communities



Human capital

Human capital consists of the abilities and knowledge an individual possesses. Human capital is mobile, though there are limitations to its mobility. For example, some abilities are useful only when there exists financial, social or natural capital. Education, abilities, health, values, beliefs and leadership are all elements of human capital. Human capital may also include values and beliefs that lead to a devaluation or fear of biodiversity (the forest as a threat) or that value this resource. Human health may be connected to natural capital, or it may be believed that better levels of health are available in areas distant from natural capital. Sometimes formal education, which promotes productivity and human control over nature may damage natural capital. The components of human capital may be positive or negative incentives to the conservation of biodiversity.

Social capital

Social capital involves trust, networks of reciprocity, shared symbols, collective identity and the sense of a shared future. Because it is horizontal rather than hierarchical, social capital adds value to other forms of capital. Social capital, as it is a characteristic of a community, watershed or region, is not mobile. This is because, for example, elements such as mutual confidence require time to create. In addition, there are two ways to think of a shared future. One is in terms of a limited good: if something good happens to you and your family, something bad will necessarily happen to me and my family. But social capital may also aid individuals and groups in a community in working together for a desired collective future, by means of reciprocity. The culture and the cosmovision of a group or a community are part of social capital. This may involve a cosmovision of the unlimited abundance of nature. Or it may involve a belief in the ability of technology to remedy losses of biodiversity. Social capital of these types may diminish natural capital.

By contrast, there are cultures and cosmovisions based on the sacredness of biodiversity. With these groups, it is important that the culture be understood in order to strengthen symbols and collective identity linked to natural capital.

Natural capital

The quality of the air, the quantity and quality of water, the quality and quantity of soils, the biodiversity of fauna, flora and microorganisms, and the

landscape are components of natural capital. Taken together, the elements that make up natural capital form healthy, sustainable ecosystems. Biodiversity is the most important of these elements in assuring that an ecosystem is functioning at optimum level, retaining carbon, cleaning the water and the air, and so on. Natural capital is not generally mobile, though there are species that migrate annually or in the course of their life cycle and which depend on immobile natural capital to survive.

Other forms of capital may be threatened by natural capital. Nevertheless, if we identify the positive incentives which contribute to human, social and natural capital simultaneously, we will find a balanced system. Natural capital contributes to human capital by assuring air and water quality; social capital contributes through providing collective identity and the collective symbols of a community or a region. In addition, if we consume natural capital rather than investing in it, financial capital will experience serious impacts.

Financial or constructed capital

Financial capital is highly mobile. It can move from one continent another, one country to another, one province to another in a matter of microseconds. It is also very important, providing for the purchase of livestock, seeds and equipment, for investment in stocks, bonds and other financial instruments. It can also be used for the construction of irrigation, sewage, and potable water systems, for buildings, highways, and bridges.

Financial capital is the most privileged form of capital. It is used to construct things, and too often construction—of roads, buildings, bridges, plantations, and so on—is confused with development. As a result, it is often invested in areas of high biodiversity with disastrous consequences. However, financial capital can also be used to identify protected areas, and to invest in projects that will minimize damage to the environment. As a result, a balance can be achieved between conservation and development. However, this goal depends on the existence of human and social capital as well.

It is evident that the different forms of capital are means that serve a variety of ends. Invested wisely, they lead to a healthy environment, social equity and a viable economy. The first three forms of capital described—human, social and natural—contribute to the quality of life. Studies demonstrate that the quality of life is associated with two major conditions: the respect we extend to others and the existence of alternatives from among which to choose. This is not the same as choosing among twenty different brands of toothpaste. It must be understand that there are different ways of making a living as well as different ways of enjoying life.

Studies also suggest that the quality of life is not related exclusively to the standard of living. The standard of living is also important, and includes material goods requiring financial and constructed capital. For example, health is one element in the quality of life because it opens up alternatives. Health is associated with clean water coming either from a healthy environment or as a result of a water purification system. In many cases, community efforts in a watershed to maintain natural capital by means of protecting a water source cost much less and contribute much more to human capital (through training) and social capital (through strengthening reciprocity networks), than huge investments of financial/constructed capital, which oftentimes diminish social equity because the poor do not have access to new systems of potable water.

The context

In order to increase social incentives to conserve biodiversity, we have to take into account the current situation in a community. This requires taking into account three elements in society: the market, the state, and civil society. The market is characterized by globalizing and industrializing tendencies. At the level of the state, we are in a period of democratization and decentralization which increase the role of civil society. While the center of social incentives for the conservation of biodiversity lies in civil society, the other two spheres are very important, as they create the conditions in which civil society acts and reacts.

The market

The two most important tendencies characterizing the market are globalization and industrialization. Both are characterized by their vast scale and their mobility.

Globalization

Beginning in 1973, and especially during the 1980s and 1990s, states and transnational companies have focused on bringing down the barriers to the international flow of financial capital. Greed and fear motivate the movement of money, and these motivations do not contribute to sustainability. But economic motivations have an impact on resources beyond the purely financial.

In the absence of trade barriers, competition is increased. With high levels of competition, the prices of raw materials fall, including those of

oil, copper, aluminum, corn, sugar, and beef. The drop in prices is often felt by the producers of these items though not necessarily by consumers nor by stockholders.

Under these circumstances, the easiest way for producers to increase their income is to produce more. As a result, businesses concentrate on investing in technology to improve productivity. Another way to produce more is through the purchase of other entities which produce the same item. Thus, by the end of the 1990s, we have seen impressive mergers at the global, rather than the national, level in those sectors which produce goods and services, such as automobiles, appliances, chemicals and products based on biotechnology. Some financial experts have called this the age of oligopolies, in which two or three transnationals control the production or the sale of similar products.

Consolidation increases economic security because the oligopolies are not interested in who produces nor in where they produce. Instead, they concentrate solely on production costs. As a result, natural capital becomes one more input for the purposes of increasing profits.

Industrialization

Globalization results in other forms of production, and this implies new divisions among the elements involved. To begin with, possession is divorced from the use of resources. That is, owners are stockholders and those who carry out production are wage laborers. Wages depend on the level of profits and the value of stocks. The price varies constantly and is determined by those famous motivations: greed and fear.

Second, there is a weakening of the ties that bind consumers and producers, diminishing the transaction costs. This weakening is reinforced by another type of consolidation: vertical integration. With the proliferation of access to new information, there is a transition from general to specific products. Some say that all markets are niche markets. We are in the post-Fordist period of industrialization. Instead of products with general characteristics produced on assembly lines, production is centered on very specific characteristics desired by consumers. To improve flexibility and the conditions imposed by a specific site, there are fewer core corporations and a rise in outsourcing.

The State

In contrast to the centralization of economic power, we are witnessing the decentralization of the state at the national level. At the international level, the only entity with global coverage is the World Trade Organization,

which imposes rules of trade, denying the nation's right to legislate measures to mitigate the impacts of activities on the environment or on workers. This international entity has preeminence over the UNDP, the UNEP or the ILO as well as over national entities even less able to insist on the importance of forms of capital other than the financial.

The ideology behind decentralization has much to be said for it. It is based on the concept that decisions regarding rules and the use of resources ought to be made at the local level. At the same time, this requires the spread of democracy, the participation of persons formerly excluded from decision making at the local level. If genuine democracy does not go hand in hand with decentralization, local elites are further strengthened.

In many cases, resources benefit the central government controlled by elites while responsibilities are assumed by local governments. As a result, we have local governments without human resources (the lack of trained personnel for schools and public services) or financial / constructed resources in order to carry out tasks assigned by the state. In addition, when there is a lack of social capital, there is little citizen interest in participating in or supporting local government.

Another serious problem experienced by the state is corruption. The theft of a nation's heritage has risen to outrageous levels in some countries. This leads to the discrediting of the state, at the provincial and local as well as the national level. Corruption destroys trust, and one of its victims is biodiversity.

Civil Society

In view of the situation characterizing the market and the state, the role of civil society becomes even more important. Civil society strives to create a sustainable future within the context of a discredited state and a de-localized market. In spite of the lack of power, it can work in favor of conservation and development by means of increasing capital in the community, the watershed and the region.

In countries throughout the world, there has been an increase in activity on the part of civil society. There are local organizations with specific interests that go beyond the traditional, including both NGOs and local GOs. The NGOs no longer restrict their activities to the delivery of goods and services but focus their actions on conservation and development. This leads to a more territorial and long term focus. As a result, there has also arisen the possibility of conflicts among NGOs, among grassroots groups, and between NGOs and grassroots groups. But there are also opportunities for negotiation, for identifying new actors, for thinking about ends rather than focusing

exclusively on means. Questions like these thus arise: Why are we building this water purification plant? What is it for? What is the goal of this project? Is it simply a matter of investing a certain amount of money in infrastructure and improving the health of the community? Are their alternative ways to reach the same end which could contribute, at the same time, to other ends? What about a plan for the conservation of biodiversity to protect water sources, which may be even more important than a water purification plant? And what about investing in the building of a school or community center, which requires less money while contributing to an increase in human and social capital?

Civil society, made up of local communities and communities of interest, favors small scale projects rooted in the community. The market favors large scale projects characterized by their mobility.

Incentives for the conservation of biodiversity

There are a number of mechanisms for changing human behavior (Figure 12.2). The most effective of these is internalization which occurs through socialization and education. An actor wants to conserve biodiversity and knows how to do it. This is the positive situation. The negative situation involves an actor who has no desire to conserve biodiversity or does not know how to do it. If he or she lacks desire, a stronger motivation is required. If he or she lacks the knowledge, education on the principles and technology involved is the appropriate strategy. We are talking about incentives that enrich human capital.

Less effective and more costly is social pressure. In a positive scenario, the actor will gain social prestige in his or her community as a result of conserving biodiversity. He or she will also know how to do it. The conservation of biodiversity is a task assumed by each member of his or her group. Through conservation, he or she reaffirms a collective identity and strengthens reciprocity. Social pressure may involve negative sanctions if necessary. For example, neighbors may mock genetically altered soy beans which require the use of toxic pesticides, informing the individual in question that he or she is thinking only about immediate and personal gains and not about the future of the community. Or an actor who hunts local wildlife may lose prestige within the community.

If internalization and social pressure fail, we have to turn to more costly motivations more difficult to enforce, that is, economic sanctions. Positive economic motivations include the possibility of earning more for a product that conserves biodiversity (a product with a set of characteristics linked to a specific consumer). Or there is the possibility of generating lower costs by

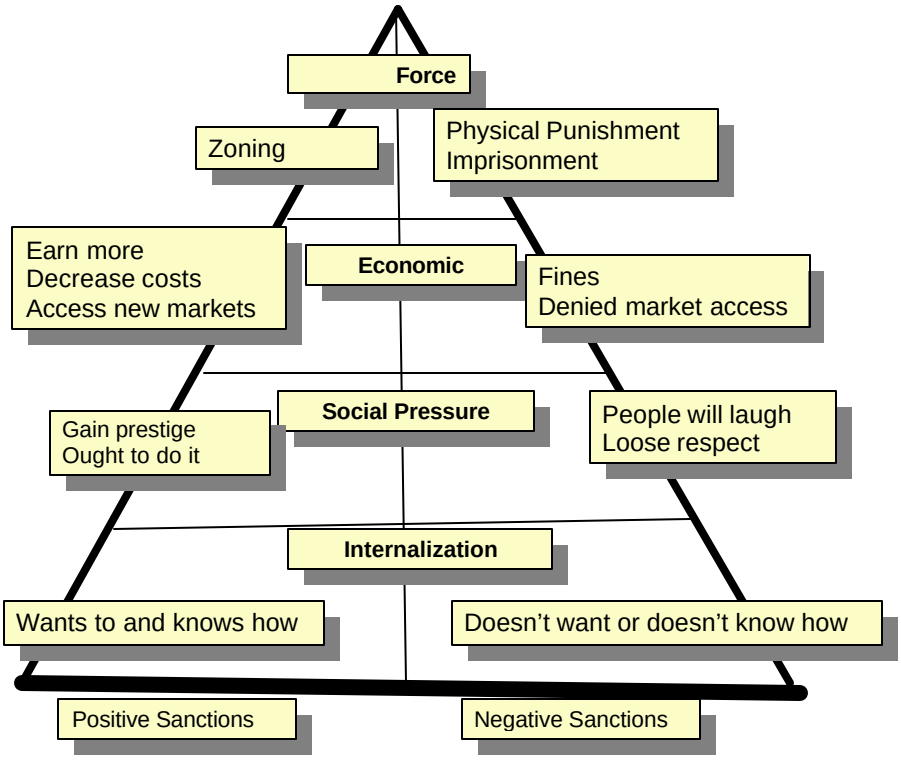
producing in a way that conserves biodiversity through the application of agroecology techniques. Or a "green" product may be introduced into new markets and lead to better prices for the producer.

If economic incentives do not work, economic sanctions may be applied. These include fines for destroying biodiversity such as, for example, hunting monkeys or firing an employee who cuts the forests in a reserve. Or the refusal to accept a product that does not conserve, or is potentially dangerous to, biodiversity, such as the European Union's refusal to allow genetically modified corn to be imported by its member nations. Another sanction involves the suspension of a resource. In Cotacachi, the local indigenous organization suspends water service to communities whose members burn or cut forests in areas near the borders of the Cotacachi-Cayapas Ecological Reserve (RECC). This is an example of the empowerment of Cotacachi's indigenous communities (strengthening of social capital) in the co-management of the reserve.

Finally, force may also be used as a sanction. An increase in the territory of an ecological reserve is a positive move. Punishment or jailing for violation of the reserve's rules is a sanction. In Cotacachi, a community leader mentioned how a resident had taken a bath in the community's water tank. The community asked the local authority to tell the guilty party to stop doing that. But he repeated the act. As a result, the community got together and subjected the man to a ritual bath as a punishment. This was done in the presence of the young people of the community and served as an example of what happens to those who do not respect the community's rules, in this case, those related to the protection of the community natural capital.

It is important to understand that when contradictions exist among the motivations of actors, protection of biodiversity becomes more precarious. Those contradictions have to be identified and everything possible must be done to resolve the problems involved. And, in the case of the market and its global reach, the motivations based on internalization, education and social pressure are much less effective than economic motivations and force. However, today, given the existence of corruption which has diminished the will to conserve biodiversity, and the process of decentralization which has resulted in fewer mechanisms to enforce conservation, it is civil society that has to assure that capital based on the community, the watershed or the region are in balance in order to achieve a future characterized by healthy ecosystems, social equity and viable local economies.

Figure 12.2: Motivation for Changing Human Behavior



Chapter 13

The Double Task of Institutional Strengthening and Executing Project Activities Simultaneously with Local Partners

Jody Stallings and Mario Garcia

Critical elements of integrated conservation and development (ICD) projects include protecting the environmental integrity of a geographic area over the long term, improving the economic security of local people, and assuring the sustainability of project activities (Ack 1991). Our project has recognized sustainability as a multi-faceted concept that includes four distinct realms: the technical, economic, institutional, and social.

ICD Projects require strategic alliances in order to obtain project objectives (Larson et al., 1998). One of the essential elements of these alliances is the strengthening of local organizations to ensure the long-term success and sustainability of project interventions. A typical model of ICD Project management has been that of financing project implementation via international organizations, which in turn work with local partners in the execution of project activities (Larson et al. 1998).

The Sustainable Uses of Biological Resources (SUBIR) Project has been working simultaneously at two levels: strengthening local partners and executing project activities in partnership with the same NGOs. This double task will be dealt with in this document. One SUBIR partner, EcoCiencia (Ecuadorian Foundation for Ecological Studies), has been particularly successful in strengthening local organizations and for that reason is highlighted as a model in this paper.

Institutional strengthening

Institutional strengthening can mean many things to many people. The concept can range from the simple acquisition of equipment to the complex

Table 13.1: Elements of Institutional Strengthening

Strategic plans, including the development of the organization's own style and mandate
Fund raising strategies
Procurement of equipment
Administrative and financial support
Technical training
Calculation of the overhead costs of the administrative/technical structure
Institutional recognition
Staff to fill critical positions in the Institution

process of developing viable financial and administrative systems for local NGOs. This wide range of definitions is illustrated in Table 13.1.

A principle recommendation in the 1994 external evaluation of the SUBIR project (Glick et al., 1994) was that the number of project partners be reduced, and that the remaining NGOs be strengthened to increase their capacity to manage projects. This recommendation was based on two areas of concern. One involved strengthening financial and administrative systems for local partners, while the other was more focussed on technical strengthening.

Administrative and financial strengthening

Administrative and financial strengthening must go further than acquiring financial software packages and hiring staff. The target organization's credibility in the future will depend on its ability to manage project funds efficiently in a timely fashion, free of financial errors. Experience in managing yearly financial audits, publishing annual reports, developing and using institutional procedures (manuals on financial procedures, vehicle policy, personnel policy, etc.), calculating institutional overhead rates, and demonstrating a commitment to responding to donor demands can make a substantial contribution to organizational strengthening.

Technical strengthening

Technical strengthening can be achieved via training, carefully monitored execution, and publication of results. The strengthening "curve" is varied among local organizations, depending almost entirely on the age and experience of the institution, the mix of talent in the institution, and the institution's willingness to participate fully in training activities. Publication is a critical, albiet time consuming, activity. Peer reviewed international and national publications in journals and books are an essential aspect of technical

recognition for an organization. These publications will make a great contribution to a fledgling institution's recognition as a professional and respected entity.

A strategy to carry out both approaches

It is highly recommended to use these approaches in a few select institutions. Time is needed to ensure that a partner institution is managing the administrative, financial, and technical aspects. If the objective is limited to training institutions, then a larger number of NGOs can participate. However, if the objective is to strengthen and to allow these NGOs to execute activities in the project, then it is imperative to work with only two or three NGOs.

Training and monitoring must be a central part of the strategy throughout the project cycle. In-service training can be included in the training package. Structured training from trusted independent sources, such as internationally recognized auditing firms, can be used initially for leadership courses, strategic planning, and financial accountability. Technical training should be a combination of structured workshops and practical applications at the field level.

One of the first steps in the strengthening a young organization in administrative / financial terms is calculation of an approximate overhead rate. Initial overhead rates for young organizations can be exceedingly high. This is due in part to the organization's lack of financial expertise. It is not uncommon for a young organization with few technical projects to approximate a 1:1 ratio of technicians to administrative staff. One strategy is to subsidize the overhead rate of the organization, to allow for the acquisition of key positions in technical, administrative, and financial areas. The subsidy is gradually reduced to allow the organization to take on more and more independent financial responsibility, and eventually eliminated.

An additional step in the strategy is to be willing to accept errors and to assist the organizations in resolving their problems, whether they are in the administrative, financial, or technical areas. Financial audits are excellent strengthening tools and demonstrate to the organization the seriousness and importance of managing funds correctly. Audit recommendations must be fully complied with by the partner organization.

The Lead Implementing Organization (LIO) and donors must be in full agreement to use patience and understanding when dealing with organizations that are learning new skills and are executing project activities at the same

time. The strategy is to turn over more and more technical and financial responsibility to the project partner, even though this double burden may produce delays in reporting, field execution, and financial management.

Problems associated with combination of both executing and strengthening

There are several problems associated with this strategy. First of all, there may be delays in achieving the programmed results. These delays are often related to other problems associated with this strategy. For example, many young organizations, with a small project portfolio, tend to survive from check to check, as they lack endowments or survival funds to get them through low funding periods. New software programs, demands from donors or LIO, the lack of supportive documents, etc., can delay payments from the LIO. This, in turn, affects compliance with the annual operating plan. Without funds, there can be no execution of project activities at the field level.

Other problems associated with this strategy are the financial dependency of an organization on the project and the high overhead rates that are common in a fledging organization. In the first case, an organization can be totally, or largely, financially dependent on a project. It is not uncommon to see a 90% dependency at the beginning of a project cycle. The goal is to reduce this dependency through time by means of project diversification. In the second case, overhead rates will tend to be high initially. Donors and projects should recognize this and see the subsidies cited above as a strengthening exercise.

Positive aspects of doing both

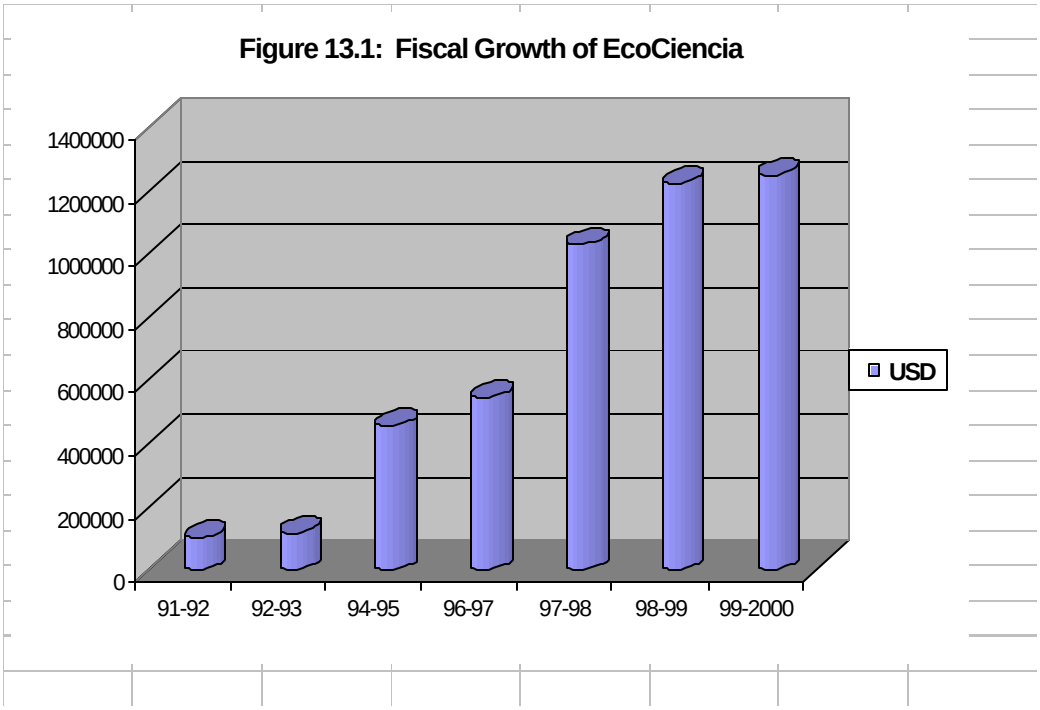
The positive aspects of this strategy include several issues. First, the separate strategies of strengthening, and then later executing, take much longer to carry out than doing both simultaneously. In addition, this strategy provides an organization with a complete vision of technical and administrative problems and how to resolve bottlenecks. The overhead subsidy rate and the reduction of this rate over time allows the organization to plan for increased costs and to develop projects that will cover this subsidy.

EcoCiencia Case Study

EcoCiencia, the Ecuadorian Foundation for Ecological Studies, was founded in 1989 by a group of young biologists who met as students at the Catholic University in Quito and shared a vision to conserve Ecuador's

biological diversity. When the SUBIR Project began in 1991, EcoCiencia was three years old and had already established a working relationship with Wildlife Conservation Society. In 1991, EcoCiencia managed few projects, with an annual operating budget of approximately USD 100,000. The staff consisted of eight technicians and four administrators. There was no estimation of the overhead costs. Since EcoCiencia and WCS had been working together on conservation projects, EcoCiencia was selected by the SUBIR consortium to participate in the biological monitoring component in the pre-design stage of SUBIR.

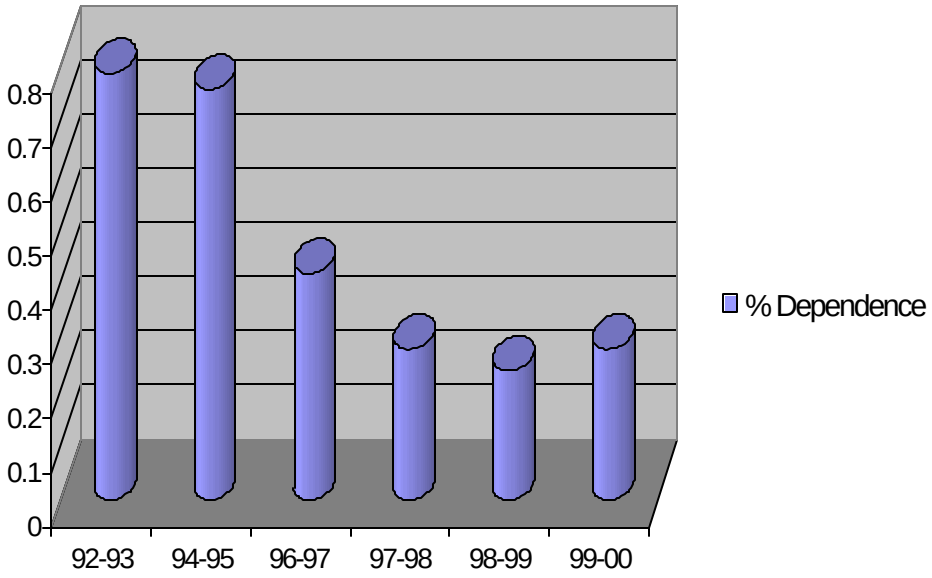
Figure 13.1: Fiscal Growth of EcoCiencia



During 1992-93, EcoCiencia's financial dependency on SUBIR approached 80%; over the next few years, this dependency was reduced as EcoCiencia´s technical recognition improved and additional projects came on line. Their financial dependency was reduced from 80% in 92-93, to 28% in 99/00 (Figure 13.1).

This reduction is not due to the SUBIR project financing fewer activities in the organization, rather, the project contribution remained approximately the same each year, with a significant increase in non-SUBIR funds entering the institution. In 1999, EcoCiencia managed a budget of 1.24 million dollars

Figure 13.2 Dependence on SUBIR Project



(Figure 13.2) and the staff consisted of 50 technicians and ten administrators, representing a 5:1 ratio of technicians to administrators.

The growth curve for EcoCiencia has been 10 years. During the first four years with SUBIR, from 1991 to 1994, the "curve" was nearly flat. EcoCiencia was basically dependent on the project for operating funds. After year four, the curve changed from linear to exponential. This is due to the lag time in strengthening, technical courses, and execution. Project results became more significant after year four, and recognition from donors followed the publication of results. This recognition was key to EcoCiencia´s success to obtain additional projects.

Conclusions

The SUBIR project embraced significant risk by attempting to strengthen local partners while expecting them to execute project activities. There were risks in the administrative/financial and technical areas. However, these rich

experiences proved to be a solid strategy with tremendous impact for project partners.

EcoCiencia´s experience is a valid lesson in tracking the success story of a fledgling organization. Over-head subsidies were an important aspect of its growth and fundamental support to the administrative/financial skeleton of the organization. This support enabled EcoCiencia to develop additional project proposals and to secure funding outside of the project donor. In addition, this support was fundamental for EcoCiencia to become recognized as a leader in terms of technical ability.

This model is not recommended for all situations. The primary conditions for success are based on trust between the LIO and the partner, the flexibility of the donor to understand and accept delays in some project implementation, and to respect the institutional boundaries of collaborating institutions. In addition, it is important to stress the long-term maintenance of key NGO positions. If these conditions are met, this model has a high potential for success and the impact of this approach can be much larger than the sum of its parts.

References

Ack, B. L.
1991 Towards success in integrated conservation and development. Wildlands and human needs. Paper #1, WHN Technical Paper Series. Washington, D.C: World Wildlife Fund.

EcoCiencia, Ecuadorian Foundation for Ecological Studies.
2000. Financial Reports. Quito, Ecuador.

Glick, D., C. McCorkle, A. Patterson, R. Victurine, and J. Dickinson
1994 Phase I Evaluation. Sustainable Uses for Biological Resources (SUBIR) Project. Tropical Research and Development. United States Agency for International Development/Ecuador, under Cooperative Agreement No. 518-0069-A-00-1113-00.

Larson, P. S., Freudenberger, M., and B. Wyckoff-Baird
1998 World Wildlife Fund's Integrated Conservation and Development Projects: Ten lessons from the field 1985-1996. Washington, D.C: WWF.

Chapter 14

Ecotourism: Funding Conservation Programs through Entrance Fees. The Case of the Galapagos National Park

Kleber B. Machado

Tourism is one of the world's largest industries. There were 532 million international arrivals in 1994 generating 337 billions USD (WTO 1995). The World Tourism Organization (WTO) has projected some 661 million international arrivals in 2000, nearly a 100% growth rate. Ecotourism constitutes only a fraction of the industry; however, many tourists, whose main activity is not ecotourism, also visit a national park or protected area while traveling

The tourism industry has evolved to meet the increasing demand for environmental and environmental-related tourist destinations. The growth of ecotourism and, in turn, of tourist flow, presents a real sustainable alternative to economic growth for local people in developing countries. However, conservationists oppose both ecotourism development and the flow of tourists as they represent a threat to the natural landscape and the preservation of biodiversity preservation (Munasinghe and McNeely 1994, Wells and Brandon 1992).

Despite the tremendous growth of tourism and ecotourism, many of the parks visited are not able to maximize the benefit derived from tourism. The lack or insufficiency of infrastructure, visitor and information centers, trained guides, and gift shops are among the most common deficiencies in national parks operations. This, in turn, results in a loss or less than optimal use of potential tourism revenue Wells and Brandon (1992), In addition, most governments charge far less for access to natural sites than tourists and tour organizers are willing to pay Rarely are admission fees to popular destinations high enough to keep the number of visitors within an ecosystem's carrying

capacity (Coccossis and Nijkamjo 1995). Aside from the environmental damage to fragile ecosystems, governments in developing countries use the revenues for general purposes, rather than using them to manage and protect the natural resource (Coccossis and Nijkamjo 1995, Lindberg 1991).

Validating ecotourism's profit-earning performance and potential is central to establishing it as a model of sustainable development. Ecotourism is now a major contributor to the economies of numerous developing countries including Belize, Costa Rica, Ecuador, Kenya, Nepal, Rwanda, and Thailand (Wells 1993), Whether these earnings benefit conservation, thus maintaining the attractions on which ecotourism is based, depends on how much the central planner increases founding for establishing and managing parks and provides incentives for long-term conservation by management agencies, local governments, and local communities. Some of the most pressing issues include capturing revenue from ecotourists and protecting the natural resource base from degradation due to over-use.

However, economic downturns, severe pressures on the land for growing populations and other factors can cause fluctuations in the financial and political dedication to conservation. The notion that nature is free still persists, even though most of the natural areas are officially designated protected areas (Munasinghe and McNeely 1994). In fact, preserving natural sites can be quite costly. Natural parks, for example, incur the usual direct costs of land acquisition and maintenance, as well as additional expenses, such as legal and bureaucratic outlays to resolve conflicts over alternative uses. Indirect costs and opportunity costs should also be considered. These may include forgone revenues from logging, agricultural, industrial, and/or residential development

Not only are the benefits of ecotourism underestimated, but many other benefits from conservation in the tropics are also unaccounted for by market forces. The destruction of primary forests has irreversible consequences, including the loss of biodiversity and species extinction. Other consequences of tropical deforestation include soil erosion, watershed deterioration, and global warming (Outhgate and Whitaker 1994). The failure of markets to account for these benefits of conservation, combined with the underestimation of ecotourism benefits, results in less preservation of natural areas than is desirable While ecotourism revenues are only a proportion of the benefits of conservation, they are one of the few tangible ways to capture financial returns on the preservation of natural areas.

This study tries to answer the following question: are visitor's to national parks willing to pay higher entrance fees if they are told the money collected will be used to increase conservation efforts? In order to address the issue, the Contingent Valuation Methodology (CVM) is used to estimate visitors'

Willingness to Pay (WTP) entrance fees for conservation programs designed to improve the quality of the Galapagos National Park. Although this study is not the first to apply CVM in the Galapagos National Park, it is the first study to link entrance fees as a vehicle to fund conservation practices and elicit views on the amount visitors would be willing to pay.

The following sections include a review of the main economic theory relevant to CV, with special attention to utility function specification, estimators, the type of method used to elicit a response, and the welfare measure associated with the method. Then, the more relevant results of the study conducted in the Galápagos Islands are presented. Finally, some conclusions and recommendations are offered.

Estimating "willingness to pay" as an entrance fee using a contingent valuation methodology: The Galapagos National Park

A common problem with existing structures of fees is that they are set below the value of parks or protected areas. As Moran's contingent valuation study (1994) of Kenyan national parks shows, CV studies can help to better assess the real value of entrance and user fees in Parks. As a result of that study, which found among foreign visitors an untapped willingness to pay more than existing fees for non-consumptive uses, it was recommended that the Kenya Wildlife Service experiment with an amount between USD 15 (the current entrance fee) and USD 85.

In non-industrialized countries, there are few institutional mechanisms for the incorporation of demand information in the planning of public services. As a result, misjudgments about consumer preferences have often led to poor project design and performance (Altaf and Hughes 1994). Consequently, institutions such as the World Bank, the Inter-American Development Bank, and government agencies of several countries have understood the need for incorporating demand information and estimates of the benefits of the projects into the planning process.

Another common problem in non-industrialized countries is the lack of public participation in the planning process. This may be the result of insufficient and inadequate mechanisms for incorporating public participation. The importance of including demand information in planning and the non-feasibility, in the short term, of elaborating mechanisms for public participation in the planning process, suggest the need for alternative approaches (Altaf and Hughes 1994). Willingness to pay (WTP) can be a good guide for planning services. It allows not only the incorporation of demand information but also public perception of the different alternatives to be evaluated. Additionally,

if people are willing to pay for the cost of a particular service, then it is an indication that the service is valued and therefore will be used, and it will be possible to generate the funds needed for sustainable operation (Whittington 1990).

Even though the application of CVM in natural resource valuation has grown considerably (Carson 1993 in Moran 1994), and numerous applications to park resources demonstrate the methodology's validity (Mercer et al. 1993 in Moran 1994), the use of CVM is not very common in Latin America. The CVM used in this study, adapted from the market research literature, is a new approach for environmental valuation that provides an alternative to traditional contingent valuation. It presents respondents with a range of policy options, asking them to rank these in terms of effectiveness and then asking them to state their willingness to pay for each option. This approach has been called in the literature "The State Preference Approach"; it has several benefits over more traditional CV methodologies.

The conceptual foundation of the contingent valuation method

When interpreting CVM estimates, projecting values for environmental amenities is problematic. In the following discussion, these difficulties will be discussed using economic theory, specifically theory of consumer choice and theory of public goods.

For expositional purposes, there exists an individual utility function such as:

$U(x, z)$

Where x is the vector of market goods and z is the vector of environmental goods. Assuming that the consumer maximizes utility over the vector of market goods_, the problem is

$Max\ U\ (x, z)$
$s.t.\ p(x = y,$

Where p is a vector of prices and y is income. The solution for the maximization problem yields Marshallian demand correspondences of the form

$xi = hi(p, z, y) \quad i=1, ..., n$

The indirect utility function is, then, defined as

$$v(p, z, y) = u[h(p, z, y), z]$$

Where utility is a function of income, prices, and the environmental good. Assume that at least one element of vector z is increased such that no other element of z decreases. Further, assume also that prices and income remain unchanged. Let z1 >> 0 be the good increased such that z1 > z0 where z0 stands for good z1 before the increase. Then,

$$u1 = v(p, z1, y) > u0 = v(p, z0, y)$$

Therefore, under the simplified assumptions, a change in utility level can be represented by the indirect utility function. More specifically, the compensating variation measure of the utility change can be represented as:

$$v(p, z1, y - c) > u0 = v(p, z0, y)$$

where the compensating variation, c, is the amount, expressed in monetary terms, necessary to make the individual as well off as before the increase in z1; that is, take her to its original utility level, u0. The amount c is then the WTP measure for the change in z1. And that is the amount that a CV survey instrument intends to elicit from a respondent. Since the environmental good is a public good, total WTP is given by aggregating over individuals. Passive-use values can also be represented under the same framework. Let the utility function take the functional form

$$u(x, z) = w(u(x, z), z)$$

Where w(() is assumed to be increasing in both arguments. The first argument, u((), is the utility generated from the use of z -the environmental good and x -the market goods. The second argument, z, accounts for the utility that is not related to the consumption of market goods; that is the passive-use value. Use value can, in principle, be estimated using revealed preference methods (i.e., travel cost, hedonic pricing). However, passive-use value, as a component of total value, can only be recovered using CVM. The CV survey used in this study was designed to elicit a willingness to pay value for improvements of the conservation practices in the Galápagos National Park. This value is assumed to encompass both use and passive-use values.

Survey Design

The survey structure used for this study contains a number of components. The first part of the questionnaire –the introduction— focuses on general information regarding awareness of environmental issues, general information about the visit to the GNP and overall satisfaction with the experience. The second part was designed to evaluate how visitors perceive the Galapagos National Park. Specifically, they were asked to evaluate the management of the park as well as conservation problems. In addition, a set of management alternatives was presented and visitors were asked to evaluate these in terms of how effective they perceive them to be. The options being evaluated, presented in more detail later, include:

OPTION A	:	Status quo
OPTION B	:	Environmental regulation and enforcement
OPTION C	:	Waste management, enforcement, more park personnel, and educational centers

The options are presented as a set of attributes and each is explained and compared with the current situation of the park. The attributes were selected based on a set of preferences expressed by visitors interviewed in a pilot study conducted as part of a larger study. The presentation of the options as a set of attributes helps to avoid embedding because each option is segregated by its characteristics. To assess respondent satisfaction with each option, each individual is asked to rate options on a scale of one-to-seven according to how well he/she thinks the option in question solves the environmental problems in the park. The cost associated with each alternative is not taken into consideration at this point. Thus, the rate is independent of cost.

The costs associated with the implementation of each option are considered in the next part of the survey, where respondents are asked how much they would be willing to pay, as an entrance fee, if any option were implemented. The format chosen to elicit WTP is an open-ended question. A summary of each option's characteristics is presented as a reminder. The objective of this option is to make people think specifically about how much they would pay as an entrance fee if the money were used to implement an option.

In the fourth section, visitors are asked about their trip to the Galapagos National Park, about their tour operator, and about the cost of the trip. The final section includes questions based on standard socio-economic information. These data are used in the statistical analysis of the survey as a whole.

There are four versions of the survey. They are identical except for the number and/or order in which the options are evaluated. This was done, so we could test several embedding and ordering biases that are generally associated with this type of CV methodology. The following orders were used in the various surveys:

Survey I	:	option A, option B, option C
Survey II	:	option A, option B
Survey III	:	option A, option C
Survey IV	:	option C, option B, option A

Management alternatives

The management alternatives evaluated in this study were designed to reduce ecological damage to the Galapagos Islands. These include:

- improve facilities so more people will do less damage;
- provide better information on conservation within the park;
- increase control in the park through more park personnel;
- limit visitation through quotas, specifically, a 20% reduction in the number of visitors; and
- charge higher fees to maintain revenues or fund new management programs

The options were fully explained to each respondent, so as to minimize the possibility of misunderstandings on exactly what was to be evaluated. Each option was presented as follows:

Option a: status quo

This option implies the continuation of the current policies and management practices in the Galapagos. As a consequence, park conditions will remain as they are today. With this option, no improvement in management practices in the Galapagos will occur.

Option b: environmental regulation and enforcement

With this option, the government (through the park service) will institute regulations designed to reduce environmental damage and the impact on wildlife due to tourism. The following options would be implemented: 1). restrict the number of visitors to the park by 20 percent and 2). require tour operators to discuss park regulations and enforce them.

Option c: waste management, enforcement, more park personnel, and education centers

This option involves reducing park visitation, increasing enforcement and adding more park personnel, improving waste management practices, and providing new educational centers to teach visitors the importance of conservation and park protection in the Galapagos, and to provide information on the park's attractions. The following actions would be implemented: (a) restrict the number of visitors to the park by 20%, (b) require tour operators to discuss park regulations and enforce them, (c) improve the waste management system at the park, (d) enforce the marine reserve zone, (e) increase the number of rangers and guides by 20% and double the number of signs, and (f) increase the number of educational centers to at least one at each major site.

Data collection

Fieldwork in the Galapagos National Park consisted of requesting tourists to fill out the survey form at the airports before leaving. Face to face interviews were carried out between February and April of 1998. Field work was carried out every day of the week at the airport after tourists had completed their visit. The questionnaire was tested and adjusted for a week and then evaluated and refined. The modifications consisted basically of rephrasing some of the questions to avoid confusion, and adjustment of some of the scales used to evaluate tourists' perceptions of the "quality" of the park. The researcher was assisted in survey application by four previously trained interviewers; most with post-graduate education and a good knowledge of the park. The decision to administer the survey at the airport was made after the pre-test phase of fieldwork. The intent was to cover, to the extent possible, all types of tourists. At the same time, an effort was made to have a representative sample of the different socio-economic groups that visit the park. Visitor characteristics and distribution are affected by the high cost of visiting the park. Interviews took between 35 and 45 minutes.

Results

Most of the results from the survey come in the form of descriptive statistics. Since the main objective was to present interviewees with a survey instrument that would encourage assessment of perceptions of the park, most of the questions where designed to help tourists recreate the experience.

Therefore, they were asked to rank their answers on "perception scales". In this section, some of the main results are discussed (see Machado and Lee [forthcoming] for a complete analysis of these results and their implications for tourism in the Islands).

Results for selected variables

In this section we present and discuss some of the results of the 1998 Galapagos Visitor Survey. The first section of the survey was intended to assess the familiarity of tourists with conservation issues worldwide and in the Galapagos National Park. Of all respondents, 84.98% indicated that they had heard or read about conservation efforts several times in the preceeding year. When asked how concerned they are about conservation issues, on average the response was 5.59 on a 1 to 7 scale (7 being greatly concerned). This implies that most visitors to the GNP are not only familiar with conservation issues, but also they are concerned about protecting the environment. Further, when they were asked about conservation issues in the Gálapagos, the average response was 6.18 on a 1 to 7 scale (7 being greatly concerned), implying that most visitors to the NPG are concerned about protecting the park.

In this section, they were also asked to rate their overall experience in the Galapagos. On average, the response was 6.20 on a 1 to 7 scale (7 being excellent).

Management issues in the Galápagos

Visitors were asked to rate "how important" they consider certain management issues to be on a scale of one to seven, one being not important, and seven being highly important. On average, visitor rated improving conservation as the most important issue, with a score of 6.5. They also rated preventing environmental damage due to excessive tourism and preventing illegal fishing in the Galapagos as very important with an identical score of 6.3. Lastly, they rated (in order of importance) increasing local people's share of tourism revenues; improving infrastructure in local communities; and improving infrastructure at visitor centers, with scores of 5.05, 4.7, and 4.46, respectively.

Visitors were also asked to rate "how much of a problem" human impact, contamination of the environment, and natural resource use and depletion are in the park, on a 1scale of one to seven, with one being not a problem, and seven being a severe problem. First, visitors were asked about the human

impact as a problem in the park. The issues they were asked to rate were: too many residents in the islands; negative impact of tourists on sites; negative impact of tourism on local culture; and, too many visitors. On average, visitors rated all to be a problem, with an identical score of 4.5 for each of these issues.

Secondly, visitors were asked about the contamination of the environment. The issues they were asked to rate were: soil/water contamination; litter and waste management; and erosion. On average, visitors rated all to be a problem in the park, with an identical score of 4.6 for each.

Lastly, they were asked to rate the problem of natural resource use and depletion. The issues they were asked to rate were: fishing and marine wildlife extraction; loss of species diversity; and, wildlife harassment and poaching. On average visitors, rated all to be moderate problems, with scores of 5.4, 5.6, and 5.5 respectively. From these results, we conclude that visitors perceive natural resource depletion to be a more severe problem in the park than either human impact or contamination.

Management practices

Visitors were asked to rate "how effective" the management practices described to them will be for improving the conservation of the Galapagos National Park. They were asked to rate "effectiveness" on a one to seven scale; one being not at all effective, and seven being very effective.

First, visitors were asked to rank on the scale of one to seven the overall effectiveness of all the conservation practices presented to them. On average they rated them at 4.25. Then, visitors were asked to rate each option individually. On average they rated option A at 4.7; option B at 4.47; and, option C at 5.3. The results indicate that visitors perceive option C to be the most effective for improving the management of the Galapagos. However, they rated option A slightly higher than option B.

Socio-economic data

The last section of the survey was dedicated to identifying the socio-economic characteristics of the interviewees. Fifty-one percent of the tourists (who answered the survey) were female and 49 percent were male. The average age of the visitor was 44.65 years. In terms of education levels, 32.68 percent were college graduates, 45.6 percent had a graduate degree, and 17.3 percent had gone to high school and had some college. These results indicate that a high percentage of visitors have higher degrees. This, in turn, is reflected in

the average household income (before taxes), which was reported at 93,663.55 USD.

Visitors were also asked if they have given money to any environmental cause in the last three years; 77.6 percent answered yes, but, when asked if they have volunteered time, only 29.4 percent answered affirmatively.

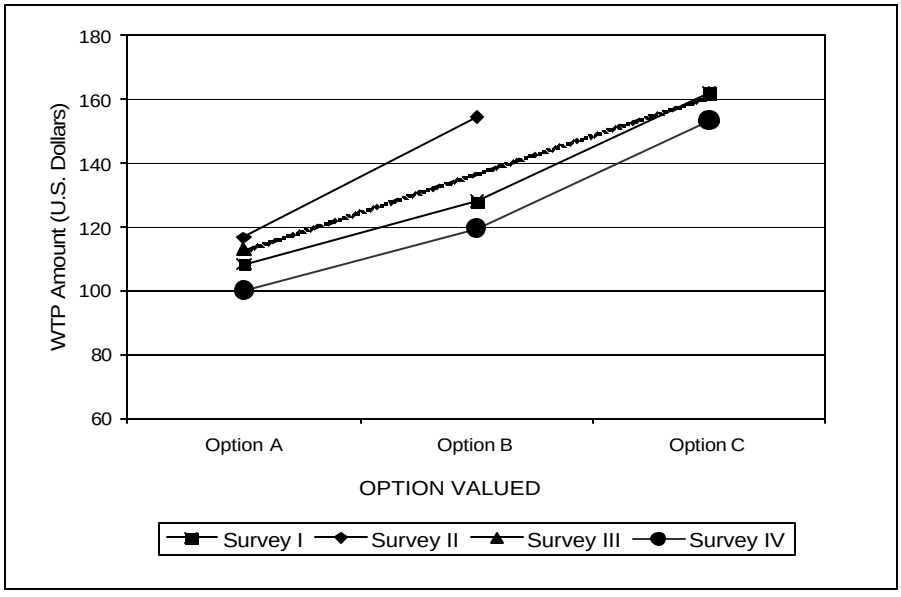
Preliminary results on WTP estimates

We begin our data analysis by describing two problems with the CV methodology: scope effects and ordering effects. The results on WTP estimates are summarized in Table 14.1:

Table 14.1 WTP Estimates as an Entrance Fee (in USD)

SURVEY I	SURVEY II	SURVEY III	SURVEY IV
the order of the questions is: option A, option B, option C	the order of the questions is: option A, option B	the order of the questions is: option A, option C	the order of the questions is: option C, option B, option A
OPTION A: Mean 108.30; Median 100.00	OPTION A116.58; 100.00	OPTION A112.97; 100.00	OPTION A99.96; 80.00
OPTION B: 127.98; 100.00	OPTION B154.30; 125.00	OPTION B119.58; 100.00	OPTION B162.02; 140.00
OPTION C161.92	OPTION C140.00	OPTION C153.35	OPTION C150.00

Figure 14.1 WTP Curves by Survey Type



The results indicate that depending on the option being valued, tourists are willing to pay higher fees when conservation and management practices on the Galapagos Islands are being offered. The magnitude of the WTP varies slightly depending on the type of survey used. Figure 14.1 depicts the WTP curves. In that figure it can be seen that the WTP curves do not exhibit diminished marginal utilities. Initial inspection of these results may lead to the conclusion that, for the range of options used, the WTP curves exhibit increasing marginal utilities. This could be explained in two ways: First, given the options offered, respondents are willing to pay more when more conservation and management practices are put into practice. In other words, within the range of options offered, respondents have not identified a point at which marginal utility decreases.

Second, the phenomena can also be explained by anchoring. The respondents know how much option A is worth to them, since they have experienced it. In addition, they have to pay an entrance fee of 80 US Dollars, which provides for an anchoring value at the lower end of the options scale. If we assume that the WTP value stated for option C is the highest they will pay for any improvement in management practices in the Galapagos (i.e., respondents do not know the effect or value of such improvements), then, it can be argued that this value corresponds to the point where their utility reaches its highest level. If that is the case, then they are also anchoring their WTP at that point. This implies that the underlying assumption of diminishing marginal utility holds. This analysis is presented and discussed in greater detail in Machado et al. (Forthcoming). That will explain why the WTP values for option B in survey types I and IV are similar (statistically the same), and the value of WTP for option B in survey type II is much higher. This argument holds for the WTP value for option C since it is statistically the same for survey type I, III, and IV, suggesting an anchoring value at the upper end of the option scale. Furthermore, the value of WTP for option B in survey type II is statistically the same as the value of WTP for option C in survey type I and IV. Within this framework, then, it is hypothesized that the true WTP value for option B is based in survey I or IV, and not on survey II. And, again, the WTP value of option B from survey II is the highest they will pay for any improvement in management practices in the Galapagos (i.e., respondents do not know the effect of such improvements).

Conclusions and recommendations

Protected areas management decisions are, to a great extent, economic decisions and, consequently, economics has an important role to play in

management practices. Furthermore, tourism in protected areas is an important activity in the economic development of many non-industrialized countries.

Knowing the economic value or at least, the income generating power, of protected areas and its contribution to local and national economies is a strong incentive to preserve these natural areas.

Funding programs will also help to make economic agents, both public and private, pay for the environmental services generated by protected areas. Therefore, these services would be better internalized in public and private decision making and there would be gains in economic efficiency because market prices would better reflect the value of these areas.

The results of the CVM applied in this study indicate that visitors are willing to pay higher entrance fees when conservation practices are being funded. On average, visitors are willing to pay 109.45 USD for option A. That is, even when no conservation programs are being funded, visitors are willing to pay 30 USD more than the current entrance fee. When conservation practices are being funded using entrance fees, visitors are willing to pay more for more comprehensive programs. On average visitors are willing to pay 123.78 USD for option B, and 159.09 USD for option C.

References

Adamowicz, W.L., J. Louviere, and M. Williams

1994 Combining revealed and stated preference methods for valuing environmental amenities. Journal of Environmental Economics and Management 26: 271-292.

Altaf, A. and J. Hughes

1994 Measuring the Demand for Improving Urban Sanitation Services: Results of a CV Study in Oaugadougou, Burkina Faso. Urban Studies 31(10): 19-30.

Arrow, K., Braatz, S.

1992 Conserving Biological Diversity: A Strategy for Protected Areas in the Asia-Pacidfic Region. World Bank Technical Paper No. 193. Asia Technical Department Series. World Bank.

Braatz, S., Davis, G., Shen, S., and Ress, C.

1992 Conserving Biological Diversity. A Strategy for Protected Areas in the Asia-Pacific Region. The World Bank Technical Paper No. 193. Asia Technical Department Series.

Chestnut, L.G. and R.D. Rowe.
1990 New National Park Visibility Value Estimates. *In* C.V. Mathel (editor), Visibility and Fine Particles. Air and Waste Management Association. Pittsburgh, PA.

Coccossis, H. and Nijkamp, P., eds
1995 Sustainable Tourism Development. Avebory. Protected Areas. A New Look at Benefits and Costs. Island Press, Washington D.C. Covelo, CA.

Negelbrcht, W. and P. Van Der Walt.
1993 Notes on Economic Use of the Kruger National Park. Koede 36(2): 113-119. Pretoria. ISSN 0075-6458

Grifo F.
1995 Biodiversity Conservation: Incentives from biomedicine and Biotechnology. INTERCIENCIA 20(4): 188-193.

Harrison, J., K. Miller, and J. McNeely.
1982 The World Coverage of Protected Areas: Development Goals and Environmental Needs. AMBIO 11(5): 238-245.

Hausman, J.A., ed.
1993 Contingent Valuation: A critical assessment. Contribuions to economic analysis. Amsterdam: North-Holland.

IUCN and Inter-American Development Bank (BID).
1993 Financing Protected Wildland Systems. *In* Parks and Progress: Protected Areas and Economic Development in Latin America and the Caribbean. Valerie and Barzetti (editors), Pp. 159-185. Washington D.C.

Jakobsson, K., and Dragum, A.
1996 CV and Endangered Species: Methodological Issues and Applications. New Horizons in Environmental Economics.

Kahneman, D., Slovic, P., and Tversky, A., eds.
1982 Judgement under Uncertainty: Heuristics and Biases. Cambridge: Cambridge University Press.

Kramer, R., Sharma, N., and Munashinghe, M.
1995 Valuing Tropical Forest. Methodology at Homburg, Germany.

LaPage, W.
1994 America's Self-funding Park System: The New Hampshire Model. *In* M. Munasinghe and J. McNeely (editors), Protected Area Economics and Policy. WB and IUCN. Washington D.C.

Leclerc, A.
1991 User Fees in Natural Parks-Issues and Management. Project Management Cost Recovery, Environment Canada.

Lindberg, K
1991 Policies for Maximizing Nature Tourism PhD. Dissertation. Ithaca, NY: Cornell University..
Machado, K., Schulze, W., D. Lee.
2000 Embeddedness and Calibration of WTP Values for Conservation Programs. Unpublished Manuscript. Cornell University.
Machado, K and D. L Report
1998 Galápagos National Park Visitor Survey. Unpublished Manuscript. Cornell University,
McClelland, G.H., W.D. Schulze, J.K. Lazo, D.M. Waldman, J.K. Doyle, S.R. Elliot and J.R. Irwin.
1992 Methods Measuring Non-Use Values: A Contingent Valuation Study of Groundwater Clean-Up.Report for the US Evaluation and Funding Mechanisms for Protected Areas: A Venezuelan Case Study. M.Sc. Thesis. Cornell. University. 160pp.
Mitchell, R.C. and Carson, R.T.
1989 Using Surveys to Valuate Public Goods: The Contingent Valuation Method. Washington D.C.: Resources for the Future.
Moran, D.
1994 Contingent Valuation and Biodiversity: Measuring the User Surplus of Kenyan Protected Areas. Biodiversity and Conservation 3:663-684.
Munanguishe, M. and McNeely, J., eds
1994 Protected Area Economics and Policy: Linking Conservation and Sustainable Fund Cleanup (Forthcoming).
Schulze, W., McClelland, G., Doane, M., Balestari, E., Boyce, R., Hurd, B., and Simenauer, R.
1994 An Evaluation of Public Preferences for Superfund Site Cleanup. Volume 1: A preliminary assessment. And Vol. 2: Pilot Study. Report prepared for USEPA.
Smith, V.L. and Eadington, W.R.
1994 Tourism Alternatives. London: Wiley.
Southgate, D. and Whitaker, M.,
1994 Economic Progress and the Environment: One Developing Country's Policy Crisis. Oxford University Press. New York.
Swanson, T.
1992 Wildlife and Wildlands, Diversity and Development. In: Swanson T. and B. Barbier. Economics for the Wilds: Wildlife, Diversity, and Development. Island Press. Washington D.C. 12-14.

The Nature Conservancy (TNC)
1992 Paying for Parks. Workshop on Conservation Finance. IV World Parks Congress.
TNC.
1995 Galapagos Marine Resource Reserve: A Pre-investment Analysis for the Parks in the Peril Program.
USNPS
1989 Recreation Fee Guideline. National Park Service (NPS-22)
Wells, M.
1993 Neglect Biological Richness: the Economics of Nature Tourism in Nepal. Biodiversity and Conservation, 2: 445-464.
Wells, M. and Brandon, K.
1992 People and Parks: An Analysis of Projects Linking Protected Area Management with Local Communities. Washington D.C: World Bank.
Whittington, D., J. Briscoe, X. Mu. and W. Barron. 1990. Estimating the Willingness to Pay for Water Services in Developing Countries: A Case Study of the Use of CV Surveys in Southern Haiti. Economic Development and Cultural Change 38: 293-311.
WTO
1995. World Tourism Organization News.

Chapter 15

Problems Associated with the Sale of Timber in the Buffer Zone of the Cotacachi-Cayapas Ecological Reserve

Marcelo León Jara

The State model for import substitution industry favored the growth of the industrial sector as the driving force behind economic development. The role assigned to the agricultural sector—and, thus to the timber and forestry sectors—was as provider of raw materials and abundant and cheap labor. The protectionist policies underlying this model provided for the appearance of monopolies in the timber industry.

The factors cited gave rise to distortions in the timber market and eliminated the economic incentives that a free market normally generates. This process led to a decline of investments in timber activities and the elimination of an economic option for peasant communities in possession of vast extensions of forests, which could have obtained income through the local management of their forestry resource.

These market failings continue today and are reflected in the low price of timber, both standing and cut; in Borbón, the former goes for six dollars per tree, while the latter brings twelve dollars per cubic meter. These prices do not cover operating costs, and may even represent losses on the part of communities and owners of the forest. In addition, problems exist in the areas of regulation, information, intermediation, and forest extraction techniques, as well as in the availability of credits.

These are some of the major elements involved in the sale of timber in the buffer zone of the Cotacachi-Cayachi Ecological Reserve (RECC) which have led to both environmental and socio economic problems, phenomena which occur simultaneously and which perpetuate a vicious circle of poverty and environmental degradation.

Forest exploitation in the buffer zone of the RECC

Timber production in the buffer zone of the RECC takes place exclusively through the port of Borbón. Timber production data, provided in Table 15.1, corresponds to forests located in the lower basin of the Cayapas, Santiago and Onzole rivers, with an area of influence of approximately 250,000 ha, including the buffer zone of the RECC.

Table 15.1. Ecuador: Participation of the Borbón Zone in National Timber Production

Years	Borbón (m^3)	National Total (m^3)	%
1994	93,519.88	1,130,275.64	8.27
1995	100,539.36	1,238,590.36	8.12
1996	91,399.84	1,851,818.93	4.94
1997	86,356.99	1,417,146.96	6.09

Source: INEFAN. For Borbón: Levantamiento de Guías de Movilización de Productos Forstales, años 1994, 1995, 1996 y 1997; For Totals for nation: División de Manejo Forestal, Estadísticas Internas (1997).

Timber production in Borbón accounts for an average of 8% of total timber production for the nation, equivalent to about 100,000 cubic meters of lumber. This satisfies the need for primary forestry material for the province and the country, both in terms of sawed lumber and of logs required by the construction industry. On average, 8,000 to 12,000 hectares are clear cut per year, resulting, for the most part, in abandoned deforested areas. Logging is not carried out in a technical fashion using even the minimal requirements for sustainable management, and this leads to environmental destruction on a grand scale. These figures are cause for concern as they reflect pressures on the nearby RECC which are part of the Chocó, one of the world's ten biodiversity hot spots.

Exploitation of forests as a model for concentration and exclusion at the national level

By analyzing records from the National Accounting System of the Central Bank of Ecuador in terms of distribution of income, we have calculated values related to the Wholesale Value Added, for the subcategory of "forestry, felling and cutting" (classified as CIIU). We further divided each of these into compensation for the following factors: production, capital, labor and taxes paid to the state.

The RVA Value Added (RVA) is defined as the "new wealth" which represents income generated or added to the economic system or branch of production, per year. This income is distributed primarily among the following production factors: employees' salaries (ES), which include wages and salaries, plus social security payments; the Raw Surplus from Exploitation (RSE) is the net surplus of exploitation minus the consumption of fixed capital, which results in payments to the capital factor, or profits; and, Net Indirect Taxes (NIT) which is the result of the difference between raw indirect taxes minus subsidies.

Primary distribution of income: RVA = ES = RSE = NIT

The relations between ES/RVA, RSE/RVA and NIT/RVA constitute the relative participation of labor, capital and the state in the "new wealth" created. The data in the Table 15.2 indicate the primary distribution of income at the national level, for the category of felling and cutting of forests; as is evident, the wealth is highly concentrated and this concentration is on the increase.

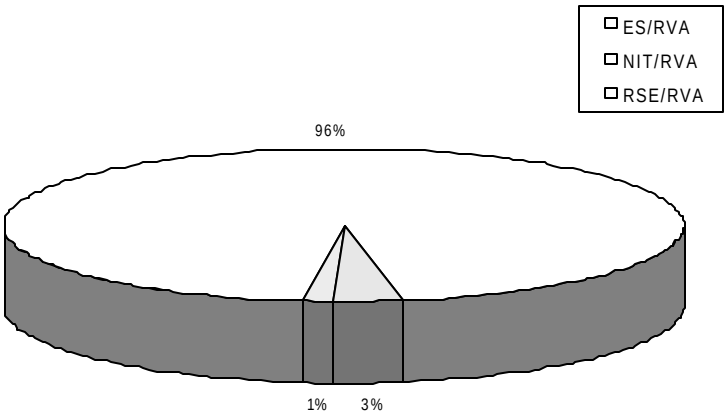
Table 15.2 Forests, Felling and Cutting

(in millions of current sucres)

Years	RVB	ES	NIT	RSE	ES/RVA	NIT/RVA	RSE/RVA
1973	535	18	7	510	3.4%	1.3%	95.3%
1974	801	24	6	771	3.0%	0.7%	96.3%
1975	1,019	25	10	984	2.5%	1.0%	96.6%
1976	1,264	29	11	1,224	2.3%	0.9%	96.8%
1977	1,689	31	9	1,649	1.8%	0.5%	97.6%
1978	1,918	33	10	1,875	1.7%	0.5%	97.8%
1979	2,230	43	12	2,175	1.9%	0.5%	97.5%
1980	2,644	57	14	2,573	2.2%	0.5%	97.3%
1981	3,098	60	20	3,018	1.9%	0.6%	97.4%
1982	3,885	61	21	3,803	1.6%	0.5%	97.9%
1983	4,963	68	22	4,873	1.4%	0.4%	98.2%
1984	6,649	87	32	6,530	1.3%	0.5%	98.2%
1985	8,311	107	41	8,163	1.3%	0.5%	98.2%
1986	11,982	140	53	11,789	1.2%	0.4%	98.4%
1987	21,694	213	71	21,410	1.0%	0.3%	98.7%
1988	32,702	301	153	32,248	0.9%	0.5%	98.6%
1989	48,784	427	239	48,118	0.9%	0.5%	98.6%
1990	77,179	579	327	76,273	0.8%	0.4%	98.8%
1991	118,290	832	606	116,852	0.7%	0.5%	98.8%
1992	193,067	1,495	1,017	190,555	0.8%	0.5%	98.7%
1993	286,344	2,422	1,088	282,834	0.8%	0.4%	98.8%
1994	379,339	4,354	1,714	373,271	1.1%	0.5%	98.4%
1995	471,624	5,266	2,430	463,928	1.1%	0.5%	98.4%

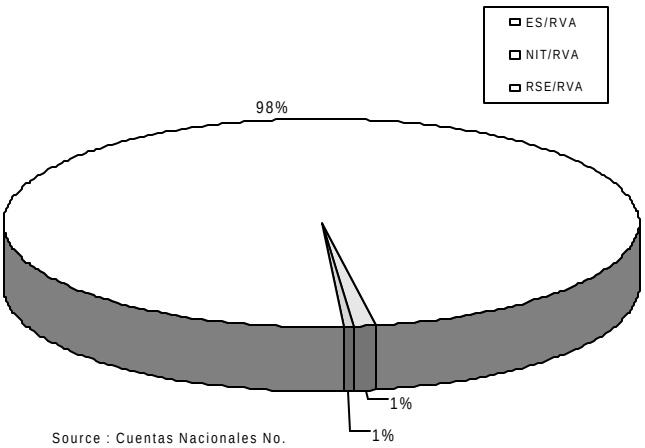
Source: Cuentas Nacionales No. 18, Banco Central del Ecuador (figures compiled by author).

Figure 15.1. Timber, Felling and Cutting
Primary Distribution of Raw Value Added
Percentage
1973



Source : Cuentas Nacionales No. 18 , Banco Central

Figure 15.2. Timber, Felling and Cutting
Primary Distribution of Raw Value Added
Percentages
1995



Source : Cuentas Nacionales No. 18 , Banco Central

In effect, the Raw Surplus Exploitation rose from 95.3% in 1973 to 98.4% in 1995, at the expense of employee remunerations which, in the years cited, decreased from 3.4% to 1.1%. This is demonstrated in the figures below, which provide an illustration of the degree of concentration of wealth in timber exploitation in the forests of Ecuador.

Payment for labor and income for the owners of forests in Borbón, from a community point of view

During the months of August and September of 1998, the communities of Calle Manza y Majua felled trees, and subsequently sold the logs in the market in Borbón for USD 36.35, a price higher than that in effect at the time.

This period of production was used as a base for cost studies and analyses of profits. Below the results are presented in the context of three production scenarios.

1. With *minga* labor: The *minga* is a traditional system of community labor for which compensation is in kind, that is, food and liquor, rather than cash, during the days spent logging. When profits result, a good portion of these are used for community needs and whatever is left over is paid to individuals. In this first scenario, collective and individual profits were as follows:

FINAL PAYMENTS	SUCRES
Price paid by company for solid cubic meter without bark	200,000.00
Average production cost for solid cubic meter without bark	132,062.59
Apparent profit per solid cubic meter without bark	67,937.41
Average wage each worker should receive per cubic meter	1,663.17

2. With wages paid in the area: This second scenario is based on the wage paid for manual labor in the area. At the time of the study, in mid-1998, the daily wage was 15,000.00 sucres, equivalent to USD 2.72. The results are indicated below:

If the communities had adopted this production strategy, monetary compensation of laborers would have resulted in losses amounting to a little more than 11% of the price paid for logs.

FINAL PAYMENTS	SUCRES
Price paid by company for solid cubic meter without bark	200,000.00
Average production cost per solid cubic meter without bark	227,218.25
Apparent profit per solid cubic meter without bark	-27,218.25
Average loss to be paid by each worker per cubic meter	- 253.32

3. With the minimum wage in force at the time: The third scenario is hypothetical, based on the assumption that compensation will be at the minimum wage established by the national government (33,007 sucres per day at the end of 1997). The results for this production strategy are as follows:

   The results are eloquent; demonstrating that only through *mingas* is it possible for loggers to make a "business" out of this activity.

FINAL PAYMENTS	SUCRES
Price paid by company for solid cubic meter without bark	200,000.00
Average production cost per solid cubic meter without bark	411,401.75
Apparent profit per solid cubic meter without bark	-211,401.75
Average loss to be paid by each worker per cubic meter	- 2,943.92

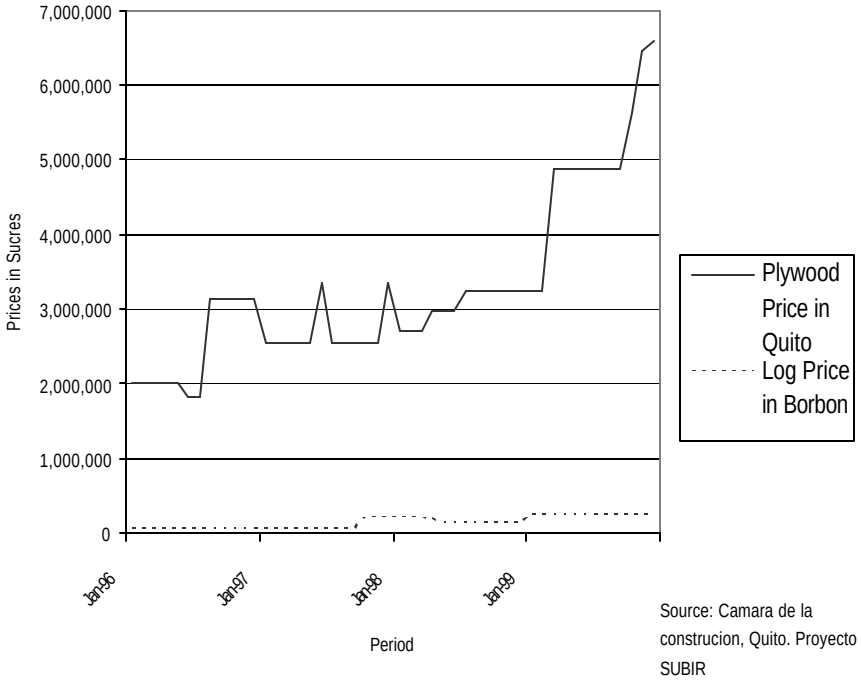
There are various repercussions involved in this activity, but they essentially come down to two elements already mentioned: poverty among residents of the communities and the loss of the forest resource, in terms of volume, quality and coverage, as well as the gradual disappearance of biodiversity and the progressive appearance of secondary forests of low economic and biological value.

The behavior of prices for raw materials and finished products

The behavior of prices in these categories is unequal: raw material barely increases in price over time while the prices for finished products --plywood, in this case--increase dramatically. The reasons for this difference are due to the very nature of the two types of economic agents involved in all aspects of the production process which come together in the market, that is, the powerful

timber industry and forest communities. Figure 15.2 demonstrates prices paid for plywood in Quito and prices paid for logs in Borbón, per cubic meter in sucres and dollars.

Figure 15.2. Plywood Prices in Quito and Log Prices in Borbon



Source: Camara de la construcion, Quito. Proyecto SUBIR

Figure 15.2 also shows prices in sucres for logs sold by the communities belonging to the Community Forest Network, with advice from SUBIR in the Borbón area. Although the prices obtained through this strategy were much higher than those in force in the Borbón market, this tendency could not be sustained because of the firm decision on the part of logging companies to refuse to recognize a higher price in order to nip the community organizing process, begun in 1996, in the bud. In addition, drastic reduction in prices in real terms resulted from the crisis being experienced in the national economy, a crisis characterized by the severe devaluation of the sucre and persistent inflation, the highest in Latin America.

Table 15.3 contains a comparison of price behavior for logs in Borbón and average plywood prices in Quito, per cubic meter, compared with the

behavior of the Consumer Price Index (inflation) and the Construction Price Index.

Table 15.3 Behavior of Prices for Logs and Finished Wood Products (Plywood) and Consumer Price and Construction Price Indices

ANALYSIS TABLE	Jan. 1999	Dec. 1999	Increase
Price/m^3 logs, Borbón, sucres	220,000.00	260,000.00	18.2%
Price/m^3 logs, Borbón, dollars	31.40	13.00	-58.6%
Price/m^3 plywood C, Quito, sucres	3,343,505.00	6,589,611.00	97.1%
Price/m^3 plywood C, Quito, dollars	478.00	329.00	31.2%
Consumer Price Index (CPI), Nov. 1999			53.3%
Construction Price Index, Nov. 1999			54.6%

Note: With approximately 2m^3 of log, 1m^3 of plywood is produced.
Source: Market prices in Borbón. Almacenes Peña Durini. INEC and the Chamber of Construction, Quito

The price increase in Borbón for logs is a third lower than the inflation rate, whereas plywood prices increased at half the inflation rate during 1999. Analysis of the behavior of the dollar indicates a drop in the price of finished wood products that is much less than is the drop in prices of raw material. This demonstrates that the unequal movement of prices goes hand in hand with the power to fix them. This is one of the ways wealth is concentrated to the detriment of those sectors unable to quickly raise prices.

Conclusions

Around 8% of all lumber produced in the nation comes from the Borbón area. This represents approximately eight to twelve thousand hectares deforested per year. The concentration of wealth in the forestry sector is among the highest in Ecuador, and this results in a highly inequitable distribution of income. There is an absolute disparity in the behavior of prices of raw materials

and finished products based on this material, in this case, timber, which explains the extent of structural differences between economic agents.

References

Central Bank of Ecuador. National Accounts, No. 18, 1995.
----. Monthly Statistical Information, February 2000.
Chamber of Construction, Quito. Price list for construction materials, 1996-1999.
Marconi S. and P. León. Notas sobre cuentas nacionales. Cuenca, Instituto de Investigaciones Sociales, IDIS, 1984.
Vivanco O. and J. Serrano. 1998. Suministro de Madera de los Productores a la Industria y
Determinación del Tabulador de Costos. Quito, CARE-Project SUBIR, September 1998.
Various documents from the Marketing component for Project SUBIR, CARE Ecuador, 1996-2000.

Chapter 16

The Community Forest Network: A Tool for Strengthening Community Capacity

Marcelo León Jara

Small, independent loggers tend to be characterized by low levels of organization, their inherent disadvantages when dealing with middlemen and the timber industry, and their lack of resources for improving their condition as timber suppliers. These factors led to the creation of the Community Forest Network (CFN), the first association of lumber producers in Ecuador made up of communities who own forests and who are interested in managing forest resources in a sustainable fashion.

The objective of the CFN is to create a united front for the purpose of selling lumber while at the same time protecting the economic interests of the forest communities in the northern region of the province of Esmeraldas. Members attempt to improve market prices by offering wholesale prices to various communities, thus improving their negotiating and sales position vis-a-vis buyers, and eliminating the middleman and dealing instead directly with the wholesale buyer.

In order to be part of the CFN, a community must fulfill a series of requirements which include: possession of forest, interest in sustainable management of the forest, organized forest production through a community forest committee, and the support and approval of community members. The CFN offers a number of benefits to member communities, including technical assistance, better prices and a stronger negotiating position, regular training in forestry, legal and market matters, support of other CFN members, and access to market information on prices and buyers.

Major problems in the sale of timber from native forests

Some of the problems associated with the sale of timber from native forests are the result of practices in the production stage. These include: poor quality of lumber due to inappropriate harvest practices; lack of protective measures and poor management and handling of trees; and lack of technical knowledge in the preservation and drying of wood leading to sale immediately after felling in order to prevent damage. All of these are problems that occur daily among peasants in Borbón and neighboring communities. The result is that the communities suffer a loss as lumber receives low ratings and low prices.

Producers also face a number of problems in marketing their product. To begin with, trees are felled prior to negotiating their sale. As a result, the producer loses virtually all control and is forced to sell his product as quickly as possible to avoid damage; this is no position to look for buyers offering a better price.

In addition, overproduction (especially of logs) is a problem during the rainy season and during holiday periods, such as Holy Week. This leads to a fall in prices which do not recover for months.

Verbal agreements are another potential problem. When there are differing interpretations of the agreement, it is difficult for producers to establish new agreements with buyers. Whereas formal contracts are seldom drawn up in the area, there is a need to note the sale conditions in writing. However, because there are few buyers in the zone, sales options are limited, and producers generally have no choice but to accept prices fixed by the customary buyers. This problem is exacerbated by the fact that producers have no steady flow of information on prices and markets. Since they are not aware of alternatives, they are in a weak negotiating position *vis-a-vis* buyers who are well-informed.

Another problem is the lack of flexible, diversified production. Sales are in the form of logs or boards. Little knowledge of market demand is an obstacle to organization and improvement in conditions under which producers sell their product. This problem is further complicated by the lack of knowledge on rating procedures, often leading producers to sell their lumber for prices lower than those justified given the quality of the product.

Problems due to the lack of organization among forest producers

Individual producers and communities offer a very limited quantity of lumber for sale. In addition, there is no sales organization that brings together

forest producers and controls the volume available. Thus, they are at a disadvantage in negotiating with buyers.

In addition, the community does not include in the cost of production the labor provided through *mingas*, that is, an ancient system of community labor involving a group of persons - family members or friends of the owner of the trees to be felled - who collectively fell and saw the trees, open trails to take the logs to a river, tie them together to form a raft and take the lumber to the point of sale. Workers generally receive food and drink, under the *pasamanos* system, i.e., "today I work for you, tomorrow you work for me..."

Organized efforts to sell lumber

Lumber available in the market is produced and sold in two ways: individually and communally. The first involves producers who fell trees on their farms. Sometimes a peasant will organize a *minga* to fell and sell his trees, absorbing the costs. Generally, he sells his product to middlemen, a practice that involves a series of disadvantages: low prices for a small volume of lumber; prices, quality ratings and measurements determined by the buyer; lack of guaranteed buyers and prices; competition among small producers; the high cost of the *minga*.

Lumber production at the community level involves the exploitation of community forests and community organization in the sale of the product. The quantity of lumber produced and sold is relatively large. Thus, the community requires a prior contract in which price, and rating and measurement systems are established beforehand. The community generally seeks buyers from the large timber interests.

While this type of production and sale provides certain benefits, nevertheless the community is at a disadvantage in the lumber market. In addition, there are problems at times in the organization of tasks and the division of profits. In any event, community members continue to compete with other small producers.

Different sales practices

Sale by the tree

When standing timber is sold, the buyer selects the trees, pays the price agreed upon to the individual or community, and assumes responsibility for felling. Buyers are usually middlemen who sell the timber to large lumber companies. Price is calculated per tree rather than per cubic meter, and is

extremely low, fluctuating between four and six dollars per tree which usually represents from four to seven or eight cubic meters of commercial lumber.

The disadvantages of this sales mechanism are numerous. To begin with, middlemen seldom employ community residents as they use their own crews. Thus they generate no employment locally. Nor do middlemen comply with norms for the protection and care of the environment as the forest is not theirs and there exist no controls or provisions for verification of compliance by forestry authorities at the site.

An additional problem involves sale by the tree rather than by cubic meter. The owner of the trees inevitably loses because, as mentioned above, the amount of lumber in a tree fluctuates from four to eight cubic meters. But this difference is not taken into account in negotiations, as a single unit price is fixed. As indicated, the per tree price range is between four and six dollars.

However, there are certain potentially positive elements in this type of sale, which depend on the power of negotiation of the seller and the willingness of the buyer to deal honestly. The benefits are generally related to forests difficult to access. In these cases, the middleman uses his crew and machinery, the latter being an element which the seller has no access to. In addition, the roads opened by the middleman to get machinery in and lumber out will then be available to the community, which can also negotiate the use of the buyer's machinery for the construction of other infrastructure needed by community residents.

Nevertheless, these potential advantages in the sale of standing timber do not justify the low prices paid for the product, nor the destruction of the forest involved.[1]

Sale of lumber to middlemen at a waterway

This sales practice requires that the owners of a forest fell the trees and transport them to a riverbank or the edge of a body of water, where they are delivered to middlemen. The trees are then cut or tied together to form a raft that is floated down the river. This type of sale, at the edge of a waterway, is more often used for sawed boards than for logs.

The disadvantages of this system are several. The producer has to wait for a middleman to appear in order to sell his lumber. The middleman determines prices, measurement and quality rating. He is at a further advantage given that he has information the community lacks, in addition to money and contacts with buyers outside the community.

Potential positive aspects of this system include a degree of autonomy enjoyed by producers in exploiting their forests. This is beneficial if it leads to

a reduction in the volume of timber felled and does not involve transport of the product to other markets. In any event, the potential advantages depend on the power of negotiation of the owner of the forest. However, we know that in practice said power is minimal, and thus this system does not usually benefit the producer.

Sale of lumber to small-scale middlemen (suppliers)

Lumber is also sold at collection and storage points to small-scale middlemen who may be members of the producers' community. These individuals generally have limited access to capital and occasionally pay on credit. The most evident case of this type of sale involves the community of San Miguel on the Cayapas River. This community buys sawed lumber from other communities upriver, stores the lumber in the community, and when an appreciable volume has been collected, transports the product to Borbón to sell. In addition, prices are determined, quality rated and measurements taken at the collection point. Small forest producers are in favor of this sales mechanism, involving collection and storage at a point in the zone, because they are able to negotiate the sale of small volumes without having to transport the product to other markets. In addition, they are paid immediately and in cash, and the market is known, which fact generates confidence in the seller.

Sale to middlemen in Borbón

Forest producers may take their lumber to Borbón. However, rather than sell directly to large lumber companies, they deal with middlemen for various reasons. First, the large companies seldom buy directly from the producer. In addition, the sellers are unaware of better markets. They generally need to make the sale quickly, particularly if the product was illegally logged at sites where the activity is prohibited. For one or several of these reasons, producers are obliged to deal with middlemen.

The disadvantages involved are the same as those mentioned in relation to other sales mechanisms, and may include additional problems. The lumber is often sold a kilometer or two outside of Borbón to middlemen encountered on the way. These individuals then resell it to the large lumber companies. The price offered is inferior to that which would result from a direct sale. And sellers do not have an opportunity to establish a business relationship directly with a buyer.

Sale of lumber to companies or lumber yards

Producers would be better off selling their product in logs to the large companies located in Borbón. However, while the prices offered by companies are better than those available from middlemen, the producer continues to be at a disadvantage because even these slightly better prices are so low that they do not cover the costs of timber extraction. The large companies maintain this inequitable system. They are the sole and direct parties involved in fixing extremely low prices which are artificially frozen so that they are the beneficiaries of the wealth coming from the forest.

The same is true of boards. The lumber yards in Borbón pay very low prices, much lower than those paid by sawmills and lumber yards in Quito, Guayaquil and other cities in the country, and these, in turn, are inferior to prices paid on the international market.

Producers who sell logs have no option as there are no alternative sales points. The monopsony they face is formed by two large lumber companies and two others which are somewhat smaller but whose practices are the same. The sale of boards would be more beneficial for producers, and they no doubt are aware of this fact.

Principal patterns problems involved in the sale of lumber

Reasons forest producers sell their timber to middlemen include the following:

- Due to custom, friendship and symbolic kinship relations with middlemen.
- Because the middlemen are there when producers are ready to sell their product, as a result of need or desire.
- As a consequence of lack of information on prices, new markets and better customers, that is, ignorance about the fact that they could be earning more if they sold in other markets.
- Because of legal issues, i.e., many producers have no management or work plan, and middlemen "facilitate" the legalization of timber sold.

The major problems producers face in selling lumber are:

- The buyer rather than the seller determines the price of lumber.
- The owners of forests do not calculate production costs, and thus have no basis for determining the price of their product.
- Producers are unaware of measuring methods to convert logs into cubic meters and thus do not participate in the measuring process.
- The owners of forests do not know how to rate and classify timber.

- Forest producers do not have information on lumber prices at the local level, and certainly not at the level of national or international markets.
- The owners of forests fell their trees prior to negotiating with a buyer. They prepare the timber and rafts to bring the product to a sales point without knowing to whom they will be selling it.
- When a prior sales agreement does exist, this is verbal, rather than in the form of a legal contract.
- In many cases, the middleman provides an advance for operational costs, but seldom pays the entire amount due, as a result of which the producer is providing capital to the middleman.
- Middlemen sell to companies which provide advance payment and equipment whereas producers do not enjoy these advantages.
- Profits to the owners of forests are ridiculously low and do not provide the means for the appropriate management of forests.
- There is no free market, based on open and transparent competition that is equitable for all participants in the process; rather, the system is fixed by the buyers, amounting to exploitation pure and simple, either open or concealed, without the least trace of ethics involved.

Alternative: The Community Forestry Network (CFN)

In light of the problems involved in the sale of lumber, described above, an alternative was proposed for the sale of lumber, for the purpose of improving profits through the formation of a union of forest producers who would create a sales front that would have an impact in the lumber market.

Under this system, various forest communities join together to sell their lumber, offering a larger volume and negotiating more advantageous prices and conditions. The quantity of lumber is that produced by all the communities involved in the association.

Exploitation of timber is carried out by each community on the basis of its internal organization. The members of the association create a commission to negotiate conditions of sale with larger buyers or lumber companies.

This initiative was adopted by the SUBIR project to aid communities in gaining power in the market and improve prices through offering a larger volume of lumber. The association of forestry communities would determine conditions for the classification and measurement of lumber, using scales known and accepted by both parties involved in the sale.

There were fears, however, about creating a large entity among forest communities, and that the producers would not comply with the terms of

formal contracts. In addition there was concern about the communities' ability to base their organization and administration on business principles. Nevertheless, it was decided to undertake the development of the association of forest communities, known as the Community Forestry Network (RFC - Red Forestal Comunitaria).

The RFC is an organization that brings together communities which own forests from which residents produce lumber. The communities have organized to manage their forestry resources in a sustainable fashion and to sell the lumber and other forest products at a just price. The RFC's goal is to negotiate favorable sales conditions and to have an impact on the market by means of offering significant quantities of lumber from forests subject to management plans.

RFC objectives

- Organize to create a united front for the sale of lumber under conditions benefitting forest communities.
- Improve prices in the market by means of selling a considerable volume of lumber, achieved by selling together the production of various communities (supply management).
- Improve conditions for negotiations and sale of lumber with buyers.
- Eliminate intermediaries from the sale of the products of RFC members through negotiating directly with wholesalers.
- Provide information on sales opportunities to the best buyers at the best prices.

RFC member benefits

- Technical assistance from Project SUBIR.
- Regular training in matters related to forestry, laws and the market.
- Better prices and negotiating conditions.
- Direct sale to the final consumer at a sales point in Quito.
- Market information on prices, buyers, etc.
- Support from the members of the RFC.

RFC community membership requirements

- The community must own forested lands.
- The community must demonstrate interest in the sustainable management of their forests.
- The community must have the support and approval of all of its members.
- The community must be organized to exploit and administer community forestry activities.

RFC members internal organization

Each member of the RFC organized a Forestry Committee which is made up of a forestry administrator (or the president of the forestry committee), community residents who work in the forest, equipment operators (of power saws, chain saws, aerial cables, etc.), and other community members who are involved in logging activities, such as persons who build and sail rafts, assistants, cooks, etc.

The Forestry Committee is subject to a set of operating regulations approved by the entire community, which cover all aspects related to logging. The regulations include a management plan, a work plan, rules for selection and felling of trees, accounting procedures for all phases of the activity, etc. The presidents of the community and the Forestry Committee represent the community at RFC meetings.

RFC legal status

Communities associated with the RFC form a Business Company, a legal entity which funcions as a company whose shareholders are communities, and the purpose of which is to sell lumber from sustainably managed forests in the open market. As a Business Company, the RFC's structure includes the General Board of Shareholders, the Board of Directors, a President, an Administrator or Manager, and administrative and support personnel.

RFC's sales policies

The major objective of the RFC is to sell lumber, in logs or boards, from managed forests. To that end, the following policies have been developed:

Sustainable Forestry Management: RFC offers lumber from forests exploited on the basis of a work plan and according to sustainable forestry management principles.

Legal lumber: RFC offers legal lumber, that is, lumber that comes with a "Use License" and a "Plan for the Transport of Forest Products," granted to each community by the state's Forestry Institute (INEFAN).

Lumber quality: The RFC offers first class lumber, carefully selected; type "C", or "third class" logs are discarded at the production site, on the basis of ratings accepted by both communities and buyers. Preferred boards are produced using chain saws.

Lumber preservation: RFC assumes responsability for all tasks related to preserving lumber in order to guarantee the quality of the product.

Contract terms: Contracts are signed by both parties involved in the sale. These documents contain the following points:

- Delivery site agreed to by buyer: on company grounds, at lumber yards or at loading points.
- Advance payment: On signing the contract, the buyer pays a percentage of the total sale price.
- guarantee: the RFC offers a guarantee or a bank draft.
- The contract stipulates penalties for any breach of contract.

RFC future activities

Those involved in this project have been discussing a number of activities to improve the RFC sales system. These include:

- Construction of infrastructure, such as lumber yards, drying areas, sawmills;
- Price and market information programs;
- Training programs for sales technicians and other community personnel involved in the RFC;
- Research activities on production, management and treatment of lumber;
- Small business and cooperative programs;
- Marketing programs; and
- Programs to promote and provide credit for producers.

Success of the RFC concept: Conclusion

As of May 1999, the RFC had 22 communities which had received land titles to a number of forests or were in the process of doing so the characteristics of these communities are show in Table 16.1.

Community members are as follows:

1. RIO CAYAPAS: Chispero, Guadual, Majua, Jeyambi, Tsejpi, San Miguel, Viruela, Agua Blanca, Calle Manza, Corriente Grande.

2. RIO SANTIAGO: San José de Tagua, La Peña, Wimbí, Selva Alegre, Guayabal, Playa de Oro.

3. RIO ONZOLE: Pintor, Arenales, Zancudo, Santo Domingo, Colón.

Table 16.1 Basic Socio-economic Facts about RFC Communities and Their Logging Activities

Ethnic composition	Chachis and Afro-Ecuadorian communities
Land surface area	70,800 hectares
Forest cover	26,400 hectares
Families	950
Inhabitants	4,300
Schools	19 with 1,000 students
Teachers	30, maximum 2 per community
Family income	USD 170/year (April 1999)
Forest species	Sande, chanul, chalviande, cuángare, etc.
Non-wood products	Palmetto straw, damagua, gourds, etc.
Lumber production 1998	6,300 m^3 logs
Management plan	In place in 13 communities, being developed in 9

In 1998, 16 communities sold their products to middlemen and 6 to businesses. The average sale price per cubic meter of lumber, in log form, was 143,000 sucres. While this program is in its infancy, the model points the way to helping forest communities overcome economic and legal impediments to their social progress.

Part

4

Developing Local and National Capacity for Integration of Conservation and Development

Indigenous youth marching for biodiversity. Cotacachi, Ecuador.

(*Photograph by Gabriela Flora*)

Chapter 17

Creating Local and National Capacity for Integrated Conservation and Development Projects

Jan L. Flora

The transition period we are currently in (in which the dominant economic, political, and military rules are changing) began in the 1970, but had its roots in the 1960s. This new era in the making has been given the name of *Globalization.* According to McMichael (1996), particularly for countries in the *South* (the terms *developing countries* and *Third World* belong to earlier eras), developmentalism or *desarrollismo*, which implied a strong state capable of intervening directly in an effort to improve the well being of its people, has been replaced by a new model that defines the progress of an economy in terms of its degree of "participation in the world market" (McMichael, 1996). Specialization and efficiency have come to be more important, while a decline in the well being of the majority of the population is not viewed as necessarily negative. A decrease in the family income of the poor and middle classes is—at least initially—used as an indirect indicator that structural adjustment programs are working. Thus, McMichael (1996) suggests that international economists took a positive view of the "flood" of cheap corn from the U.S. that inundated Mexican producers in the 1990s because it represented the triumph of efficiency over inefficiency. That theoretical perspective provided no means to measure the negative effects on daily life in Mexico City and other cities receiving migrants from the Mexican countryside, nor did it include other externalities, such as the added costs experienced by the Immigration and Naturalization Service of the U.S., commonly known as the *migra* by Mexicans seeking to escape from it. In addition, the Mexican government decided to "restructure" the 60-year old agrarian reform so that small and "inefficient" *ejidatarios* (peasants who received land in usufruct in the reform of the 1930s) could sell their plots to more aggressive neighbors (or to agro-

industrial interests). The purchasers, who with more land, could presumably work it more efficiently. At a national and global scale this change implied a replacement of state elites by the "new financial elites of the transnational companies" (McMichael 1996). Thus globalization is generating greater centralization of economic power and the growth of flexible manufacturing, whose principal result is the reduction of the cost of industrial labor. Meanwhile the state sector is shrinking and efforts are made to decentralize what were functions of the national government to the regional and local levels.

The above-described scenario looks rather dark, but it opens possibilities for a positive development as well, which is the strengthening of civil society from the bottom up. Governmental decentralization has certain benefits because the historic centralization in Latin America, Africa, and in certain Asian countries has been excessive. However, decentralization, as it has developed so far in Latin America, is not accompanied by an increase in resources for local and regional governments, suggesting the option of collaboration between local governments and civil society in a joint effort to acquire resources for local initiatives. Of course, such collaboration or alliances may take a variety of forms, given the fact that local societies, like national ones, are often quite stratified. Because of that stratification, it is important that such alliances be as inclusive, rather than exclusive, as possible (Flora 1998). Social inclusion, an aspect of social capital, is based on diversity of ideas, of knowledge, and of social ties, rather than centering on the homogeneity of a local elite group. Sometimes, groups that are marginalized from local power and wealth, and from the dominant local culture need to organize around their own commonalties in order to later negotiate with other local interests on a more equal footing. For such marginalized groups, links with organizations from the outside that might provide support or resources of various kinds is extremely important, especially during the initial period of organization building. Thus, the proliferation of non-government organizations (NGOs)—local and international—as well as funding agencies (which in the Andean region at the moment are likely to be foreign) are very important in the process of building a local civil society that incorporates all social groups (Duncan, 1999).

To understand the present situation in rural parts of the Andes and of Latin America in general, it is useful to look as the kind of projects that have been dominant at different periods since the beginning of Globalization and the role of the peasantry in each kind of project. We can talk of the following periods: 1). the era of Integrated Rural Development (in Spanish the acronym is DRI) projects which began in the 1970s, 2). neo-liberalism, or what

Bebbington (1997) calls the Chilean Way in its agrarian aspect, and 3). the present, where various local responses are being formulated to deal with the social, political, and economic inequalities generated (or exacerbated) by neo-liberalism. Discussion of the three periods follows:

1. During the 1970s, sparked by multilateral capital from the World Bank and supplemented by bilateral funds, there was an explosion of DRI projects. The situation was propitious for countries from the South to borrow large sums to invest in the DRIs, because there was an abundance of international capital, particularly eurodollars resulting from the sale of high-priced oil by the OPEC countries and some other producers. In addition, U.S. dollar inflation benefited borrowing countries. For the South, it appeared to be a bad decision *not* to go into debt, particularly when there was great demand for the primary export products raised in Latin America. The DRI projects contributed to employment of technical and scientific personnel, as well as a modest expansion in public employment, and were thus politically attractive to incumbent politicians. The DRI projects promoted modern agriculture among peasants already oriented to the market, and strengthened local physical infrastructure (economic capital) as well as human capital in the more well-off peasant areas, by improving rural health and education infrastructure. No great effort was made to strengthen social capital. Local peasant committees were organized as a vehicle for delivering technical information, but care was taken by authorities to avoid involvement by these committees in broader policy issues as had occurred in the 1960s. Furthermore, little interest was expressed through the DRIs in preserving natural capital.
2. With the beginning of the recession in 1981, or more correctly for countries of the South, the economic *depression* triggered by the (successful) U.S. effort to reduce dollar inflation by limiting credit, funds for development of peasant regions dropped rapidly, because governments of the South, centered their efforts on stopping the massive increase in international debt that had suddenly befallen them. They were reluctant to contract more foreign debt to continue or initiate new DRIs. They had to repay the debt in dollars that were no longer diminishing in value. In addition, interest payments rose, because in the transition from high to low U.S. inflation, nominal U.S. interest rates rose sharply. Since international interest rates were pegged to the U.S. rate, interest payments ballooned. Finally, the strong recession, first in the U.S., and then in other Northern countries caused the bottom to drop out of the international commodities prices. Countries of the

South, unable to pay the burgeoning interest on their debt, negotiated to have major parts of current interest converted into medium and long-term debt, and the national debt of virtually all Latin American and African countries skyrocketed.

The only development program oriented to peasants in this period was that of promotion of non-traditional (high-value) export crops in order to increase foreign exchange. This was the context for the coming of the "Chilean Way." Its effects (if not objectives) appeared to be similar those of the agrarian transition in the U.S., which had gained force after WWII—a transition to a more technological agriculture and an expulsion of farmers (in this case, peasants) from rural areas to the cities to fill a demand for labor in urban areas. Seen from this perspective, there were two types of peasants—viable ones and unviable ones. The unviable peasants would form the mass of migrants to the cities, cheapening the cost of urban labor and stimulating industrial production in the cities. In the DRI period, although it was recognized that in the long run there had to be a demographic transition, the short-term objective was to invest in economic infrastructure in support of rural production (both agricultural and non-agricultural). Thus it was thought that rural-to-urban migration could be ameliorated and delayed. In the 1980s, these considerations evaporated from the lexicon of policymakers, it was believed that in time the market would take care of everything. Structural adjustment programs were designed to force open the markets of the South, while Northern countries maintained agricultural subsidies for their farmers and reduced agricultural trade barriers that protected their farmers ever so slowly. Given the conditions of the world economy in the 1980s, the option of growing themselves out of debt was unrealistic, but Latin American and African countries did reorient their economies toward international trade in this period. In that sense, structural adjustment policies were successful.

3. Around the turn of the 1990s, a reevaluation of neo-liberal policies began. Although, the IMF continued to believe that the package of structural adjustments could alone reform the economies of Latin America and Africa, in particular, the World Bank began to seek policies that would reduce the impact of those adjustments on the affected populations (see World Bank 2000). They developed "efficient" social assistance programs narrowly targeted at the poor, and gradually began to favor programs of social transformation once again, without returning to the multifaceted projects of the 1970s. In the countryside,

perhaps with the exception of Chile, which had intensive export agriculture in the Central Valley that acted as a motor for production and, to a limited degree, employment, the transition did not occur as expected. In the Andean area, for example, there was migration to metropolitan and intermediate cities, but much of it was circular migration. The "migrants" maintained a base in their rural communities (Waters 1997; G. Flora 1998). The rural household, particularly among indigenous groups, was maintained and included those who remained permanently in the community (the elderly, married women, and children, principally) and those who were "temporarily" absent—for periods of up to a year. Income from agriculture (or more correctly, from horticultural-sized plots cared for mainly by women) with wage income provided by men and young unmarried women, who sometimes found employment in the "county-seat" town, but more likely had to seek work in the provincial or national capital[1]. Others felt obligated to migrate to richer countries, where the formed part of a transnational community. Often, the rural household blended income earned from sale of a limited number of agricultural products and livestock (most peasant production is still for auto-consumption) and the salaries of family members working in urban areas and outside the country. Those working outside the country might visit once a year or less frequently, depending on the distance. The phenomenon of transnational communities can be seen in cities of the North, where there is a continual coming and going of certain people to and from the place of origin. Those who travel frequently between origin and destination develop businesses that link North and South (Goldring 1998; Rodriguez 1999). Thus the boundaries between urban and rural areas within nations of the South and international borders between Northern and Southern countries become porous. The only unique feature that distinguished rural from urban communities is the attachment that migrants feel to their communities of origin and the determination of both the permanent migrants and "circulating" residents in the place of destination, as they seek to preserve their peculiar culture (See G. Flora 1998; Martinez 1985). Unfortunately, this adaptation to neo-liberalism and to globalization does not imply a decline in poverty and inequality. On the contrary, poverty has increased in peasant areas of origin over the past 20 years, while inequalities have grown between sending and receiving areas, and within the receiving areas of the North. Migration and transnational linkages are two interrelated *family survival strategies*, with a greater impact

than the public assistance programs targeted at the poor in Southern countries.[3] Neither has reduced inequalities within or among regions. However, communities and families have experienced an increase in social capital—in the external linkages established by families in communities that historically have been quite isolated. These links increase knowledge of the outside world and a selective acceptance of new ideas. If this social capital at the individual and family level can be converted into community (here I am speaking of both place-based and interest-based communities) social capital, it may provide a base for improving the lives of permanent and circulating residents of (geographic) communities of origin. The challenge of the early decades of this new millennium in peasant areas is to develop the rural community from within, using ties with the outside, while at the same time conserving natural capital. This in part was the dream of integrated rural development, but with other rules of the game, and absent the concern for the environment.

How might we proceed to increase the capacity of communities and local governments to improve the quality of life of their inhabitants while conserving natural capital?

The saying, "If you don't know where you are going, any road will take you there," would seem to be universally applicable. In order to decide on a strategy(ies) for enhancing the capacity of communities and local governments to act on their own behalf, civil society organizations and local governments need to be more specific in defining desired outcomes. While other approaches may be equally useful, I would like to present the results a collaborative effort by a group of intellectuals and practitioners in the U.S. with financial support of the Aspen Institute and the U.S. Forest Service to develop a series of comprehensive objectives or outcomes that can be tailored to the needs of communities and other local groups. A flexible set of indicators of progress toward those outcomes, when agreed upon by the locality or organization can serve at one and the same time as a road map for reaching the outcomes and for measuring progress toward those outcomes (C. Flora et al. 1997). The group settled on five outcomes that correspond to four kinds of capital: social, human, natural, and economic. (Two outcomes are associated with social capital.) Different means can be used to reach these goals. It is desirable—indeed necessary—that the people affected reach agreement on indicators that measure progress toward each outcome, are readily measured, and have face validity (that is, it is clear to all concerned that they measure progress

toward the objective). Following is a description of each outcome and suggestions for possible categories of indicators at the community level (of course the approach is appropriate for governmental and quasi-governmental units, civil society organizations, and socially-conscious market-oriented firms):

1. *Strengthen community initiative, responsibility and adaptability (an aspect of social capital).* This objective indicates that residents share a vision of the future (based on participatory planning), seek collective means to respond to ubiquitous change, and begin with internal resources before seeking resources from the outside. It is also important that people not have a victim mentality, because such an attitude can immobilize the community.
2. *Strengthen relationships and improve communication (another aspect of social capital).* This objective can be measured in terms of an increase in interaction among groups within the community, particularly among groups that do not ordinarily communicate with one another as equals, an increase in interactions with outside groups that they have not previously related to, and an increase in the access to new types of information from within and outside the community. Engaging in joint planning and mutual willingness to engage in frank discussions around controversial community issues could strengthen relations and the flow of internal information.
3. *Utilize the knowledge and skills of local people (human capital).* Identifying, reinforcing, and integrating individual capacities can fulfill this objective. Integration, or the *socialization*, of these skills means putting them to effective use for the community. This perspective emphasizes the gifts of residents and not their shortcomings (Kretzman and McKnight 1993). It is an optimistic perspective, which in and of itself may aid in solving problems.
4. *Sustainable ecosystems with multiple benefits for the community (natural capital).* Measurement of the degree to which this objective is being achieved can be in terms of actions or plans that promote harmony between human communities and natural systems. Another kind of indicator is the utilization of ecosystems or specific natural resources for multiple benefits. Another kind of indicator would be concrete action by groups with different ideas (often incompatible with one another) about how natural resources should be used that leads them toward common ground that later could contribute to a redefinition of how those resources might be used.
5. *Diversified and flexible economies (economic capital).* Indicators of a healthy economy could include a reduction in poverty (rather than focusing

on economic growth, which might or might not lead to more egalitarian distribution of income or wealth), an increase in the savings held by residents (as long as that increase in savings does not lead to a divergence between the poor and the well-to-do.)

As previously stated, context is important in choosing indicators of progress toward a more sustainable community future. Based on the above community outcomes, I believe that there are at least three components to a strategy for promoting integration of rural development and environmental protection in rural Latin America. I have attempted to incorporate some of the most salient points raised in selected papers and in the work group at the conference that bore the same name as the title of this presentation. Most of the discussion focused on NGOs devoted to conservation and community development and their relationships with communities and other local groups. The three points and discussion follow:

1. *Strengthen social capital.* Given the lack of material resources at the local level, it makes sense to strengthen social capital, particularly by including excluded groups in local processes. In general, inclusion of excluded groups requires a participatory approach; inclusion cannot be accomplished by fiat from on high. It is likely that the working class and those in poverty have fewer ties with others than do those in better off socioeconomic groups, but poor and working class families find themselves obligated to use the networks available to them, because they have even less access to other forms of capital: economic and human, in particular.

   Ethnic groups or other excluded groups that are organizationally weak: One person in the work group mentioned that where community organization is weak, personal or family interests come to the fore. This suggests that to work with communities that lack organizational capacity or social capital, or where these variables are limited to small groups of privileged residents, there needs to be a methodology that is designed specifically for this type of situation. It is appropriate to put energy into developing participatory tools that are oriented toward including vulnerable groups in situations where exclusion is the usual pattern. Perhaps in this situation, the NGO would not begin at the level of the geographic community, but rather would work on strengthening organizational capacity of the most organizationally vulnerable groups. If their own organizations lack capacity, how can they effectively negotiate with the socioeconomic groups in the geographic community

who already have effective "interest groups"? Ethnic groups can be *less* or *more* organized than other groups in the community, although they nearly always lack other resources. Women and other excluded generally need stronger organizations of their own before they can participate fully in community-wide organizations.

2. *Take advantage of decentralization policies to strengthen local development from below*. Globalization works against including the most vulnerable groups. That is, globalization tends to increase inequalities and marginalize those who lack resources to enter and compete in international markets. But part of the neo-liberal project is decentralization of certain governmental activities, with the objective (implicit or explicit) of making government smaller. The effect is to further marginalize indigenous and other peasant areas. The neglect of these zones leaves open the possibility of a collective response with respect to development and/or protection of the natural environment, *if* communities and local governments seek to increase local bridging social capital—the kind that is oriented toward inclusion of different socioeconomic groups in the community, and toward strategic development of external ties (Narayan 1999) . One approach used by SANREM is building and strengthening advocacy coalitions around particular natural resource issues of concern to community residents. In Peru, peasant community leaders have participated in researching such coalitions by participating in interviews of important stakeholders and gaining new knowledge about rules and regulations, about mental causal models[3] and desired futures of state, market and civil society entities that have interests in the particular issue. As a result, they gained knowledge about legal rights and obligations of mining companies that encouraged them to join a coalition of communities that are seeking redress from mining companies that are operating in the region and damaging grazing lands.

3. *Create enduring linkages with the outside in order to develop organizational capacity oriented toward sustainability at the local level.* The generation of social capital within the locality should be complemented with strengthening of external links. External linkages should be chosen carefully in order that information and resources that come from the outside complement local knowledge about production and ecological management of natural resources. Thus, local entities can develop the organizational capacity needed to implement new forms of

production that are more ecological, equitable, and that ensure an improvement in the quality of life (definition of sustainability adopted by the U.S. President's Council on Sustainability, and based on the perspective of the Bruntland Commission report; see President's Council on Sustainable Development 1996; World Commission on Environment and Development 1987).

Obtaining economic resources is not the principal contribution of external linkages. The support given by NGOs and other outside entities to groups with less economic and political power is of equal or greater importance. Sometimes local marginalized groups are in a situation in which they cannot get out from under the control of dominant groups alone. External linkages can protect these groups and confer prestige and legitimacy at the local level. It helps them acquire the capacity to move forward when they are in checkmate on the local scene. NGOs can be an important, but not the only type of external linkages that facilitates the acquisition of external resources not available locally.

The flourishing of NGOs results from the first "shrinking" of the state that was the result of the economic crisis and the rapid growth of external debt in the first half of the 1980s. In a not too distant future, we can hope that the state might help vulnerable groups by implementing laws and rules that guarantee equal access for all social groups.

The inability of national governments to make these guarantees or even to provide basic services to their citizens has left a big hole that NGOs are increasingly seeking to fill. In the presentations on this topic and the work group that followed, the following practical suggestions were made that would aid in implementing the three objectives:

1. Establish a formal agreement between NGO and the community: the letter or document agreed upon should specify the expected products and the resources to be contributed by each party. Previously, there should have been ample discussion in the community of the feasibility of contributing those resources and of delivering the products. In this dialogue, it is important to discuss the reason for these contributions: that is, What does the community wish to accomplish? And, Do the contributions of the two entities lead to the accomplishment of those objectives? The NGO should also make a similar assessment, but generally the

process of developing the proposal to a donor will fulfill this requirement.

2. Use and training of local paraprofessionals (*promotores*): Paraprofessionals (paralegals, parabiologists, health promoters, etc.) who are recruited from the community itself increase both individual and collective capacity (related to human and social capital, respectively). At the same time paraprofessionals are an important link between the NGO and the community, playing a double role, which often makes their work difficult. The training that they receive is not only something that they should share with the rest of the community, but also should serve as a mechanism for entering into the world of the NGO, as they develop a closer relationship with it. Thus they gain greater possibilities than other members of the community to understand the point of view, strategies, and tactics of the NGO. In addition to transmitting technical information, the promoters con act as cultural "translators" of the interests of both sides, but it is still more important that they reinforce their relationship with the community, so that they can carry the legitimate interests of the community to the NGO.

   A mechanism suggested by Marlene Corazo, a paralegal from Esmeraldas, was that the community, jointly with the promotores, make its own evaluation (annual or more frequently) of the progress of the project toward the goals established by the community. As part of this process, the community would evaluate the work of the *promotores*. This would help assure that the paraprofessionals continue being true representatives of the community before the NGO.

3. Monitoring team: Another formal manner of promoting strong ties between the community and the NGO is the monitoring team, presented by Pablo Velasco of UNDP in his presentation. He emphasized building local capacity by taking advantage of the heterogeneity of the capacities, practices, knowledge, etc., that exist in the community, in the NGO, and in the funding agency. Monitoring teams, consisting of persons from all three entities, would fill the following roles:
   - They act as a nexus among the granting agency, the implementers, and the grassroots community
   - They are a link among diverse projects in interchanges of mutual learning;

- They provide assistance in project management throughout the project cycle;
- They gather and process successes and problems;
- They document experiences that could be of benefit to other similar projects;

There are many other concrete suggestions that might be made in order to smooth out the relationship between local groups and NGOs. The relationship is fraught with difficulty, partly because NGOs, by default often take on what previously were government roles, and partly because NGOs have stronger bridging social capital with the outside than do the local entities with which they work. Having those ties also makes them valuable to the communities, local governments, and other local entities with which they work. That value is diminished if the NGOs do not foster similar capacities in the local entities with which they work.

Globalization has dealt peasant communities and civil-society organizations, resource-poor rural governments, and locally owned firms and households that enter into the market in those same geographic areas a pretty difficult hand. Only if they develop the capacity to utilize alternative globalized networks to strengthen local social, human, natural, and economic capital in a synergistic fashion, will they be able to survive in this globalized society. While there may be justification in the selective severing of ties with a globalized society or economy, the more fruitful approach is likely to be to, jointly with NGOs and other external allies, figure out how to turn globalizing mechanisms in directions unanticipated by neo-liberals, exploiting the contradictions in this new phase of the capitalist world system.

Notes

1. Recently, in certain indigenous communities of the Andean highlands, the phenomenon of "orphaned" children, has presented itself. Both parents go to the national or a regional capital to work temporarily (in spells of a week to a month), while minor children are left to take care of each other and agricultural chores. Once parents had accumulated money to live on for several weeks, they would return home. In one drought-stricken Ecuadorian community, 70 of 85 primary school children were reported to be living without adults in the house. (El Comercio, May 20, 2001, p. B7). This another manifestation of the porous borders between urban and rural parts of the Andes, and likely other parts of the South as well.

2. One estimate is that some USD23 billion is transferred to Latin America through remittances annually. People (through their remittances) are the second most valuable export of Ecuador, and, according to a spokesperson for the Interamerican Bank, exceed foreign investment in several Latinamerican countries (*El Comercio*, 20 May 2001, C1). As is suggested in the text above,

the impact of migration on the sending communities is not only the provision of economic capital, but has implications for social, human, and, undoubtedly, natural capital, although the latter nexus has not been studied, to my knowledge.

3. Mental causal models are perceived cause-and-effect relations between actions (activities and projects) that might be engaged in to promote a particular desired future. Some organization may take a strict utilitarian or scientific perspective, others may allow a large role for interpersonal relationships or for local knowledge in defining the relation between cause and effect (see Flora *et al.*, 2001).

References

Bebbington, Anthony J.
1997 Reinventing NGOs and Rethinking Alternatives in the Andes. Annals of the American Academy of Political and Social Science 554: 117-135

Duncan, Cynthia M.
1999 Worlds Apart: Why Poverty Persists in Rural America. New Haven: Yale University Press.

Flora, Cornelia B
1990. Rural Peoples in a Global Economy. *Rural Sociology* 55, 2 (Summer): 157-177.

Flora, C.B., K. Goddard, M. Kinsley , V. Luther, M. Wall, S. Odell , J. Topolsky, and S. Ratner.
1997 Working Toward Community Goals: Helping Communities Succeed. North Central Regional Center for Rural Development, USDA Forest Service, 1997. [http://www.ncrcrd.iastate.edu/Community_Success/about.html]

Flora, Gabriela
1998 Circular migration and community attachment in the highland indigenous communities of Cotacachi, Ecuador. Masters thesis. Athens: the University of Georgia.

Flora, Jan L.
1998 Social capital and communities of place. Rural Sociology 63(4): 481-506.

Goldring, Luin.
1998 The power of status in transnational social fields. Comparative Urban and Community Research 6: 165-195.

McMichael, Philip.
1996 Development And Social Change: A Global Perspective. Thousand Oaks, Calif.: Pine Forge Press.

Narayan, D
1999 Bonds and Bridges—Social Capital and Poverty. Poverty Research Working Paper No. 2167. Washington, D.C.: World Bank,
President's Council on Sustainable Development.
1996 Sustainable America: A New Consensus for the Prosperty, Opportunity and a Healthy Environment for the Future. Washington, D.C.: U.S. Government Printing Office, February. Also available at: <http://www.whitehouse.gov/PCSD/Publications/TF_Reports/amer-top.html>
Rodríguez, Nestor P
1999 Globalization, Autonomy, and Transnational Migration: Impacts on U.S. Intergroup Relations," Research in Politics and Society 6: 65-84.
Waters, William
1997 The road of many returns: Rural bases of the informal urban economy in Ecuador. Latin American Perspectives 94, 24(3): 50-64.
World Bank.
1990 World Development Report 1990: Poverty. Oxford: Oxford University Press.
World Commission on Environment and Development.
1987 Our Common Future. Oxford, England: Oxford University Press.

Chapter 18

Building Capacities for Integrated Conservation and Development: The Experience of the Small Grants Program

Pablo Velasco Andrade

The Small Grants Program (SGP) is part of the Global Environment Fund. In Ecuador, the program is administered by the United National Development Program (UNDP). The SGP provides grants of up to USD 50,000 for the implementation of local initiatives promoted by Grassroots Community Organizations (GCO) or Non-Governmental Organizations (NGOs) associated with GCOs, whose purpose is to resolve serious environmental problems throughout the world, including the destruction of biodiversity, climate change, contamination of international waters, and desertification and soil erosion.

The program began in Ecuador in 1994. It operates through a broad-based National Committee which involves the state, universities, indigenous and peasant organizations, environmental NGOs, development NGOs and women's organizations. The National Committee is charged with executing the Ecuadorian Strategy for the SGP and with selecting proposals for small projects. The program has a National Coordinator and administrative and logistical resources. To date, the program has executed around 70 small projects on the Coast, in the Sierra and in the Amazon basin region. The National Committee and National Coordinator select projects on the basis of eligibility criteria, a prior visit to the site, and the technical, social, and environmental characteristics of the proposed project. Those involved in projects implement planned activities according to a predetermined plan, a logical framework, and a budget. Implementation involves participatory mechanisms.

We have designed a mechanism for monitoring, systematizing and evaluating these experiences with the participation of technical teams linked

to NGOs. This mechanism involves the technical team working with community members in the field, a close relationship between project executors and participating communities, and the exchange and dissemination of results. I will provide more information on this mechanism below.

GEF's mandate includes support for local community initiatives designed to conserve biodiversity. In practice, 95 percent of projects funded in Ecuador have involved biodiversity. Broadly speaking, proposals are designed to conserve/recover native or traditional agricultural species, manage native forests in a sustainable fashion, rationally exploit non-timber products, and implement environmentally-friendly production systems (e.g., sustainable agriculture, community eco-tourism, and agro-forestry, among others).

Conservation and the quality of life

Our experience demonstrates that conservation of natural resources is not possible, in general, unless the basic needs of local populations are taken into account. Thus, virtually all proposals are aimed at providing economic benefits—in the short, medium or long term—as a result of conservation activities.

In countries like Ecuador, with a relatively high population growth rate, it is no longer possible to talk about large untouched natural areas without pressure from human groups whose members are trying to survive through exploitation of natural resources. We have known for some time now about the vicious circle from which these countries suffer: more poverty, greater destruction of natural resources by poor communities; more destruction of the natural heritage of communities, more poverty.

Thus, any intervention by poor communities for the purpose of creating positive impacts in the short, medium and long terms, within the concept of sustainability, must involve activities designed to conserve natural resources, including soils, water, and biodiversity, as well as activities designed to improve the quality of life for members of these communities, especially in terms of the generation of sustainable income. All too often, conservation activities continue as long as project funds are available. When resources run out, conservation activities end. Normally, this is because the first priority for the communities involved is to satisfy basic necessities with natural resources. While the sustainable management of those resources is important, it is a secondary consideration when compared to basic survival. Here we see in action the logic of the primacy of the immediate while broader considerations become secondary. In addition, given the current economic crisis suffered

throughout the country, the poorest sectors are forced to think and act in ways that will alleviate their day to day needs.

The traditional approach

Generally, projects intended to improve living conditions in rural areas while conserving natural resources are characterized by the following institutional approach:

- A donor or a financial cooperation institution. The rules of the game are always fixed at this level, including norms, policies, lines of action, eligible activities, criteria for the selection of executors and proposals, indicators to be taken into account, duration, and cost of the project are the most important aspects.
- A technical institution, general an NGO, is charged with establishing a diagnosis, base line elements, a logical framework, objectives, goals, results, indicators and the hypothesis on which the proposal/project is based. The fundamental aspect of the NGOs role is to provide the elements of the technological proposal and their positive or negative impacts on the social life of the community, its micro-economy and its environmental conditions, that is, soils, living organisms and ecosystems, in the course of project execution.
- An administrative level, generally external to the process, responsible for follow-up, control, evaluation and systematization activities. This level generally is required by the rules fixed by the financing entity and is considered, by those at the implementation and beneficiary levels, to be responsible for project supervision. Individuals at this level have a considerable degree of decision-making power as they are the lines of transmission between the financing entity or donor and beneficiaries, and vice versa. In a good number of cases, this level is charged solely with external evaluation procedures, with the limitations this situation implies.
- The subjects of intervention or the grassroots groups with whom the project will be executed. In the language used in the field, these groups are known variously as the "benefiting population," "participating families," "number of beneficiaries," "population directly served," "target population."

Table 18.1 Building Capacity for the Conservation and Integrated Development: Experience of the Small Donation Program

Project Level	Project Cycle				
	Diagnostic / Baseline	Design / Formulation	Execution	Evaluation and Control	Synthesis and difusion
Donor or Financial Entity	Demand studies and reliable information	Contribute resources for initial investment	Assume shared responsibility with other stakeholders	Provided resources for performance and self-evaluation	Support processes of systematizing and increasing diffusion through various methods
Technical Executing Organization (NGO)	Demonstrate knowledge and experience	Conduct process with substantive participation of the community; reach agreement and compromises	Assume responsibility and share it with other stakeholders; take advantage of authority	Develop schemes and methods of self-evaluation and control	Lead processes of gathering, registering, systematizing and processing information. Search for widest diffusion.
Monitoring and Evaluation	Verify elements of baseline	Adjust and refine framework, budget, and timelines; refine indicators	Fellow-up activities; facilitate adjustments and guarantee achievement of goals and objectives	Participate in process of self-evaluation. Call at various levels and enrich natural interchange and dialogue	Do a picture for each action and integrate totally the experiences. This is a mechanism of exchange and diffusion.
Grassroots Community	Contribute knowledge and vision of the problem; "problematize" reality	Actively intervene in the viable proposals and possibilities; from the knowledge of one's own dexterity	Better learned while "doing." It is essential human capital	Self-evaluate and control from another perspective, the base exercises the social control.	Analyze their experiences and compare with similar or other cases.

In the Table 18.1, authority and decision-making power is greater at the top than the bottom levels, whereas responsibility for execution is greater at the bottom than the upper levels. In this traditional scheme, communities are not full participants in the process and their level of participation in decision-making is severely reduced, which is why project activities come to a full stop when program funding ends. Monitoring and evaluation are generally auxiliary activities, isolated from the execution dynamic.

The community environment

A wide range of grassroots organizations exists in Ecuador. In rural areas and neighborhoods surrounding urban areas, especially, community organization plays a decisive role in satisfying the needs of people. Types of organizations include communes, cooperatives, associations, populated centers in rural communities, improvement committees, youth clubs, parent organizations in elementary schools, women's and mothers' clubs, ecology clubs. This type of grassroots organization constitutes the ideal mechanism for satisfying the needs of members.

Especially important for purposes of the analysis presented here is the existence and strengthening of traditional organizations with strong ethnic roots or based on daily customs and practices. We are referring especially to the active indigenous community, a paradigm of social organization existing in vast areas of the sierra and the Amazon, and still alive in large sectors of the population on Ecuador's coast. Though no longer existing in pure form, it should also be noted that many institutions based on indigenous traditions, including the community work party (*minga*), the assembly or the exchange of goods and services among neighbors constitute extremely valuable mechanisms for the implementation of sustainable development activities.

But why are traditional indigenous and related forms of organization a very important asset in the sustainable development process? An analysis of the traditional organizational system, its practices and potential, indicates that outside development agents and their promoters have made a very serious mistake in ignoring or undervaluing this system for a number of reasons:

- This is an organizational system that has been developed by the communities themselves. Thus, it corresponds to the members cultural logic and their traditions. It functions on the basis of indigenous codes of ethics and conduct and requires no additional elements in order to make it credible to community members.
- Control exercised by the community over activities, work plans and tasks assigned to members at various levels of leadership is often quite rigorous.

We can speak of social control in the strictest sense of the word, since the General Assembly—an example of participatory democracy—is the entity where knowledge is concentrated and where all important aspects of community life are determined, including the undertaking of leadership roles and other responsibilities.

- The organization is located at the site of the project, and in most cases has existed for many, many years, and is based on ancestral knowledge and practices which are, in and of themselves, of tremendous value. This entity in which knowledge is based and tasks undertaken are essential in building a valuable, durable, acceptable system of sustainable development.

The building of local capacities

On the basis of this brief characterization of the actors in a conservation and development process, with its particular and intentional emphasis on the virtues and potential of the community level, we propose the following hypothesis: It is indispensable to create two-way relationships, based on equal participation and synergy, which bind those involved in sustainable development tasks to produce creative and efficient processes. In other words, it is essential to take advantage of the heterogeneity of the capabilities, practices, knowledge, and skills of all agents and protagonists in this process in order to bring alive development activities which will lead to an improvement in the quality of life of poor communities and make them more efficient in developing ways to manage their own natural resources. However, for small projects, the potential links among different visions, concepts and practices can become limitations at the point of implementation.

It would seems that, in considering systematic and organized interventions, what is most important is a confluence of knowledge and practices, in which the starting point should be local knowledge, especially that based on ancient and daily traditions which have created a particular relationship of respect and coexistence between human beings and nature.

The construction of participatory and synergetic relationships among the actors in a sustainable development process should bring together diverse means, strategies and styles, and should originate within all the institutional and community entities involved. The attempt to do this should aim at what is termed the construction and strengthening of local capacities and their influence in processes of conservation and development.

Role of the monitoring teams

Within this context, there is an especially important element which has played a vital role in the implementation of SGPs. This element is the team charged with monitoring the progress of activities in each microproject and assisting the executors in a series of activities which extend from adjustments in the macro-logic of projects at the beginning of implementation, to the construction of indicators for the measurement of results, and including the role of liaison among the institutional actors from UNDP/SGP, technical executive teams and local communities.

Traditionally, the role of monitoring teams has not been thought to be very important in the implementation of projects. Rather, the responsibility and functions of outside evaluation teams, which usually intervene at the half-way and end points of the project, have been emphasized. However, in a good number of circumstances, the evaluation teams have not been able to get beyond their supervisory and control roles, and these are usually seen to be activities involving adjustments or modifications in project activities. This role, an unhappy one for evaluators and an unjust one for executors and communities, at times leads to deterioration in relations among those involved in intervention and may cause disruptions or maladjustments difficult to repair.

The scheme developed for the SGPs involving technical monitoring and working together, corresponds to the spirit and principal goal of these projects: to take into account community initiatives which have been developed to resolve serious environmental problems at the local level in order to reverse the tendency toward generalized deterioration of principal elements defined at the global scale, such as biodiversity, climate change, contamination of waters shared by various countries and desertification, among others.

Some of the tasks implemented or in the process of being implemented are described below. We offer these for discussion and criticism. These tasks, in the case of SGPs, are characterized by their low cost, approximately 10 to 12 percent of the total amount invested in the microprojects in question.

- Create a link among the donors, the technical team responsible for execution of the project, and the community, through a series of approaches in the field.
- Serve as a link between executors and communities which are implementing similar projects, in order to find ways to exchange experiences and knowledge acquired.
- Provide technical assistance to executors and communities on aspects related to formulation, execution and evaluation of projects, from an integrated perspective and through participatory mechanisms.

- Facilitate the enrichment of skills and abilities among local executors and communities, offering experiences from other sites which may contain aspects subject to replication.
- Collect and process the major elements of individual experiences and of the set of experiences and produce mechanisms for their systematic dissemination.

Relationship among various entities

This set of elements, which has been put into practice by the monitoring teams of SGPs, has been refined over time. We have tried to differentiate among traditional evaluation schemes in terms of work styles and practices with communities, and technical teams, especially in relation to a number of principal elements described below:

1. *The horizontal relationship*: This aspect has been commented on frequently in the creation of a relationship among diverse and heterogeneous institutional entities. However, it is still not practiced on a routine basis in project implementation. It is common to observe that the different entities involved in the development process have dissimilar, and sometimes contradictory, attitudes: the financing entity attempts to impose rules and a work pace; the entities charged with project execution, technical assistance and training tend to overvalue their own technical knowledge and experience, and to turn these elements into an indicator of the path the project should follow; communities act as receptors of definitions coming from above and in many cases do not criticize or question the process; and, the evaluation teams assume an "objective" view of intervention through disparate and often subjective elements.

   It is our view that the various entities involved in a project should construct an egalitarian relationship which is expressed in daily encounters, in terms of respect for the views of others, in terms of permitting the participation of all in decision making, in facilitating the assumption of risks and responsibilities by all participants in the process. At the same time, a horizontal relationship should permit the coming together of knowledge and practices. Without doubt, at this point we should put into practice the principle which states "he/she who knows more about a particular task should be the individual carrying out said task." That is, the theoretical and practical experiences of the various actors must be respected and each one of them should become a catalyst of the others. The role of monitoring teams, thus, is to contribute to putting into effect

this horizontal, democratic and transparent relationship which allows for greater efficiency and efficacy in the work of all actors.

2. *Assuming responsibility and authority:* These two factors are fundamental in a work collective, especially when the project involves the sustainable development of a community. Responsibility implies "responding" to community members for actions undertaken and for those not undertaken, as well as for the impacts of these on the lives of residents and their natural or built surroundings. Responsibility is not synonymous with an arbitrary or audacious attitude or behavior. The different levels of responsibility should be shared with community members during all activities, especially in the monitoring process during which self-control and self-evaluation should be the goal. Authority, if it is to be effective, must be legitimized by the example, effort and commitment of all individuals at all levels. Here elements of the Total Quality concept may be applied.

3. *A process of progressive strengthening of local capacities:* During this period of decentralization and deconcentration, it is essential that these concepts be applied to the institutionality and practice of projects. Grass roots communities and local organizations and leaders must be strengthened, especially in terms of the ability to be autonomous. This implies strengthening local people's ability to come together and to negotiate; the development of autonomy in planning sustainable activities and projects at the grass roots level; the creation of new relations among local governments, institutions, organizations from civil society and other actors; putting into motion economic development processes and the generation of productive employment and income for different sectors of the population through the rational use of local materials and skills; the establishment of accessible information systems; encounters and dialogue among the various actors (dialogue based on knowledge, interculturality).

4. *Constant reflection and feedback:* The spaces generated through the implementation of projects, which are often most in evidence during the monitoring process, should be taken advantage of by all involved for the purpose of debate, reflection and feedback. This will allow for the building of institutions characterized by reflection, production and efficiency.

5. *Direct relationships between those involved in project execution and community participants:* Frequent contacts between monitoring teams and actors in

the field will not only lead to an objective vision of that which is being executed in terms of successes and limitations, but will provide the basis for shared experiences, lessons, adjustments in the program, and the recording of relevant information.

6. *Exchange of experiences and dissemination of result:* One of the most relevant activities in the monitoring process is the workshop for different entities involved—NGOs, OCBs, and financing entities—the purpose of which is the exchange of experiences and the participatory evaluation of the process. This leads to the systematization of results, to debates, and to a complete record of the process.

7. *Joint construction of conceptual and methodological elements:* The methodological tools (criteria, indicators, forms) and other mechanisms for formulation, follow-up, systematization and evaluation of projects should be built collectively. Design, field tests and standardization should involve a series of adjustments until the optimal version is achieved. When this process has been preceded by periods of consultation and agreement, application in the field is easier and most acceptable to all those involved.

The elements mentioned in this paper are intended to identify the basic role played by monitoring teams in projects involving the conservation of natural resources and improvement in the quality of life of communities. Members of these teams are facilitators of a process of open and transparent encounter among all actors, for the purpose of achieving results that are efficient, lasting and democratic.

Chapter 19

ANAFAE and Colabora: Lessons from Experiences with Collaborative Networks for Sustainable Agriculture and Natural Resource Management[1]

Stephen Sherwood and Jacqueline Chenier

> *We are facing new forms of engagement, where unlikely alliances bring unexpected returns, where old coalitions prove to be rigid and often counter-productive, and where the traditional opposition often seems to be saying just what you are saying whilst meaning something altogether different*
>
> (Blauert and Zadek 1998)

Although rural communities in Honduras are poor, matters are not entirely hopeless. A handful of projects have made impressive contributions to rural development, and those efforts represent a modicum of hope[2]. Rarely, however, have Honduran grass-roots organizations participated in the sort of collective efforts that development practitioners believe key to sustainable change.

This study compares two networks that emerged from development research partnerships in Honduras and represents new opportunities for interaction and contributions to further research and practice. The Honduran Association for the Promotion of Ecological Agriculture (ANAFAE) concentrates on issues associated with sustainable agriculture, and the National Network on Collaborative Natural Resource Management (Colabora) seeks to strengthen community ability to manage common resources (Table 19.1).

Table 19.1 Comparative description of ANAFAE and Colabora

Feature	ANAFAE	Colabora
Initiation	September 1995, by five development organizations and a university	April 1996, by five development organizations and a university
General purpose	Promote ecologically based agriculture as well as general sustainable agriculture	Rural development and conservation through community-based natural resource management
Ideological focus	Social change and empowerment	Social change and empowerment
Function	Forum for exchange of ideas and collective action	Mechanism for introduction and dissemination of new methodologies
Objectives	• Communication • Capacity-building • Generation of ideas and practices • Policy formulation	• Development methodologies • Community capacities
Organizational structure	Formal, decentralized through working groups based on objectives	Informal, shared authority, decentralized by sites
Members/ participation	Representatives of 20 NGOs (no GOs) and 2 universities; linked to Latin American agro-ecology network	Organizations and individuals involved at 5 sites (links NGOs, GOs and universities); founding member of Meso-American network
Criteria for engaging members	Organization- and individual-based, open and free	Site-based, open and free
Leadership/ participation	Broadly shared among about 15 individuals, some occasional partners	Broadly shared among 5 individuals, with three most active
Coordinating mechanism	Board with 1/2 time facilitator	Steering committee with 1/2 time facilitator
Decisions	By working groups and assembly	Collective by steering committee
Planning	Annual, by assembly based on working group plans	Every workshop (4 months) by participants
Activities	• Forums • Training workshops • Cross-visits	• Training workshops • Cross-visits • Facilitation/mediation teams
Regular meetings	Assembly every 2 months; working groups as needed; board every month	Monthly steering committee meetings: crossvisits, workshops three times per year
Resources	Largely dependent on members; donated office and equipment; budget of USD 75,000/yr (as of 1998) for operations and workshops. One funding source.	Largely dependent on members; donated office and equipment; budget of USD 35,000 (as of 1997) for operations. Four funding sources.

ANAFAE: Collaboration for sustainable agriculture

Background

Since 1995, ANAFAE has been learning to consolidate rural development experiences and to mediate among organizations whose reasons for collaboration are diverse. The association promotes the exchange of experiences in ecologically based agriculture, facilitates the building of human capacities, directs the generation of useful ideas and practices, and represents the political interests of its members and their constituents in Honduras. Participants in the ANAFAE forum identify common interests, exchange information, and develop capacities and tools for further learning and action.

Structure and organization

ANAFAE is a loose association of 22 independent organizations dedicated to the promotion of sustainable agricultural and progress in Honduras. ANAFAE currently has four permanent working groups that focus on the following themes: communication, training, applied research and policy. Each committee chooses a chair who represents the group on the Board of Directors. Positions on the Board are determined by the functions of working groups, for example, the Head of the Policy Commission is the President and the Communication head is Secretary. This system of decentralization and representation has facilitated the Association's operation. Ad hoc work groups emerge as needed. For example, some groups have coordinated workshops on innovative technical themes such as mulch-based agriculture and pest management, while others direct activities on social themes such as rural knowledge systems or policy review. Others lead training sessions on more practical matters, such as electronic mail, or produce group documents.

Activities

After the first year, when a rather ambitious work plan was only partially completed, ANAFAE members began to focus on strengthening existing activities, rather than creating new ones. We decided to focus on enhancing participation or loaning personnel or material resources; this heightened organizational interest in ANAFAE, provided access to new resources, and facilitated the development of the association.

Table 19.2 ANAFAE Activity Plan 1999 (not including working group activities)

Activity	Location	Responsible organization
Cross-visits/regional exchanges (5)	La Esperanza Botijas La Libertad Choluteca El Merendón	CCD, CIDICCO FOMENTA CEFASMA PROCONDEMA CASM, FUNBANHCAFE
National encounter on sustainable agriculture methodologies	Siguatepeque	COSECHA, World Neighbors
Workshop on marketing of organic produce	Tegucigalpa	ANAFAE/INHAO
Workshop on organic certification	Siguatepeque	ANAFAE/INHAO
Workshop on the principles of agroecology (farmers nationwide)	Valle de Angeles	ANAFAE/COSECHA visit to Loma Linda
Workshop on the use of the internet	Tegucigalpa	SDN/ANAFAE
Follow-up workshop on training of trainers	Monte Carmelo, Valle de Angeles o El Chaguite	ANAFAE/SDN
Systematization of experience with animal traction	Tegucigalpa	ANAFAE/CIDICCO FOMENTA
Systematization of agro-ecological experiences in Honduras	Tegucigalpa	ANAFAE/CCD
Establish center of information on agro-ecology	Tegucigalpa	ANAFAE
National fair on organic products and traditional foods	Tegucigalpa	ANAFAE
Information bulletins (3)	Tegucigalpa	ANAFAE
Publication of ANAFAE's agro-ecological principles	Tegucigalpa	ANAFAE
Evaluation meeting (annual)	Valle de Angeles	ANAFAE
Strategic planning (annually)	Monte Carmelo	ANAFAE
Assembly meetings (bimonthly)	Rotational	ANAFAE assembly
Board of Directors meetings (bimonthly)	Rotational	Directiva ANAFAE
Information visits to educational institutions (4)	National School of Forestry Sciences, Zamorano, University Center of the Atlantic Region, National Agricultural School	ANAFAE
Seminars on agro-ecology for educational institutions (4)	National School of Forestry Sciences, Zamorano, University Center of the Atlantic Region, National Agricultural School	ANAFAE

Table 19.2 shows the variety of activities that ANAFAE conducts in order to achieve its objectives. Each of the thematic working groups also develops independent projects to address particular concerns. For example, the policy commission won financial support to conduct an 18-month review and impact

assessment of the controversial Law of Agriculture Modernization and Development of the Rural Sector).

The Cornell International Institute for Food, Agriculture and Development (CIIFAD) played a special role in helping ANAFAE design its network as well as respond to the broad information needs of its members. University faculty and students have conducted multiple studies with partner organizations, in particular on the networks' informal communication system and technical aspects of agriculture, especially in regard to soil and pest management. ANAFAE has provided an effective forum for university interaction with multiple organizations and linkage to grassroots development efforts. Through this interaction, Cornell has learned much about practical aspects of sustainable agriculture.

Colabora: Collaborating for community-based natural resource management

Background

In Central America, a growing population puts increasing pressure on existing natural resources. Furthermore, government restructuring has led to decentralization and local management of resources, placing greater decision-making power in the hands of municipalities, local interest groups, and non-governmental organizations. Various stakeholders in rural areas—farmers, cattle ranchers, saw mill owners, environmentalists, and government representatives—have yet to establish effective communication and administrative mechanisms, and conflicts are on the rise.

Since early 1996, Global, Caritas / Pastoral Social de la Tierra, The Yeguare Valley Project, World Neighbors, the Yeguare Valley Program of the Escuela Agrícola Panamericana at Zamorano, Cornell University[3] and others have been working together to promote alternative decision-making processes to help alleviate disputes and promote more responsible and democratic change through improved communication and community representation.Over time, the partners created Colabora, a support network for actors interested in strengthening community-based natural resource management (CBNRM). As a result, the Honduran National Forestry Agency (COHDEFOR) and municipal governments participate in each of the network's five sites. Colabora develops conflict management methodologies, organizes site-based training workshops to enable stakeholders to advocate their interests and mediate disputes, and facilitates exchanges between sites.

Structure and Operation

Colabora's organizational structure differs from that of ANAFAE in several important aspects (change TABLE numbers. Rather than organizations and individuals, Colabora focuses on five priority sites, and involves local stakeholders from governmental, non-governmental, church, private business, and other sectors (Table 19.3). A key organization from each location assumes responsibility for facilitating local CBNRM processes. Representatives from the key organizations, as well as from Cornell University, sit on a steering committee that defines the Colabora agenda. Due to its relatively small size, Colabora does not have a single leader. Instead, Steering Committee members share decision-making authority and continually plans with the help of workshop participants. Activities are conducted jointly, with member organizations sharing training and financial responsibilities. Recently, after three years of operation, Colabora received modest funds for core activities and hired a part-time facilitator to support increasing communication, documentation, and coordination needs.

Table 19.3 Colabora sites and key organizations

Site	Key organization
Cerro Azul Meambar National Park (PANACAM)	Global Village
Guyape Valley Watershed	Guayape Project
Rio Plátano Biosphere	World Neighbors
Copán Valley	CONICCH/Pastoral Social de la Tierra
Yeguare Valley Watershed	Zamorano

Activities

To achieve its objectives, Colabora has conducted numerous introductory courses, at least three national level workshops each year, and mediation processes at sites (see Inset for example). The network rotates the location of activities to promote the exchange of experiences among sites and as a mediation mechanism. Colabora has trained documentation teams that work

with key organizations to further CBNRM processes at the community level. As a founding member of the Meso-American Network on Socio-Economic Conflict Management, Colabora also participates in regional forums.

CIIFAD and the Cornell Program on Community and Environment have supported Colabora by participating in Steering Committee activities and supporting training and research needs. Its students and faculty have conducted multiple studies to address priority information needs, such as mechanisms of communication at the network level and site-based stakeholder analyses. Through collaboration with Colabora, Cornell has been able to engage with community development efforts and has learned much about the mechanics of implementing CBNRM.

Specific lessons on networking

ANAFAE

After three years of trial and error, ANAFAE arrived at a viable and effective organizational framework for communication and action. Lessons from that experience follow:

1. Personal factors:

- Common ideals: The principles on which ANAFAE was organized provided solid common ground for future interaction and enabled the group to overcome interpersonal difficulties and other factors that could have created roadblocks to interaction and cooperation. They include democracy and equity, emphasis on individual management of their economic and social context, the sustainability of natural resource practices that fit the needs of local people, and understanding of the complex biological and social principles behind effective agriculture and natural resource management
- Friendship: Many members have interacted for years and already share history and friendship. Through bringing together others who share common professional interests, ANAFAE has helped to build new relationships and promote the exchange of ideas among colleagues, along with collaborative action (Raudales 1996).

2. Organizational factors:

- Broad and open participation and local leadership: ANAFAE has an open-door membership policy, welcoming anyone interested in sustainable agricultural. Strong participation has been a means to assure that good intentions serve the interests of intended beneficiaries. Leadership

positions change on a yearly basis, and the association expects all members to eventually hold positions.

- Strengthening of existing efforts: Rather than create new activities, ANAFAE has sought to strengthen participation in and the impact of existing activities through coordination of plans, integration of ideas, and mobilization and sharing of resources.
- Open communication and dialogue: ANAFAE believes that free exchange of ideas contributes to learning and growth, and the organization has looked for opportunities to promote the flow of ideas and continued group learning. The organization also has established an institutional history and the creation of a group identity.
- Organic structure and management by objectives: Over time, ANAFAE has taken shape in the form of new work groups that come into being and dissolve according to needs. Its continually evolving structure has permitted such movement.
- Embrace of diversity of experience: ANAFAE does not try to reach complete consensus on all the complex social and technical issues of agricultural development work. The association expects tolerance of diverse views and an appreciation of the contribution of others, regardless of their ethnic or religious background or philosophical orientation.

COLABORA

Through early experience, Colabora has learned much about the practice of CBNRM and new potential roles for research and development organization partnerships, including the following:

1. How to conduct CBNRM.

Conflict management

- Non-violence: Local organizations need to find ways to transform social tensions into productive forces of change, creating new arenas for peaceful interaction among community members leading to rational decision-making. A key first step has been to involve impartial actors, introduce more objective information, and strengthen relationships around common concerns.
- Re-conceptualizing conflict management: The Network has begun to re-frame the practice of conflict management within the broader context of collaborative problem-solving. Through the process of resolving practical concerns, such as land productivity issues, people can develop needed

understanding, attitudes and skills that often contribute to more friendly or at least productive relationships.

- Addressing disparity: The Copán experience demonstrates that development efforts cannot afford to work exclusively on farm productivity issues, for example, while ignoring power imbalances and other external forces that often perpetuate rural poverty. Initiatives must enable people to articulate and advocate concerns in political forums.

Training

- Problem-orientation: Rather than train participants in potentially confusing concepts, the network has facilitated learning through dealing directly with problems in the community.

- Elicitation approaches: Conflicts are typically culturally defined and demand solutions that emerge from within the local context. The network has adopted and created open-ended, elicitation methods to problem-solving that permit genuine participation and control over the CBNRM process and lead to more relevant learning and action.

Participation

- Involvement: All actors who are responsible for the situation or could influence future outcomes need to be part of CBNRM. International representatives who can help strengthen and legitimize the concerns of underrepresented groups can also be important players.
- Representation: The involvement of certain community groups, such as women, government decision-makers, private enterprise, and the illiterate, among others, can be challenging. Nevertheless, these actors, who can strongly influence outcomes, need to be part of CBNRM decision-making processes.
- Leadership: Rather than encourage conventional, often demagogic leadership, low-profile leadership should be assisted through participation and collaborative activities to contribute to the most effective CBNRM.
- Local organizations as mediators: The network has operated through local organizations that function as community mediators, creating linkages among people and institutions, facilitating communication, and brokering interests. Ideally, mediating organizations should have a long-term commitment to community interests and be capable of playing a relatively neutral role.

2. Research

Situational analysis

- Empowering research: Participatory diagnostic processes can enhance the relevance and accountability of research while building capacities. The network's facilitation teams have been engaging people in dialogue on conflict issues, producing quality information and analysis, and helping to empower individuals through education and capacity building as well as inspiring further participation in CBNRM processes.
- Research as mediation: Participatory rural appraisals (PRAs) and conflict management methodologies have proven valuable tools for focusing attention on the problems at hand (and not just on the responsible actors). Activities of analysis, consensus-building, and planning provide opportunities for better appreciation of diverse community perspectives, more inter-disciplinary analysis, and inter-agency sharing.
- Tools for information collection and analysis: The development of new rural appraisal and conflict management methods has proven very useful for strengthening participation and analysis. The network has used resource maps, historical analysis, matrices for comparison and prioritizing options, and various methods of stakeholder analysis successfully.

Reflections

Contributions and potential

Axinn and Herisse (1996) acknowledge that genuine collaboration has very high transaction costs, but point out, "those costs are a necessary investment for successful development activities."

Through experiences with ANAFAE and Colabora, participants have learned that effective networks are not merely created as a result of premeditated plans and intentions, but rather they are the result of lengthy, often difficult processes of trial-and-error, which is to say that they evolve. When mature, collaborative networks can effectively exploit common ground among organizations, as well as create new paths for sustainable agriculture and natural resource management.

ANAFAE and Colabora have shared leadership and experiences. This has helped people come to know and understand one other's perspectives, contributing to camaraderie and more constructive relationships among organizations.

- More stable and new funding opportunities: The identification of mutual interests and a focus on strengthening existing activities rather than creating new ones, have led to joint activities and the sharing of resources. Shared organizational focuses and funding structures have provided greater stability and enabled long-term thinking. When donor agencies became convinced of the network's potential and commitment, the networks had little difficulty obtaining complementary funding for core activities.
- Improved decisions and utilization of human and institutional resources: Because both ANAFAE and Colabora were founded based on common goals, the networks are as potentially knowledgeable as their collective membership and as strong as their ability to inspire broad-based participation and collective action. Grassroots policy and community-based natural resource management. have benefited from the sharing of information and professional expertise, as well as from access to materials and facilities such as transport and training centers.
- Enhanced accountability, relevance, and use of research: Through creating conditions for demand-driven interaction with the networks, CIIFAD was able to greatly enhance the accountability, relevance, and use of research by Cornell faculty and students in Honduras. When proposed research outputs became more consistent with project needs, partners were increasingly prepared to commit resources to support faculty and student field work. In addition, research outputs became more immediately accessible to development organizations and rural communities.
- Potential for influencing policy: The ANAFAE policy group has created a new forum for identifying common themes and leveraging policy through advocacy. Large research institutions, such as universities and international centers, have an important role to play in enabling relatively less influential NGOs and farmer groups to represent concerns in policy formation circles. To date, research institutions have usually shied away from political activity, and in many cases, legal arrangements with host countries have forbidden such activity. Nevertheless, there is substantial experience demonstrating when NGOs and research institutions avoid political matters this greatly limits their ability to make lasting contributions to rural progress[4].

Obstacles

Marlboro Man academics: Research institutions need to get away from what has been called "Marlboro Man academics"— macho or egocentric and self-fulfilling research. All too often university researchers have defined problems and carried out studies independently. Even when research results

have arrived to rural villages, this work has not generally empowered people (i.e., communities did not develop new organizational or analytical skills, nor were they inspired to action). Universities should work with local researchers and multiple stakeholders to provide high quality and more objective information and guidance on the biological, chemical, physical, economic, and social barriers to progress.

For example, as a direct result of a CIIFAD-sponsored cross-visit to Indonesia, Colabora began to use participatory rural appraisal teams as part of its strategy for engaging local communities in learning and dialogue around conflict issues. This experience in turn facilitated new relationships among multiple stakeholders, exposed critical issues, built new understanding, and precipitated more effective decisions and action. Researchers should help develop local information collection and analysis capabilities and document experiences, thereby gaining new knowledge on effective approaches to change while contributing to progress on priority concerns.

- Conceptualization of the role of research institutions: Pretty (1995) and others have suggested that the action orientation of development partners, research institutions have sometimes had difficulty convincing academic advisors of the research relevance of their proposed work. This was particularly a problem for Ph.D.-level research project that demanded greater rigor. Science must consider new analytical paradigms that encourage the generation of more problem-centered and action-oriented knowledge generation, so that it may more completely address the concerns of rural communities.
- Institutional jealousies: Jealousies among organizations can affect attitudes and willingness to interact. Networks need to take these attitudes into account when designing strategies for involvement and participation.
- Funding structures: Available and flexible funding is a key factor for achieving sustained and dynamic responses to the needs of multi-institutional networks. Nevertheless, funding is often channeled through a single organization. Research institutions need to better understand opportunities available for collective efforts and encourage donor organizations to permit more flexible use of funds, often beyond project themes and areas. This will no doubt demand new collaborative management mechanisms that provide transparency, efficiency, accountability, and shared responsibility in the use of resources.
- Changing personnel, roles, and organization priorities: ANAFAE's initial design and structure was centered on organizations. Nevertheless, Honduran development organizations are largely private and depend on short-term projects, so professionals often have relatively brief contracts

and are forced to move among organizations. ANAFAE recognized the value of individual contributions, regardless of changing institutional affiliations, so the association has instituted changes to permit individuals full membership privileges. Since development professionals often continue working in particular regions, the nature of Colabora's organizational design — site-focus — enable such individuals to continue participating in the network.

- Communication among partners, but also within partner institutions: Before 1995, effective means of communication among development organizations did not exist. From the start, both ANAFAE and Colabora made strong efforts to document meetings and activities and circulate information widely. A relatively good national telephone system permitted the networks to create electronic listserves, especially with the assistance of one member organization, the United Nations Sustainable Development Network, which specialized in internet services as an institutional development scheme, to establish relatively cheap and effective linkage.
- Early on in the development of the association, ANAFAE identified a Masters student to do thesis research on its formal and informal communication systems (Raudales 1996). Colabora benefited from a similar thesis on the communication among and within its member organizations[5]. Among other findings, the studies have shown that informal channels have been particularly effective for building relationships, but that a number of mechanisms, such as management mechanics, were affecting efficiency and, ultimately, motivation. Regular meetings contributed greatly to member understanding of the networks for those who attended, but others in institutions (those who did not participate in network activities) knew little or nothing about ANAFAE or Colabora. As this situation limits full participation, the networks have been exploring strategies to strengthen communication not only between members but also within their organizations.
- Management: In the early stages of network development, projects were limited and volunteers could easily handle administrative concerns. By year three, however, both of the networks began to take on increasingly complex agendas, and it became necessary to solicit dedicated coordination support. A concern has been that paid employees might discourage membership participation. Consequently, the networks have limited the activities of employees to facilitation roles, in particular communication and follow-up activities.

Demands on actors

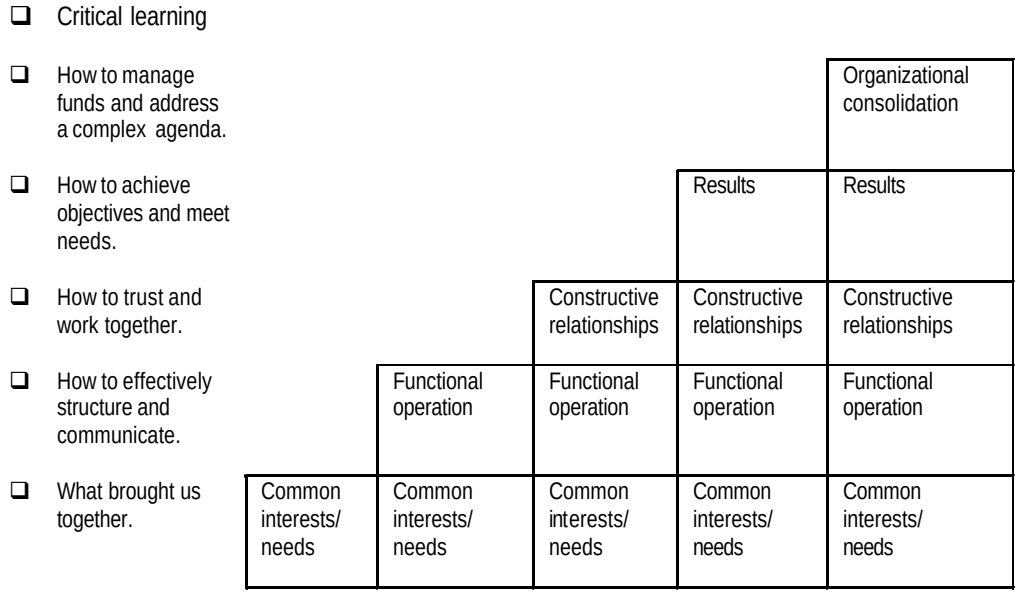
- Research institutions as catalysts for learning: Research centers and universities have a potentially strong role as catalysts, in the strict sense of the word: agents that speed up reactions. This involves demand- and service-oriented action in which scientists accommodate local demands for their expertise by providing access to information, specialized training, and research support, as well as the integration of local perspectives in the design of development projects.
- Development organizations as advocates and facilitators: Fisher and colleagues (1999) described essential roles for development organizations as both Ninja Turtles (those popular cartoon characters that champion justice) and Bunglon (chameleons). As Ninja Turtles, development organizations sometimes play advocacy roles, but their unique positions require them to be chameleons, or facilitators, that work closely with communities to monitor needs and orient constructive relations with other actors, such as scientists or politicians, who are usually relative outsiders and therefore farther removed from the rural context. NGOs certainly served this role in both ANAFAE and Colabora, for example, mediating between Cornell scientists and community needs.
- Communities / farmers as strategists and tacticians: Positive and negative experiences with development organizations have contributed to the understanding that outside-led interventions and community passivity have been the cause of many problems. The need for broad community representation and strong involvement in rural development processes is well established (Uphoff 1998), suggesting that communities have an essential role to play as project strategists and tacticians, who develop and test alternative solutions.
- Networks as platforms for addressing broad concerns: As evident in the experience of the Nusa Tenggara Uplands Development Consortium in Indonesia (Fisher et al. 1999), networks can help provide both context and continuity for collective action. Not only did ANAFAE and Colabora encourage resource sharing and multi-perspective thinking, most of the networks' achievements, especially those directed at policy formulation and CBNRM, could not have been achieved individually. Networks provide a useful arena for engaging externalities that affect the rural condition but that are normally beyond the realm of influence by individuals or single organizations.

Enabling mechanisms

- Ideals: Shared values and principles, such as the ones listed in Box 2, have bound the partnerships together. As far as possible, organizing around ideals can greatly facilitate the establishment and continuation of networks.
- Human relationships: Achieving effective networks is a tremendous intellectual and social achievement that can be greatly facilitated by friendly, or at least productive, interpersonal relationships (Uphoff 1996). History and friendship were essential for building trust and commitment around collective interests. This was particularly essential in early stages of network formation, when effective communication and decision-making mechanisms were not yet well established. Creating an environment in which people give each other the benefit of the doubt, i.e., attitudes that lead to more positive interpretations of possibly equivocal statements or actions of others, is essential for avoiding needless conflicts. Organizers should define clear strategies to attend to the social needs of partners in ways that will promote increasing participation and ultimately organizational consolidation.
- Complementary interests and shared decision-making authority: Much has been written about the comparative advantages of inter-organizational collaboration. Nevertheless, as in the practice of economics, unless parties share decision-making authority and control over terms of interaction, mutual benefit and complementarity can be greatly limited. To fully achieve the benefits of interaction, networks must involve diverse actors and permit fair and equal participation in decisions.
- Results: Willingness to work together is unlikely to continue unless decisions lead to concrete results that inspire organizations to invest time and resources in collective interests (Alsop et al. 1996). Small but cumulative successes have helped both ANAFAE and Colabora to establish conditions for increasing participation.
- Organic structure: The process through which ANAFAE and Colabora arrived at effective organizational designs was essential to their success. As Figure 19.1 describes, both ANAFAE and Colabora needed time to build relationships and learn how to function as a group before progressing to more advanced stages of organizational development. Korten (1980) and others have argued the advantages of the learning process over the blueprint approach to project management. He suggests that rather than plan mechanistically and rigidly, institutions should "embrace error," learn with intended beneficiaries, plan together, and link knowledge building with action. While developing local capacity to analyze needs through

participatory learning and action, projects can achieve greater "fit" with the local context as group capacity grows, thereby increasing the likelihood of success.

Figure 19.1. The Consolidation of ANAFAE and COLABORA: Three-year Process of Learning and Action.



Conclusion

New arrangements emerged from innovative partnerships in Honduras in the form of two networks: ANAFAE uniting 20 development organizations and two universities around the theme of sustainable agriculture; and Colabora, bringing together stakeholders in five sites around community-based natural research management concerns. The experiences were particularly useful for giving development organizations access to specialized information and skills, and also for helping research institutions improve the accountability and the relevance of their activities. In the process, much was learned about how to build effective platforms for multi- and inter-institutional interaction, despite the occasional difficulties of involving actors with diverse objectives and operational cultures.

In order to genuinely contribute to the mutual goals of the networks, universities needed to broaden their agenda and take on new, more applied

activities. This required the employment of a fulltime coordinator to maintain close communication with the networks and to represent interests in forums, and sometimes to mediate between development practitioners and scientists. Essentially, the coordinator and the network forums served mediating roles between scientists and rural people, helping to reconcile relatively divergent world views and distinct (though complementary) motivations and objectives.

Effective collaboration between development organizations and research institutions was achieved slowly through an iterative process of trial-and-error. Critical elements that facilitated this achievement were common history, friendship, ideals, interests, and mutual success. The emerging networks required evolving organic structures as well as highly flexible communication and decision-making mechanisms for responding to the growth and maturity of the networks.

Once effective collaborative frameworks were established, ANAFAE and Colabora were able to successfully formalize institutional arrangements and promote more ambitious agenda, such as that involved in national policy formulation. Multi-institutional platforms enabled members to address previously neglected political issues that were relevant to their priorities, but beyond individual capacities. The networks enhanced grassroots ability to affect sustainable agriculture and natural resource management at macro levels, thereby opening new opportunities for development work in Honduras.

Notes

1 Based on a case study first presented at the International Workshop on NGO-Research Partnerships (RESPAR), IIRR, Cavite, Philippines, 4-10 October 1998.

2 For examples of outstanding development work in Honduras, please see Bunch (1987), Bunch and López (1994), Mejía (1993), Krishna et al. (1997), Pretty (1995), as well as Smith (1994).

3 Participating organizations at Cornell University included CIIFAD's Central American Program as well as the Center for the Environment's Program on Community and Environment.

4 For arguments on the need of development organizations and research institutions to engage with political issues, see Blauert and Zadek (1998), Pretty (1995), and Sherwood (1997).

5 Thesis of Eric Nielsen, Masters student, Department of Communication, Cornell University (in progress).

References

Alsop, R.G., R. Khandelwal, E.H. Gilbert, J. Farrington.
1996 The human capital dimension of collaboration among government, NGOs, and farm families: Comparative advantage, complications, and observations from an Indian case. Agriculture and Human Values 13 (20): 3-12.

Axinn, G. and R. Herisse
1996 Accountability and collaboration in international development. Agriculture and Human Values 13 (20): 1.

Blauert, J. and S. Zadek.
1998 Mediating sustainability: Growing policy from the grassroots. West Hartford, CT Kumarian Press.

Bunch, R.
1987 Case study of Güinope Integrated Development Program, Güinope, Honduras. Paper presented at IIED Conference on Sustainable Development, London. 28-30 April.

Bunch, R. and G. López
1994 Soil recuperation in Central America: Measuring impact 4 to 40 years after intervention. Honduras, COSECHA. 18 p.

Chenier, J. S. Sherwood and T. Robertson
1999 Copán, Honduras: Collaboration for identity, equity, and sustainability. Pp. 221-236 *In* D. Buckles (editor), Cultivating Peace: Conflict and Collaboration in Natural Resource Management. IDRC/World Bank.

de Fontenay, C.
1997 Market Power and Agro-export Production in Northern Honduras. Doctoral dissertation. Department of Economics, Stanford University, California.

Fisher, L., I. Moelino, and S. Wodicka.
1999 The Nusa Tenggara uplands, Indonesia: Multiple-site lessons in conflict management. Pp. 61-80 *In* D. Buckles (editor), Cultivating Peace: Conflict and Collaboration in Natural Resource Management. IDRC/World Bank.

Kaimowitz, D.
1996 La ganaderia hondureña: Entre la esperanza de un crecimiento incluyente y sostenible y las amenazas del latifundio y la deforestación. Pp. 169-204 *In* El Agro Hondureño y Su Futuro. E.

Baumeister (coordinador). Editorial Guaymuras. Tegucigalpa, Honduras.

Humphries, S

1997 Milk cows, migrants, and land markets: Unraveling the complexities of forest to pasture conversion in Northern Honduras. Paper presented at the Latin American Studies Association XX International Congress, Guadalajara, Mexico, April 17-19.

Korten, D.

1980 Community organization and rural development: A learning process approach. Public Administration Review. 40 (5): 480-511.

Krishna, A.; Uphoff, N.; Esman, M

1997 Reasons for Hope: Instructive Experiences in Rural Development. USA, Kumarian Press.

Lacy, W.

1996 Research, extension, and user partnerships: Models for collaboration and strategies for change. Agriculture and Human Values 13 (20): 33-41.

Mejia, F.

1993 Las actividades de conservación de suelos en las organizaciones privadas de desarrollo de Honduras. FOPRIDEH. Tegucigalpa, Honduras.

Pretty, J. 1995

Regenerative Agriculture: Policies and Practices for Sustainability and Self-reliance. Earthscan Publications, London, U.K.

Raudales, M.

1996 Communication Systems of a Network in Honduras: Case Study of the National Association for the Promotion of Ecological Agriculture (ANAFAE). Masters thesis. Maxwell School of Communication, Syracuse University, Syracuse, NY.

Sherwood, S.G.

1997 Politics of inequity: The impact of recent public policy changes on small-scale agriculture of the North Coast of Honduras (in Spanish). *In* M. B. Flores [coordinator], The Use of Cover Crops in Central America. Case Study for the International Workshop on Smallholder Green Manure Cover Crop Systems of Tropical and Subtropical Regions. Santa Catarina, Brazil, 6-12 April: 40-46.

Smith, K

1994 The Human Farm: A Tale of Changing Lives and Changing Lands. Kumarian Press.

Uphoff, N.
1996 Learning from Gal Oya. Possibilities for participatory development and post-Newtonian social science. Intermediate Technology Publications.
Uphoff, N.
1998 Balancing development and environmental goals through participatory and community-based natural resource management. Paper for AAEA International conference on agricultural intensification, economic development, and the environment. Salt Lake City, NV, 31 July - 1 August.

Chapter 20

Organizational Strengthening for the Sustainable Management of Natural Resources in Tropical Rain Forests

José Villacrés

Project SUBIR has been working since 1992 in conservation and development in the lower areas of the Cotacachi-Cayapas Ecological Reserve (RECC). SUBIR staff implement activities in association with other NGOs, specifically, CARE, JATUNSACHA, ECOCIENCIA, and with local communities. The purpose of the project is to implement development models based on the sustainable use of available natural resources to satisfy the needs of families and the social development of local peasant organizations.

For this purpose, Project SUBIR staff develop activities which include the following components:

- Organizational strengthening
- Legalization and Political initiatives
- Sale of products
- Improvements in land use
- Biological monitoring.

The lowlands of the CCER are located in the northwest of Esmeraldas province, in a tropical rain forest zone. Two major ethnic groups live in the reserve's buffer zone, Afro-Ecuadorians and the indigenous Chachi culture.

Due to geography, access to the area is difficult, and the communities have received virtually no services from the state. Consequently, there is a lack of basic infrastructure for health, education, conservation, social welfare and other needs. As a result, communities have to depend exclusively on natural resources, especially timber, to assure the satisfaction of their basic needs and to acquire community services. This situation puts community members

at a serious disadvantage in dealings with the logging industry, middlemen, salesmen and all other parties who are eager to take advantage of the area's natural resources, which they have protected for years.

Objective

The objective of Project SUBIR's Organizational Strengthening Component is to aid members of Afro-Ecuadorian and Chachi organizations develop their administrative, organizational and technical skills in order to manage their natural resources in a sustainable fashion.

Social organization prior to the arrival of project SUBIR

In Afro-Ecuadorian communities, social organization took the form of Improvement Committees, Parent Committees, Peasant Associations and Fiesta Committees. In addition, a regional Afro-Ecuadorian Organization of the Upper Cayapas was in the process of developing. The purpose of these organizations was primarily to preserve the culture's cosmovision, plan yearly fiestas, organize community work parties, and seek support for health, education and other basic services. In matters of land tenancy and management of natural resources, the position of local organizations was very weak.

The Chachi people had a stronger organizational base in the Chachis Centers, affiliated with the Federation of Chachis Centers of Esmeraldas. Among members of this group, the vision and ability to act in the area of land tenancy was stronger. As a result, a number of centers had land titles and the majority had established the boundaries of their territory.

Community organization and its basic elements

Through participatory processes carried out with local actors, it became clear that the purpose of community organization should be to encourage the administration and sustainable management of natural resources. This process involves the following basic elements:

- legalization of land tenancy;
- legal status for community organizations;
- training of leaders, paratechnicians and residents in general;
- By-laws, internal regulations and administrative procedures;
- Integral Natural Resource Management Plan or Community Forestry Management Plan; and
- community run small businesses

Legalization of land tenancy

In order for a community organization to encourage the sustainable management of natural resources, it must have legal title to its land so that the community can develop economically, socially and culturally. Consequently, Project SUBIR has supported the legalization of community land titles. The lands covered by these titles are not subject to division nor can they be sold. This guarantees the integrity of the property for future generations.

Communities administer the lands by providing families a parcel for their use in the development of agro-forestry activities.

Legally recognized community organization

For this purpose, SUBIR staff have discussed with communities the different types of organization recognized by Ecuadorian law, under the auspices of different ministries and related to the needs, traditional organization, future goals and ways of life of Afro-Ecuadorian and Chachi communities. As a result, Afro-Ecuadorians have opted for communes and agro-forestry associations in which men and women participate equitably as members, with the same rights and obligations. The only form of organization in indigenous communities are the Chachis Centers, which existed prior to the arrival of Project SUBIR.

Training of leaders, paratechnicians and community members

This process has been basic to the consolidation of community organization for the sustainable management of natural resources. Training programs have been offered in social organization, law, biology, forestry, agro-forestry and marketing.

In the area of social organization, the following subjects have been covered: participatory diagnosis, community planning, formulation and evaluation of projects, parliamentary procedures, and communal administration of small businesses, human relations, leadership and accounting.

When a community has members who are trained in essential skills, residents are able to analyze their problems, generate opinions on what is happening in their environment, and make decisions at all levels, especially as related to forest resources.

To strengthen the authority of members of boards of directors, work has been done in defending the cultural and moral values of the community, with an emphasis on responsibility, integrity, honesty, solidarity, respect and mutual aid.

By-laws, internal regulations, administrative guidelines

Here it is important to point out that community organization is the primary mechanism for administration and control, through which the use and customs related to the management of a community's natural resources are determined, in accordance with existing laws. Consequently, based on their own needs and cultural reality, communities create, discuss, approve and share by-laws, internal regulations and guidelines for the administration of their collective goods. The most relevant of these instruments are:

- Forestry Committee Regulations
- Ecotourism Committee Regulations
- Regulations for the Administration of Community Funds
- Guidelines for the Community Credit Fund

These instruments encourage the strengthening of community authority by persons on the board of directors, and the appropriate administration and control of collectively owned goods. However, it has been necessary to involve state authorities to orient and support the activities of boards of directors, especially as regards forestry management.

Integral natural resource management plan or community forestry management plan

The purpose of these plans is the socio-economic development of communities based on the sustainable management of natural resources, which will make it possible for communities to:

- project their vision of the future over the long term, that is, ten or twenty years;
- determine those socio-cultural, economic and ecological aspects that the community should improve or implement;
- prioritize their needs and the use of their natural resources over time;
- identify potential human, natural and economic resources available, and determine rules for their use;
- channel available resources in an appropriate fashion; and
- design a chart of the community which illustrates its most important resources and their potential uses.

Small community businesses

Small community businesses have been promoted by Project SUBIR. These are based on the sustainable management of natural resources. The concept

of a small business includes the following elements:

> ...an entity or organization established [on a small scale]...for the purpose of developing activities related to the production and sale of goods and services in general to satisfy the various needs of residents. The basic objective is to obtain income while minimizing costs and expenses. The major characteristic [of a small business] is that administration and accounting are guided by a social contract…(Suquilanda 1997).

Small community businesses delegate the administration and operation of a productive activity to responsible persons with the necessary skills in order to produce earnings for the community. Thus, a small community business does not involve the participation of all members in administration and operation of productive activities, such as the exploitation of forest products according to a management plan or ecotourism. Instead, groups of members are trained in the necessary skills and work on behalf of the community, guided by an organizational structure and appropriate rules. The small community business is the operative entity in communities that carries out productive activities established or visualized in the Integral Management Plan or Community Forestry Management Plan.

Profits generated by small community businesses are invested in specific social development priorities indicated in the community's plan. Jobs generated by small community businesses provide an opportunity for families to increase income and satisfy family needs. With this cycle, the conservation and development circle is closed in local communities in the lower areas of the CCER.

Conclusion

When communities have access and put into practice the basic elements described above, we can talk about local organizations that administer and manage their natural resources in a sustainable manner. This is a long term process given the socio-cultural and geographical limitations and the level of conflict present in the communities. However, thanks to the willingness of local actors to get involved, a number of organizations are on the road to reaching the twin goals of socio-economic community development and the conservation of biodiversity. The chart below provides a summary of Chispero, one community which is successfully combining development and conservation.

Table 20.1 Results of Organizational Strengthening in the Community of Chispero.

In 1995	In 2000
❑ Association of Afro-Ecuadorian peasants	❑ Community legally established as Comuna Chispero and community authority exercised by town council
❑ Scattered population	❑ Town center established and school and town hall built
❑ Only males 18+ years are members	❑ Males and females 18+ years are members
❑ No community land title and few families with land boundaries established	❑ Community has title to its lands
❑ Unplanned exploitation of forest	❑ Integral Natural Resource Management Plan and Forestry Management Plan established
	❑ Forestry Committee determines exploitation and sale of forest products
	❑ Community and forestry committee establish by-laws and Instructions for the Community Management Fund written
	❑ 5 community members work as para-technicians: 1 in legal matters, 2 in forestry, 1 in agro-forestry and 1 in marketing
	❑ Accounts of productive activities maintained and savings account opened
	❑ The town council plans administrative tasks on the basis of an annual operating plan
	❑ A small business started by women who create craft items from forest sub-products

References

Suquilanda, L.
1997 Contabilidad Agraria y de Sociedades. Loja: Universidad Técnica Particular de Loja.

Ley de Organización y Régimen de las Comunas.
1992 Quito: Corporación de Estudios y Publicaciones.

Chapter 21

Participatory Conservation: Lessons from the PALOMAP Study in the Cayambe-Coca Ecological Reserve, Ecuador[1]

William H. Ulfelder and Susan V. Poats

The introduction of the participatory paradigm took place on the basis of previous changes. In Ecuador, as in other Latin American countries, the state was forced to allow non-governmental organizations (NGOs) to become involved as counterparts in conservation areas. Thus, there was a movement from the first stage, in which the state assumed exclusive responsibility, to a second stage in which NGOs began to collaborate, though still within the framework of conservation which excluded local populations. The third stage, in which NGOs adopted the local participatory paradigm, is opening the way for local organizations to become involved in planning and implementation activities. At the present time, actors formerly excluded are beginning to have a role, within the context of changes in the role of the state which, however, continues to affect the dynamics which condition conservation and development. The direction that this dynamic takes will depend on a number of factors, but there has yet to be sufficient reflection regarding this process, based on concrete experiences. At the same time, we still do not have enough specific cases, objectively and analytically documented, of community participation in the conservation of natural resources.

In our opinion, what is lacking is a systematic appreciation of the methods, achievements and impacts of this type of experiences related to the social and institutional contexts in which they take place. The effectiveness of the participatory focus as it relates to the field of natural resources and biodiversity

conservation remains unknown. To what extent does the participatory focus represent an improvement in the possibilities for conserving and guaranteeing appropriate management of natural resources in the long term, as compared to the traditional processes applied in previous stages?

In order to begin to answer this question, we have developed a systematic study of the experiences of integrated conservation and development projects (ICDPs) which operate on the basis of the participatory paradigm in an area comprising an ecological reserve in Ecuador. Our purpose is to extract a series of lessons and establish a methodology which will permit fine-tuning in the design of participatory activities within the context of future conservation projects.

The PALOMAP study[2]

The study entitled "Local participation in the management of protected areas" (PALOMAP - "Participación local en el manejo de áreas protegidas") was a collaborative study by The Nature Conservancy (TNC) and the Latin American School of Social Sciences (FLACSO - Facultad Latinoamericano de Ciencias Sociales), carried out in 1996 in the Cayambe-Coca Ecological Reserve (RECAY - Reserva Ecológica Cayambe-Coca), Ecuador, and its areas of influence, under the auspices of the Ford Foundation. The stated objectives of the PALOMAP projects were the following pair of initiatives:

1. develop a research methodology to measure the impacts of participatory initiatives that may be applicable to other protected areas in Latin America, especially the Andean-Amazon region; and,
2. generate a series of lessons learned, on the basis of a group of case studies that represent the different types of participatory conservation initiatives, along with practical suggestions for improving these.

The PALOMAP study centers on a comparative analysis of the conservation initiatives implemented in the RECAY, which include local populations in the management of protected areas. In the study, emphasis is on the analysis of interaction processes among environmental NGOs, the state and the local population, and their impact on the RECAY. In the RECAY area, there are many initiatives like this one (ecotourism, agroforestry, small businesses, wildlife management, etc.) which incorporate a socio-economic component in their strategies for natural resource conservation. On the one hand, the local population is recognized as a source of information on the appropriate use of natural resources. On the other, it is assumed that development may mitigate the pressures brought to bear on natural resources

in the area. However, there has been no analysis of the variety of participatory methodologies used, nor of the relation among the types of participation and the types of conservation intervention employed. There has been no systematic attempt to prove that local participation results in better conservation of protected natural resources in the RECAY.

In order to fill this gap, the study was carried out through analysis of the following:

- the various existing conceptualizations regarding participation of the local population in conservation efforts;
- participatory methodologies and institutional capabilities applied to the identification of situations and the planning of conservation/development actions;
- the relation among participatory methodology, type of conservation intervention and the impacts of conservation activities, and the sustainable use of natural resources;
- the effect of socio-organizational, political and legal (local, regional and national) factors on the way in which the relationship between institutions and local populations and the development of participatory activities evolve.

The Cayambe-Coca Ecological Reserve

The RECAY covers approximately 403,000 hectares located in four provinces (Pichincha, Imbabura, Napo and Sucumbíos). The National Institute for Natural Areas and Wildlife (INEFAN, acronym in Spanish), under the jurisdiction of the Ministry of Agriculture, is responsible for the reserve's management. Human settlement is prohibited in the reserve. Also prohibited is the use of forest resources, grazing lands and water, except for purposes of research or tourism. Nevertheless, these prohibitions are not complied with in practice. There are human settlements in the RECAY, as well as communities and individuals in the immediate surroundings who regularly use forest resources, graze their livestock within its boundaries, and hunt.

The Ecology of the RECAY

Ten life zones exist within the RECAY: Humid forest, Subtropical humid forest, Very humid subtropical forest, Low montane humid forest, Very humid montane forest, Humid montane forest, Humid pre-montane forest, Low humid montane forest, Very humid sub-Alpine forest, and Nival (Paucar and Reinoso 1978; Fundación Natura 1996). The paramos and the Andean tropical forests

within the RECAY were declared "regionally outstanding," the highest rating available, by the Biodiversity Support Program, a consortium of USAID, Conservation International, The Nature Conservancy, Wildlife Conservation Society, World Resources Institute and World Wildlife Fund. More specifically, the RECAY area was declared regionally outstanding due to its biological value in all categories: plants, mammals, birds, insects, reptiles and fish (USAID 1995). At the same time, the Biodiversity Support Program classified the current conservation status of the RECAY area as "vulnerable" (a category between critical and relatively intact), according to the "Conservation Status of Ecoregions of Latin America and the Carribean." But when the conservation status is determined based on the level of existing danger, the conservation status of the ecoregion is listed as "in danger," that is, approaching the highest priority level (USAID, 1995).

The human population within the RECAY and in the surrounding areas

In Ecuador, 86 percent of protected areas have been affected by human populations whose use of resources has generated conflicts with management plans (Fundación Natura 1992). The human population within the RECAY is relatively small. Indeed, the residents of neighboring communities, haciendas, and state and private entities use the protected resources of the RECAY and, occasionally, "threaten" the reserve as a result of the patterns, frequency and/or intensity of the use they make of the RECAY's natural resources. There are only two communities within the reserve, and both are indigenous. Residents of the community of Oyacachi are Quichua and have been living there, at 3,200 masl, for 500 years. Nearly 400 persons reside in the settlement. The other community is the Cofán Center of Sinanagöé, composed primarily of Cofán families, although there are also a number of Cofán women with mestizo husbands. There are only 17 families in Sinanagöé, 12 of these headed by Cofán males.

Surrounding the RECAY are numerous individual landholdings, settlements and villages which depend on the natural resources of the area. The upper part of the reserve is surrounded by old settlements, many of the former haciendas which were divided during the agrarian reform of the 1960s. The residents of these communities depend, primarily, on livestock raising (milk and meat) and the production of grains such as wheat and barley. Due to difficulty of access (roads), the lower part has been colonized only recently. Although some populations such as Baeza are old, in many cases the villages along the road to the Ecuadorian Oriente, or rainforest region, were established

after the oil boom of the 1970s when the road and the pipeline were built. The residents of many of these communities depend on livestock (milk production for Nestle or local cheese factories) and agriculture (naranjilla, maiz, coffee, cassava and plantain). In the lower area there is rapid population growth due to the high birth rate and, especially, to migration into the area. According to the National Census Institute of Ecuador (INEC), during the 1980s, the annual growth rate for Baeza was 10.32 percent; El Chaco, 7,48 percent; Linarea, 7.9 percent, and Lumbaquí, 5.0 percent (Fundación Natura 1992). Eighty percent of families in the lower zone come from the Sierra in search of land (Fundación Natura 1992) and the majority of resdents have no title to their land.

Research methodology used in the PALOMAP study

Although RECAY is one of Ecuador's oldest protected areas, there is relatively little documentation of its protected biological resources, or of the neighboring communities. The few studies available on surrounding communities are very superficial and are no more than inventories (the number of people living at a site, the number of schools, churches, shops in existence), and there is little descriptive or analytical information on human activities related to natural resources. All of this information was fed into a computer program (PROCITE) for use by the PALOMAP team.

The second step involved a rapid survey in the course of a trip around the RECAY, carried out by the complete interdisciplinary team and, at certain points, including persons affiliated with other organizations or residents of local communities. The initial survey included a trip to the northern area of the RECAY in order to explore the new road being opened between La Bonita and Lumbaquí. The team completed the survey with a series of detailed interviews with key informants, involving individuals living in the Reserve area or working there at different tasks for long periods of time. Information gathered during the survey and in the course of interviews with key informants was then analyzed to divide the area of human occupation within and around the reserve into six socio-ecological zones of study which are briefly described below.

The High Andean Zone is the paramo which forms a buffer zone in the upper part of the RECAY toward the east. It begins in the south with the Quito-Papallacta road and continues north along the upper zones of Cayambe and Ibarra, ending in the upper areas and to the south of Pimampiro. Although both Papallacta and Oyacachi are paramo communities, each has socio-cultural and economic characteristics distinct from those of other communities in the

high Andes, primarily due to their close proximity to the reserve and activities related to the exploitation of the hydric resources in the surrounding areas. For that reason, we decided to define Oyacachi and Papallacta as independent zones in our analysis.

Following the road from Papallacta toward the Oriente (Lago Agrio), the entire area from Cuyuja descending to Lumbaquí is a heavily colonized area, but to facilitate our analysis, we divided it into two: the area from Cuyuja to El Chaco is the Old Colonization Zone, in which there have been more than two generations of settlers, and the New Colonization Zone, marked by active processes of occupation and settlement, in spite of the existence of the RECAY. It should be noted that these two zones share other significant characteristics. First, they are part of the Quijos River basin which flows into the Napo River and represents one of the most important tributaries of this Amazon waterway. The waters of the Quijos are scheduled to become part of an enormous hydroelectric dam, to be located in an area known as the Coca-Codo Sinclair. The most important waterways feeding into the Quijos originate in the RECAY or in the Antisana Ecological Reserve (REA) which borders with the RECAY to the southwest between Papallacta and Baeza. Thus, the future of this hydroelectric project depends, in large part, on the continued and effective protection of these reserves. A second characteristic of these zones is that the human population is "between reserves". The settlement areas are shaped like a narrow human corridor the runs from the RECAY to the REA and, from there, to the Gran Sumaco. As noted above, this corridor has a high rate of human population growth. Human pressure is going to increase toward the reserve unless viable alternative economic programs, related to the conservation of the reserve for current and future generations, are implemented.

The team also defined the Sinanagöé Zone on the Aguarico River. This includes the Cofán population and the areas in which they exploit natural resources, as well as the Quichua settler communities to the south and the Sierra settler communities, primarily in the province of Carchi to the north. The last zone is the core zone of the area within the reserve in which there has been very little extraction of natural resources or agriculture and livestock production activities by human beings.

Case studies

After identifying the reserve's socio-ecological zones, the team decided to select a sample of specific cases through which members could study in detail the link between the social and the biological in participatory conservation

activities. We made an inventory of all the participatory conservation experiences around and within the RECAY. From these, we chose seven to serve as concrete examples. Below we present a brief summary of each case studied.

Thermal pool project in oyacachi[3]

Visits to thermal waters are popular in Ecuador, and there are places, such as Baños, which are internationally famous. Construction of the pools in Oyacachi was begun four years ago during implementation of the SUBIR project, with funds from TNC, but the pools were never finished because of a lack of adequate technical and financial assistance. Construction currently underway is a continuation of work already done and will provide a restaurant and changing rooms. The hope is to one day include lodging. Community residents will be selected to work in the complex and to manage the pools and restaurant. Members of the Antisana Foundation see tourism as an alternative to the spread of cattle raising activities and as a way to alleviate poverty in the area.

Papallacta termal pools

Termas de Papallacta is a private business managed by a company made up of six partners who live near the community of Papallacta, 90 minutes from Quito, the capital of Ecuador. A restaurant, two cabins and a hostel surround the pools. The site is very popular, attracting thousands of visitors on weekends and hundreds from Monday to Friday. This case is different from the others discussed here, in that it is a private, for-profit venture. There is no community project associated with the complex, and only a handful of residents of the community of Papallacta work at the complex. Nevertheless, the PALOMAP team decided that it would be interesting to compare this initiative with others which are not run by private enterprises.

Trout farm in Oyacachi

There are two trout farms in Oyacachi, one local and the other sponsored by Fundación Natura, a conservation NGO based in Quito. The local initiative consists of ponds being built by four residents who will raise rainbow trout (*Onchocynchus mykiss*). Trout have been in the rivers of Oyacachi since the 1960s when they were seeded by community members. The construction of new ponds reflects the intensification of production in order to supply demand

from tourists and markets beyond the community. Fundación Natura, with financial support from CARE-FISE, is implementing a trout raising project to increase production and involve more people. According to technicians working on the project, trout farming is not intended to replace livestock, nor will it prevent the spread of the latter to areas not appropriate for cattle grazing.

Eco-cultural tourism project in Sinanagöé

The eco-cultural tourism project in the community of Sinanagöé was begun by SUBIR in 1993 (TNC/CARE/USAID). The Sinanagöé community was selected due to the predominance of Cofán families (12 of 17 families are Cofán, five are headed by settlers who have married Cofán women), one of the most threated indigenous groups in Ecuador, as well as for the existence of abundant flora and fauna in the area. A cabin was built, as was a canoe to bring visitors to the site, and a trail with informational markers was opened. In addition, the community received a generator to provide electric light, an outboard motor, and equipment and materials for the cabin and the kitchen. Some members of the community were trained by SUBIR and the Ucumari travel agency in the administration of a tourist complex. However, the project was abandoned for lack of continuity and financial resources.

Territorial zoning project in Sinanagöé

To guarantee the survival of the abundant flora and fauna in areas surrounding Sinanagöé, and thus assure the area's attractiveness for tourists, it was decided to divide the community's territory into three zones based on use: intensive use zone; zone for hunting and extraction of forest products; and an off-limits zone. The first two zones cover 5,150 km^2 and the last 45 km^2. Within the intensive use zone, located on the banks of the Aguarico River and extending 500 meters inland, agriculture, livestock raising and hunting activities are permitted. In the hunting and extraction zone, community members hunt the mammals and birds necessary to provide protein in their diets, and also obtain materials for housing construction and tree trunks for canoes. The off-limits zone was established to guarantee an intact forest with mammals, birds and trees of varying sizes, in order to attract tourists to the area. It is important to keep in mind that zoning was carried out without the participation of INEFAN, and was never approved by that entity.

Paramo management in the Juan Montalvo zone

In the high altitude zone of Cayambe-Coca, there are five communities which receive assistance from the Institute of Ecology and Development in Andean Communities (IEDECA) for paramo management. IEDECA is coordinating its work with the Ecuadorian National Institute for Wildlife and Natural Areas (INEFAN), which has approved the project. The total area surrounding the five communities is estimated to cover 3,700 ha, of which a third are located within the RECAY. The management plan, in the process of being formulated, includes a territorial zoning component (community pasture, use of forest resources, absolute protection and potential protection) and a program for institutional reinforcement to help peasant communities organize. Though the full management plan has yet to be approved by INEFAN, IEDECA and the communities involved are already coordinating activities to manage the area's resources. These include fire control, reforestation with native species, rotation of grazing livestock and application of veterinary techniques to improve livestock health.

Oyacachi and Sinanagöé community park rangers

The community park ranger program was established in 1993 during project SUBIR's first phase with financing from the Nature Conservancy and USAID-Ecuador. Currently, the program is being carried out by Intisana Foundation in coordination with INEFAN. There are currently 13 community forest rangers representing 10 communities. According to the training module developed by Fundación Natura (which also trained the community forest rangers for the RECAY), the role of the community forest rangers is "to be the stimulus for a process of transformation in their societies with the support and coordination of the public and private sectors, in order that, in the medium and long terms, these societies will be self-sufficient thanks to the work and initiative of the collective" (Fundación Natura 1996). It is to be assumed that this "transformation" will have conservation and sustainable development aspects and will be beneficial, on the one hand, for protected areas in which the rangers work and, on the other, for the communities in which they live. The hope is that the community forest rangers become community leaders, aiding their communities in the search for a better future through sustainable development and the conservation of natural resources.

The case studies selected represent all zones in the study area, with the exception of two colonization zones. We looked at a number of conservation and development activities in these areas but, in the end, decided that the

activities underway in these areas had not been in progress for sufficient time to enable us to analyze their results in order to determine the biological effectiveness of participatory interventions. We hope that during the second phase of the PALOMAP project (1997-1999), it will be possible to undertake studies of the zones in question.

Key questions for field research and the analysis of case studies

We created a set of "Key Questions" to guide our field work and analysis of case studies.

- Is the participatory initiative explicitly related to threats in the protected area?
- What was the planned relation between the initiative's expected results and conservation objectives?
- Were measures designed to determine the effectiveness of conservation and the equity of the initiative?
- What kind of participation was designed for the conservation initiative and what were the advantages and disadvantages of these as regards the hoped for conservation results?
- Were the scale and type of participatory initiatives appropriate to the kind and priority of threat encountered?
- Have new threats been created, or existing ones increased, as a result of the participatory conservation initiatives?

To respond to these questions, we used open interviews; focus groups; a participatory community workshop to verify conflicts identified (only in Papallacta); community, farm and resource mapping; a 24 hour story and analysis of activities by gender; agriculture and resource calendars; identification of stakeholders. All of these activities helped to create a "human ecology profile"[2] of each study zone, of population sites (settlements and towns) in each zone and of those involved in the case studies. The profile describes, primarily, the relationship that local people have with natural resources and the protected area of each zone.

To complement the Human Ecology Profiles (HEP), we applied various biological research methods. Given the size of the study area, it was not possible to carry out biological studies in the entire area; thus, we concentrated the Socio-Biological studies on concrete situations in the case studies. The biological study consisted of a number of methodolgies.

The study of the chemical and physical properties of water in Oyacachi and Papallacta was carried out to determine if the thermal pools are causing changes in river water and whether the pools are safe for users. Paul Parker, a

master's degree candidate from Duke University, USA, applied a simple field study method (using CHEMets packets) to analyze levels of coliforms, dissolved oxygen, chlorine, phosphate, pH and turbidity in the water prior to its entry into the thermal pools and trout ponds, in the pools and ponds, and in the rivers into which the water was discharged after use (above, at and below the site of discharge). Biologist Esteban Terneus took samples of trout in Oyacachi to measure their size and analyze the contents of their stomachs to determine their health and what they were feeding on in ravines and rivers. To understand the impact of paramo management activities carried out by IEDECA with the communities of Juan Montalvo, in comparison with sites at which traditional management techniques are being used (Papallacta) and a site with no livestock (around the Sarahurco volcano), Esteban Suárez and Eduardo Toral of EcoCiencia applied a research methodology which involved earthworms as an indicator of soil quality. By analyzing the quantity/density, biomass and diversity of earthworms, they were able to come to a number of preliminary conclusions as regards the ecological impacts of the management system used in Juan Montalvo. In Sinanagöé, two studies were undertaken to analyze the effects of territorial zoning. One, by Patricio Mena and Rubén Cueva of EcoCiencia, involved the creation of transects in hunting/extraction zones and the "off-limits" zone, where they counted mammals and birds, with particular attention to species hunted by community residents. Finally, William Ulfelder and Verónica Núñez of Nature Conservancy established transects to analyze the state of the forests in the three use zones (hunting/extraction, "off-limits" and livestock/agriculture use). They used direct and indirect indicators of anthropogenic disturbances, such as the number of trails opened and trees felled, the number of agriculture species (coffee, cassava and naranjilla), distribution of tree trunk diameter, and others.

Analytical framework for the PALOMAP study

Stakeholder Analysis

The defined the relations and types of power that exist among the different actors at the level of the reserve in its entirety, as well as at the level of a specific community or conservation initiative. There are wide differences regarding interests, relations and power among the organizations and communities within and surrounding the protected areas, and these differences must be understood in order to understand the results and impacts of the activities being implemented.

First, a list was prepared of all the organizations which maintain a relationship with the target organization. Then, using circles of different colors and sizes, informants created an image of institutional relationships. Informants were then asked why certain circles (institutions) were larger and closer, while others were more distant and smaller. This type of analysis helps to open an interpretive space as regards interinstitutional relationships at the present time and in the past, and hopes for such relationships in the future.

Analysis of threats to the Cayambe-Coca Reserve

An analysis of threats allowed for a better understanding of the way in which the activities of local people and other interested parties (petroleum companies, large property owners, municipal authorities, etc.) might affect the good management of the area and also permits an understanding of priority problems that exist (West 1995).

Threats to protected areas are "those activities, of human or natural origin, which cause significant damage to the resources of an area or which are in serious conflict with the administrative and management objectives of the area" (Machlis and Tichness 1985). The analytical methodology applied was developed by The Nature Conservancy and has been used in dozens of protected areas in the United States and Latin America. Basically, the methodology consists in the identification of five elements: systems, tensions, origins of threats, strategies and anticipated results.

"Systems" are ecosystemic components or natural elements. If the protected area is small and relatively homogeneous in terms of ecological complexity, the system can be a set of the entire area (e.g., paramo). Some protected areas of greater size or with multiple and heterogenous elements can be divided into their component systems, such as natural communities (i.e., cloud forest, tropical forest, pre-montane forest). Another classification that can be included is the analysis of the major classes of species and key species (i.e., Andean condor *Vultur gryphus*) (West 1995).

"Tensions" are impacts which damage the ecosystem or ecological processes. These include habitat fragmentation, erosion, sedimentation and diseases affecting wildlife.

"Origins" are threats. The deforestation of steep lands causes erosion and the opening of roads and settlements cause habitat fragmentation. TNC equates origin with the term "threat" because it is what causes the problem that affects the management of a protected area.

"Strategies" are alternatives identified to respond to and diminish threats. These can be local, regional or national.

Finally, "anticipated results" are those conditions which it is hoped will be achieved through good management of an area and the reduction or elimination of the threat in question. These must be realistic and achievable.

In August of 1996, PALOMAP sponsored a workshop to analyze threats to the RECAY, facilitated by Len West of The Nature Conservancy. Participants included representatives of INEFAN, national and international conservation NGOs, donors and grass roots organizations. This was the first time this type of analysis was undertaken for the RECAY in its entirety. During the event, participants identified a host of threats which are endangering the existence of various natural systems in the Cayambe-Coca. Four systems were identified: the tropical zone (<1000 masl), the semi-tropical zone (1000-2000 masl), the mountainous zone (2001-3000 masl) and the high altitude zone (>3000 masl). Some of the major tensions identified were: habitat destruction; loss of species, genetic material, ecological functions; landscape destruction; contamination; sedimentation; erosion; and change in the course of rivers. Threats (origins) include: colonization, deforestation to open pastures and croplands, excessive hunting, excessive fishing, mining, construction of infrastructure, burning of paramos, inappropriate garbage disposal, and fishing with dynamite and *barbasco* (a poisonous plant), among others.

In February of 1997, a second threat analysis workshop was held, facilitated by The Nature Conservancy, to review the threats identified in the first workshop and to develop strategies for dealing with them. The map that was created on the basis of these two workshops is included in this paper. It provides a clear view of the types and geographical locations of the threats. Fundación Antisana, which is in the process of developing a new management plan for the RECAY, together with INEFAN, is continuing the process initiated by PALOMAP.

Results have been extremely interesting. It became clear that in a number of cases there is an imbalance among the location, type and size of conservation initiatives *vis a vis* the type and priority of threat. A good example of this is the construction of a new inter-oceanic road between Lumbaquí and La Bonita in the buffer zone to the northeast of the RECAY. Everyone agreed that this is one of the most serious threats to the reserve and that at the moment there are few community conservation initiatives in existence to avoid damage to the area, with the exception of community park rangers and the establishment of community-owned land in Sinanagöé, a process that has been going on for more than ten years. In the second class of initiatives, there is a good relationship between threat and conservation initiative. Management of the Juan Montalvo paramo is dealing with one of the most serious threats—over-grazing and burning—to the highland area of the RECAY. Activities

such as the carrying capacity of different types of vegetation, prohibiting burning, reforestation and environmental education, have been implemented to directly address these threats. There is a third category of initiatives which includes those projects that respond to present threats, but the type and size of the initiatives are not necessarily appropriate given the size and priority of the threats in question. A good example of this is the Community Park Ranger (CPR) program. Whereas there are 13 CPRs working in the reserve at conflict and threat sites, they work only part time, lack basic equipment and training, and many do not have the authority to confiscate items taken illegally from the reserve.

Analysis of conservation intervention by types of participation

The analysis component in the PALOMAP study consists of the creation of an analysis matrix in which all types of interventions are listed along a vertical axis and all types of participation along a horizontal axis. Then, the conservation interventions are located on the matrix. Below we present first the typology of conservation initiatives and later the participation typology. Next we present the matrix composed of both forms of analysis.

Types of conservation initiatives

As the PALOMAP study demonstrates, there are different types of conservation projects in the RECAY, promoted by different organizations, both governmental (GOs) and non-governmental (NGOs). Territorial zoning, management plans, economic initiatives such as small businesses, and tourism activities, among others, represent distinct strategies in the biodiversity conservation area. These conservation "mechanisms" seek to provide benefits for local people. In general, these are conservation initiatives implemented at the local level, in a voluntary fashion, focusing on local people, and participatory in nature. If local residents do not benefit from conservation efforts, these activities can create social and political conflicts, and lead to the indifference toward rules and laws, and even the sabotage of projects (Tisdell 1995). On the other hand, there are also activities and projects which are born and implemented completely within the community. These are better defined as "initiatives" because there is no "intervention" on the part of external entities. The PALOMAP team decided to call case studies "initiatives" because this term includes local processes that occur with or without the participation of an outside entity, and is thus more inclusive.

Tisdell, in his 1995 publication, *Issues in Biodiversity Conservation Including the Role of Local Communities,* describes six mechanisms for the conservation of biodiversity, all of which include local people. He divided these mechanisms in the following classes: subsidies to local residents for conservation of natural areas; payment of royalties for the use of genetic material; use of natural resources which does not involve consumption; use of natural areas for economic activities which do not endanger biodiversity; transfer of income to local people to diminish their need to take advantage of natural resources; and financing of development projects outside of protected areas to improve income and diminish pressure on the natural resources of the area.

The PALOMAP team, based on their knowledge of initiatives in the RECAY and other protected areas, modified Tisdell's mechanisms to develop a typology of conservation interventions. The team identified seven types of initiatives.

- Improvement in current uses of natural resources. This type of initiative includes those projects directed at inappropriate, inefficient and/or non-sustainable uses of natural resources. An example of this is the management of wildlife to assure the sustainability of animals hunted, by establishing hunting seasons, periods when hunting is prohibited, and limits on the number of size of animals hunted.

- The non-extractive use of natural resources. This category of initiatives includes those projects which "leave only footprints on the landscape," and those in which the "consumption" of natural resources is only temporary. In an ideal situation, once an activity has taken place it is almost impossible to detect impacts. Trekking, wildlife photography, bird watching, and the catching and release of fish are good examples.

- Compensation (cash, services and/or infrastructure) to diminish activities which represent threats to the area, its biodiversity and/or its natural resources. The theory behind this type of initiative is, "As a result of this payment, you promise not to continue carrying out this damaging activity in the future." The "payment" might be money, health or education services, provision of a community water system, or some other form of compensation.

- Small development businesses to increase income and thus diminish pressure on natural resources. One of the common hypotheses of conservation and development is that pressures exist on protected areas

because local people lack the necessary resources to make a living without entering the area to acquire firewood, plants, wildlife, minerals, etc. According to the theory, if these persons had alternative sources of income, the threat could be diminished. In Cayambe-Coca, there are numerous small businesses of this type, such as cheese factories, guinea pig farms, orchards, and fish farming projects.

- Financing/subsidies for the protection of a protected area. This type of initiative includes those initiatives which provide resources (financial, time, materials, etc.) for area management. In many cases, these initiatives involve donations from international and national NGOs and GOs. Organizations such as TNC provide radios, vehicles and training to state employees to facilitate management of the area.

- The payment of royalties for the use of genetic materials. The best known example of this type of intervention is the contract between Merck Pharmaeuticals and InBio in Costa Rica, in which Merck has the right to use Costa Rica's natural resources in its search for medicinal substances, but is responsible for financing research and management activities, and for paying a percentage of profits to the government of Costa Rica. The use of genetic material is not restricted to medicines, but may also include food, industrial materials, etc.

- Legal incentives to conserve. One of the most deeply felt conservation problems is the lack of security experienced by people who "threaten" protected areas. Residents do not believe that they can count on those resources over the long term because others will come and take advantage of them. The response, in many cases, is to use the resources as quickly as possible. One solution to this problem is the provision of property rights. These may be formal, such as a title to the land and the resources on it, or they may be less formal, such as a decision on the part of the community board to take advantage of resources in a certain way (i.e., a limit on the amount of firewood each family may extract from a community forest on a daily basis). The right may be individual or communal, although the latter requires rules to avoid competition among members of the group. And the right may be universal (soil, above soil, below soil), or may be limited (such as the right to harvest only forest resources or a single tree species).

Types of participation

Throughout the world, conservationists talk about "local participation." However, in practice there are many types of participation. Instead of inventing a new typology, we have modified those already existing and used both in studies of agriculture and conservation. Our typology identifies six types of participation: passive, contractual, consultative, collaborative, among colleagues and self-starting. Below is a brief description of each of these.

- Passive participation. In this type of participation, a community or group of persons participates by means of receiving information on something which is going to happen or which has already happened. In these cases, the idea of the need for community participation comes from outside the community, generally from agents promoting conservation. The "participatory interaction" is one way: from those who have taken certain decisions toward those who should listen to them. Community response is not taken into account and the "owners" of the information are professionals and/or individuals from outside the community. At times, apparently passive participation is, in fact, forced, given the existence of regulations or policies which oblige participation. An example of this coercion is the fines levied on those persons who do not attend meetings or at least send a representative.

- Contractual participation. In this type, community participation in certain activities is requested or invited via a formal arrangement. For example, certain "services" required by the project may be contracted from community members. The most frequent arrangement is one in which the project provides materials and technical assistance and the community participates by providing labor. At times, there is a formal "price" established for the labor. Thus is the community said to be participating actively in the project. However, in this type of participation, the participatory impulse comes from outside, the type and degree of participation are determined by those from outside, and there exists a limited flow of information or opinion provided by the community to those leading the project.

- Consultative participation. In this type of participation the participatory initiative also comes from outside, but is based on the desires, opinions and needs of the people or the community. Outside agents define problems and solutions, but may modify these in light of information obtained during

consultations with the community. Information about the community is generally obtained by "extractive researchers" and analyzed by experts, and solutions are proposed to the community. In these situations, the relationship between the community and outside agents is similar to the "doctor-patient" relationship.

- Collaborative participation. As mentioned in the third type above, the idea to promote participation by the community comes from outside in this type, but both sides participate equally in the diagnosis of the problem, the analysis of data, and the design, implementation, monitoring and evaluation of a solution. In order to truly work, this type of participation requires long-term relationships and commitment on both sides: the community and the outside agents. It also requires continuous interaction: this is not a quick process and it is difficult to establish this type of participation when great distances separate the individuals involved. Although there is an attempt to establish a more even and equitable relationship, at least during the early phases of this type of participation, certain hierarchies are maintained in the roles of those from the outside and members of the community.

- Participation "between colleagues." In this type of participation, conservation activities may be important, but the basic objective is to actively strengthen the capabilities of local residents so that the community and/or local groups may carry out their own conservation and development projects. The initiative for this type of participation comes from outside, but emphasis is on activities that will increase the abilities of informal and local systems to become "self-starters." In a way, outside agents who promote this type of participation want to "level the playing field" of conservation and development, and seek to "empower" their colleagues in the community and promote the development of their ability to negotiate with outside agencies and organisms.

- Self-starting communities. In all the types of participation described above, there are two parties: local or community people and outside agents. This last category in our participatory typology implies a single party: the community. In these cases, the community organizes itself to identify a problem and its solution, without the existence of an outside initiative. The local group or community seeks its own resources and means to solve its problem or to implement a conservation activity. They might seek help from outside technicians or specialists, but the community controls the

process. When they look for outside help, it tends to be under the guise of participation "between colleagues." There is a tendency to classify this type of participation by the community in the conservation of natural resources as "ideal"; however, it must be recognized that these types of activities may or may not question or address inequities existing in the community. This type of participation could generate conservation activities that favor local power groups and harm socially disadvantaged groups, such as the poorer community members, young people, women or local minorities.

Creation of a matrix of cases according to type of conservation and type of participation

Using the Types of Conservation Initiatives and Types of Participation described above, we can classify the seven case studies analyzed by PALOMAP

Thermal pools project in Oyacachi

This initiative is basically a small business in which the Thermal Recreation Center of Oyacachi can be seen as a response to the need to provide economic alternatives to a population which is placing pressure on natural resources. According to the technician in charge, the major threat which Oyacachi represents to the RECAY is the poverty of residents, associated with the extensive and non-sustainable use of natural resources, especially deforestation to establish pastures for livestock. It is hoped that the income generated by tourists who come to the pools, plus related projects (restaurants, cabins, crafts and fishing for sport) will be sufficient to encourage the community to invest its resources, in the form of time and money, in this activity rather than in cattle raising.

The type of participation is consultative. Without a doubt, the people of Oyacachi voice their desires and opinions, and there exists an understanding at the community level that they are receiving technical and financial assistance to diminish their impact on the reserve surrounding the community. Nevertheless, from the start of implementation with Project SUBIR I, the design of the pool and the idea as to how to implement the project came from the outside. Experts have carried out technical, social and economic studies, and little information has been shared with community members by means of a continuous and transparent dialogue. The community has not been informed

fully about pool management, the number of persons who will be working at the site, the amount of profit, etc.

Papallacta thermal pools

Thermal Waters of Papallacta is a private enterprise, and thus distinct from the other cases studied. Although the owners have a high interest in protecting resources around the tourist site, have built the complex in a manner that is compatible with the surroundings, and hope to provide environmental education to national and international visitors in the future, the principal goal is to generate profits for project partners. If sufficient profits are not generated, the project will collapse. In any event, because the partners have economic and political connections, Termas can, and already has, played an important role in protecting the reserve.

The fact that this is a private enterprise makes typing participation more complicated. As a business, it represents a type of self-organization. The partners joined together and invested their own money in something which seemed to be a good investment. The relation with the community of Papallacta, which is located only a kilometer from the site, is contractual. Termas Papallacta contracts the services of local people who work as manual laborers, ticket sellers, janitors and assistants. The people of Papallacta have no right to offer opinions or suggestions to the partners, since this is a private business.

Trout ponds of Oyacachi

The two rainbow trout production initiatives in Oyacachi, one implemented by community residents and the other a projects supported by Fundación Natura, are small businesses. Three community residents began the fish farming projects for economic reasons, and Fundación Natura collaborated in the hope that trout production would "prevent the spread of livestock raising and commercial forestry exploitation activities" (Fundación Natura 1996). The project is based on the supposition that livestock and forestry exploitation are economic activities that cannot sustain the community in the long term given the natural limitations represented by steep slopes, deterioration of soil quality and limited space. Trout production, on the other hand, does not suffer as a result of these limitations.

The local trout production initiative is 100 percent self-organized. The three residents involved have designed, financed and implemented their project with no outside institutional aid. They have called upon their own skills and

resources to solve a family problem: the lack of viable income-producing alternatives. The Oyacachi Fish Farming Project of Fundación Natura began as a collaborative effort. This is evident in the transparent negotiation process between the foundation and the community. Members of the former clearly explained that they would be willing to finance projects that facilitated the conservation of natural resources. This criterion was accepted by the community and they agreed to raise trout. Later, in the design and construction of infrastructure phases, the relationship became consultative as a result of a minimal flow of information between the community and Fundación Natura. There was a high level of community ignorance as regards the objectives and contents of the project.

Eco-cultural tourism project of Sinanagöé

This SUBIR I project was an initiative for the use of non-extractive natural resources. The tourists who visited the community would, ideally, have no impact on the natural surroundings. They would visit the site, take photos, walk through the forest, learn about the ethnobotanical traditions of the Cofán, and leave with their memories without leaving evidence of their visit. Income generated by the activity, and the resulting incentive to protect the environment, would diminish threats to the forest and its flora and fauna.

As in many other cases, the type of participation was consultative. Community residents provided their ideas, opinions and suggestions, especially as related to tourist attractions in the area, but the basic design was created by a technical team from outside the community. In addition, it appears that there was no consensus in the community as regards the implementation of the project; while a majority of colonists were interested, many Cofán doubted the need for and the usefulness of the project. In interviews with the PALOMAP team, it also became clear that while the community had knowledge of the project, few understood what the project's objectives were, who would own the equipment and infrastructure, and how many people would be employed. As the evaluation team for Tropical Research and Development wrote about SUBIR's effort, "Most of the planning for tourist activities was based on studies, diagnoses, inventories of tourist attractions and the knowledge and experiences of the director and consultants of the component. In the majority of cases, these plans did not come from local residents" (1994).

Territorial zoning in Sinanagöé

The zoning of Sinanagöé represents two types of conservation initiatives: better use of natural resources and legal incentives to conserve resources. It represents better use because, in theory, the people of Sinanagöé will not subject the forest to anthropogenic impacts, which would be clearly detrimental to tourist activities which require a healthy forest and an abundance of wildlife. Controls regarding where agricultural and livestock, and hunting and forestry extraction activities may be carried out would assure that at least a large part of the area remained intact. In addition, it is a legal incentive, given the process undertaken to establish this as community territory. For years, the people of Sinanagöé have attempted to establish communal territory within the reserve, based on the fact that the Cofán have been in the area long before the establishment of the reserve, and that the Cofán have a pattern of natural resource use that is much more sustainable than that of the surrounding settler communities. Zoning of the area is a requirement for the establishment of a territory and the legal provision of rights to use recourses.

Zoning, like the tourism project, began as a consultative participatory process during the planning stage. Local residents opined and provided suggestions such as where the boundaries should be established. However, technicians handled the technical information. After the planning phase ended, the implementation phase was characterized by more passive participation. Soon after, the community no longer respected zoning nor sought out technical aid for its implementation.

Management of the Juan Montalvo paramo

Like the zoning of Sinanagöé, the management plan for the Juan Montalvo paramo is an initiative whose purpose is to make better use of natural resources and to provide legal incentives for conservation. Determining the carrying loads of different types of paramo vegetation, controlling fires, rotating livestock to prevent over-grazing and compacting of soils are important steps in guaranteeing the sustainable productivity of paramo resources. Legal incentives are based on establishing users' rights for a specific group in an area which previously was open to access in general, and this provides a greater incentive to conserve instead of using up resources that previously belonged to neighbors as well. In addition, clearly defined users' rights provide an incentive for long-term activities such as reforestation.

The management plan for the paramo is a unique case of participation among colleagues. The five participating communities have a Paramo

Management Committee which meets monthly with technicians from IEDECA to discuss pending tasks and how to carry these out. There is a large group of local extension workers trained in forest production, along with veterinary and other technicians to provide assistance to their own communities. Many project decisions are made in community assemblies in which everyone can participate and offer opinions, and there is a high level of local knowledge regarding the objectives, activities, and reach of the project.

Community park rangers

The Community Park Ranger (CPR) initiative is the only project with funding for the purpose of assuring the integrity of the protected area. An NGO (The Nature Conservancy) and a GO (USAID) have provided financial resources to contract, train and equip a group of local people in skills required to protect the area. Fundación Antisana is currently implementing the program with INEFAN.

When the program began, participation was consultative. The idea for the program came from outside the communities and was later presented to them as an option in which residents decided whether or not to participate. In this early stage, communities were responsible for nominating their CPRs in community assemblies. However, during the implementation stage, the program has become a contractual arrangement. Communities do not receive much information from those in charge as regards implementation, nor do they have the opportunity to offer their own ideas and suggestions for improving the program. The CPRs are offering services to INEFAN and the conservation NGOs though they play no major role in managing their own program.

Conclusions

The results of the PALOMAP study clearly demonstrate that although organizations and communities are gaining experience in the implementation of participatory conservation initiatives, there is still much to learn and do. Few of the case studies analyzed by the PALOMAP team responded adequately to the problems they were designed to address. There was little documentation on initiatives and threats, there were no clear relationships between initiatives and threats, there were no good data bases and monitoring programs were virtually non-existent. The types of community participation are not adequate to facilitate the community taking control of the projects and their management over the long term.

It is important to develop clear hypotheses related to the initiative and the impacts they will have. In many cases, technicians work without a clear and realistic idea as to how their projects will benefit the community and the reserve. The hypothesis must be known and understand by local people. Only this kind of transparency and mutual commitment will provide optimal results.

In addition, it is important to apply the concept of adaptive management. There are still many institutions which believe that monitoring is something unrelated to the work they are carrying out. They have not yet understood the concept of a critical thinking process informing the entire initiative, which allows for the collection of information to determine if goals and objectives are being met and whether changes are needed in the process in order to facilitate achieving these.

A good beginning for participatory conservation projects would be the implementation of research methods, both socioeconomic and socioecological (a human ecology profile) such as the one used in the PALOMAP study, and an analytical framework (an analysis of threats, a stakeholder analysis and an analysis of the kind of initiative as well as the kind of participation involved). With these tools, a broad and deep vision of the local situation can be created, as well as an understanding of how the participatory conservation initiative can be implemented in order to have the greatest impact possible. However, much needs to be done to refine the methodology. For example, one area of special interest involves the legal aspects of participatory conservation initiatives. Although the team took into account the existence of legal conservation initiatives, such as land tenancy security provided for in the paramo management plan and in establishing Sinanagöé's territory, it was not possible to address this issue in depth as it was beyond the scope of the first phase. There are many active measures of conservation which are not consistent with Ecuador's Forestry Law, and which should be analyzed in greater depth in the future.

Fortunately, there will be a second phase to the PALOMAP study at two sites: the Cayambe-Coca Ecological Reserve in Ecuador and the Pacaya-Samiria National Reserve in Peru. The second phase will once again be funded by Ford Foundation. In the Cayambe-Coca, we are planning to learn more about community conservation initiatives focused on three themes: the conservation impacts of small businesses (cheese factories, pig production, mills, and others); an institutional analysis of local governments (municipalities, counties, provinces) as related to participatory conservation and the management of natural areas; and application of the concept of adaptive management in community projects. We also hope to put into practice with a number of institutions the lessons learned in the first phase. The development

of our research methodology involved a long and fruitful learning process, and our efforts were much enriched by the presence of a multi-institutional, multi-disciplinary team. The processes, relationships and dynamics of protected areas are so complex that the only way to understand and analyze them is from diverse perspective. Further effort is involved in implementing a participatory conservation initiative based on this analysis. This is only possible with the aid of a multi-disciplinary team, a critical way of thinking, an open mind and a transparent attitude between institutions and local communities.

Notes

[1] The results presented in this paper were generated under the auspices of the "Participación Local en el Manejo de Areas Protegidas" (PALOMAP—Local Participation in the Management of Protected Areas) study, a collaborative effort between The Nature Conservancy and the Facultad Latinoamericana de Ciencias Sociales (FLACSO—Latin American Social Studies Faculty), with financial support from the Ford Foundation. Principal researchers for the study were William H. Ulfelder (TNC), Susan V. Poats (Randi Randi, formerly with FLACSO), Jorge Recharte B. (formerly of FLACSO, currently at the Peruvian Mountain Institute), Cecilia A. Scurrah (formerly of FLACSO); and Barbara L. Dugelby (The Wildlands Project, formerly with The Nature Conservancy).

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[2] The complete study, *The Search for Participatory Conservation in the Cayambe-Coca Ecological Reserve, Ecuador: Results of the PALOMAP Study - Local Participation en the Management of Protected Areas*, was published by Abya-Yala in August, 1997. This paper provides a summary of the methodology and analytical procedures used, a proposal for a conceptual framework to analyze types of conservation intervention, and the types of participation involved and the principle lessons learned in the PALOMAP study.

[3] The Thermal Pool Project in Oyacachi is an initiative asponsored by the Antisana Foundation, a national conservation NGO financed by CARE-FISE (USAID).

References

Burgess, J.S. and E. Woolmington
1981 Threat and stress in the Clarence River estuary of northern South Wales. Human Ecology 9(4): 419-431.

Fundación Natura.
1996 Memorias del curso introductorio de "Formación de Guardaparques Comunitarios" para las reservas ecológicas Cayambe-Coca y Antisana. Fundación Natura, Quito, Ecuador.

—
1996 Proyecto Piscícola Oyacachi, Fundación Natura, Quito, Ecuador.

——
1992 Acciones de desarrollo en zonas de influencia de áreas protegidas, Programa de Conservación, Quito, Ecuador.

——
1992 Diagnóstico socioeconómico de la reserva ecológica Cayambe-Coca, Fundación Natura, Quito, Ecuador.

Jenkins, R.E.
1991 *The bioreserve concept.* Unpublished manuscript. The Nature Conservancy. Arlington, Virginia.

Los, G.
1992 Draft process for analyzing ecosystem threats. Unpublished memo. The Nature Conservancy. Arlington, Virginia.

Machlis, G.E. and D.L. Tichnell.
1985 The state of the World's parks: An international assessment for resource management, policy and research. Westview Press. Boulder, Colorado.

Mackinnon, J., K. Mackinnon, G. Child and J. Thorsell.
1986 Managing protected areas in the tropics. IUCN. Gland, Switzerland.

Meffe, G. and R. Carroll.
1994 Principles of conservation biology. Sinauer Associates, Massachusetts.

The Nature Conservancy.
1996 The bioreserve handbook (2nd edition). The Nature Conservancy, Arlington, Virginia.

——.
1991 The bioreserve handbook (1st edition). The Nature Conservancy, Arlington, Virginia.

Paucar, A. and L. Reinoso.
1978 Un ensayo sobre planificación para el manejo de áreas silvestres: Estudio de alternativas de manejo y plan de ordenamiento de la reserve ecológica Cayambe-Coca. Ministerio de Agricultura, Departamento de Administración de Areas Naturales y Vida Silvestre, Quito, Ecuador.

Tisdell, C.A.
1995 Issues in Biodiversity Conservation Including the Role of Local Communities Cheltenham, Edward Elgar: Northampton, MA.

Tropical Research and Development.
1994 Phase I Evaluation of the SUBIR Project. USAID-Ecuador, Quito, Ecuador.

The United States Agency for International Development (USAID).
1995 A regional analysis of geographic priorities for biodiversity conservation in Latin America and the Caribbean. USAID Biodiversity Support Program, Washington, D.C.

Wells, M. and K. Brandon.
1992 People and parks: Linking protected area management with local communities. The World Bank. Washington, D.C.

West, Len.
1995 Análisis de amenazas a las áreas protegidas. Paper presented during Conservation Week organized by The Nature Conservancy, May, 1995, Quito, Ecuador.

The World Bank
1995 A conservation assessment of the terrestrial ecoregions of Latin America and the Caribbean. The World Bank/World Wildlife Fund, Washington D.C.

Integrated Conservation and Development Programs (ICDP) emerged in the mid-1980s as a dual strategy to ensure long-term environmental protection and management of protected areas while simultaneously improving the quality of life of local people residing inside parks or their buffer zones. In the field, however, this linking of people and environment did not come without real-life dilemmas and preplexing trade-offs. This interdisciplinary volume, based on a conference organized in Quito, Ecuador, in 1999 explores the complex operational issues from the point of view of practitioners throughout tropical Latin America. Through their hard-won, hands-on experiences, the authors provide insights into all aspects of ICDP implementation from planning to research to policy. Despite tough questions and challenges facing ICDPs, the authors conclude that the gap between conservation and development can be effectively bridged by applying lessons learned from the field and thus bringing the goal of a sustainable planet closer to reality.

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