Midterm Evaluation of USAID/Ecuador's Strategic Objective 1: Biodiversity Conserved in Selected Protected Areas and their Buffer Zones

Main Report

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Acronyms

AECI	Agencia Española de Cooperación Internacional
BRC:	Bioreserva del Condor
BSP:	Biodiversity Support Program
CARE	Cooperative for American Relief Everywhere
CBNRM:	Community-Based Natural Resource Management
CDC:	Centro de Datos para la Conservación
CDF:	Charles Darwin Foundation
CEDENMA:	Comité Ecuatoriano de Defensa del Medio Ambiente
CONAIE:	Confederación Nacional de Indígenas del Ecuador
CPUE:	Catch Per Unit of Effort
CRP:	Confederación Regional de Palenques
CRSP:	Collaborative Research Support Project
CSO:	Civil Society Organization
CTO:	Certifiable Tradable Offset
DFC:	Desarrollo Forestal Campesino
DSF:	Darwin Scientific Foundation
EA:	Environmental Assessment
EMAAP-Q:	Empresa Municipal de Agua Potable-Quito
ENRO:	Environment and Natural Resource Office
ESP:	Environmental Support Program
FAN:	Fondo Ambiental Nacional
FAO:	Food and Agriculture Organization
FECCHE:	Federación de Comunas Chachi de Esmeraldas
FER:	Fundación Ecológica Rumicocha
FMP:	Forestry Management Plan
FONAG:	Fondo del Agua
FUNAN:	Fundación Antisana
GIS:	Geographic Information Systems
GMR:	Galápagos Marine Reserve
GNPS:	Galápagos National Park Service
GOE:	Government of Ecuador
GTZ:	German Agency for Technical Cooperation (Deutsche Gesellschaft für Technische Zusammenarbeit GmbH)
HCJB:	Hoy Cristo Jesús Bendice
HEP:	Human Ecological Profile
IDB:	Inter-American Development Bank
IERAC:	Instituto Ecuatoriano de Reforma Agraria y Colonización
IIRR:	International Institute of Rural Reconstruction
INDA:	Instituto Nacional de Desarrollo Agrario
INEFAN:	Instituto Ecuatoriano Forestal y de Areas Naturales y de Vida Silvestre
INGALA:	Instituto Nacional de Galápagos
INIAP:	Instituto Nacional de Investigación Agropecuaria

IR:	Intermediate Result
LANDSAT:	Land Remote-Sensing Satellite
MA:	Ministerio del Ambiente (also MIMA)
MAG:	Ministerio de Agricultura
MCCH:	Maquita Cushunchic–Comercializando como Hermanos
MICIP:	Ministerio de Comercio, Industrias, y Pesca
MIMA:	Ministerio del Medio Ambiente (also MA)
NGO:	Nongovernmental Organization
NRM:	Natural Resource Management
NRMP:	Natural Resource Management Plan
ONHAE:	Organización de las Naciones Huaoranis de la Amazonía del Ecuador
PATRA:	Proyecto de Asistencia Técnica para la Gestión Ambiental
PETRAMAZ:	Proyecto de Gestión Ambiental, Explotación Petrolífera y Desarrollo Sostenible en la Amazonía Ecuatoriana
PIP:	Parks in Peril
PNC:	Parque Nacional Cotopaxi
PNG:	Parque Nacional Galápagos
PROBONA:	Programa de Bosques Nativos Andinos
RAE:	Región Amazónica Ecuatoriana
REA:	Reserva Ecológica Antisana
RECAY:	Reserva Ecológica Cayambe-Coca
RECC:	Reserva Ecológica Cotacachi-Cayapas
RP:	Result Package
SLO:	Secondary Level Organization
SNAP:	Sistema Nacional de Areas Protgegidas
SPNG:	Servicio del Parque Nacional Galápagos
SO:	Strategic Objective
SUBIR:	Sustainable Use of Biological Resources
TNC:	The Nature Conservancy
UCE:	Unidad Coordinadora de Esmeraldas
UCN:	Unidad de Conservación Nacional
UNESCO:	United Nations Educational, Scientific and Cultural Organization
UONNE:	Unión de Organizaciones Negras del Norte del Ecuador
USAID:	United States Agency for International Development
USG:	United States Government
USGS	United States Geological Survey
WCS:	Wildlife Conservation Society

Preface
Circumstances of the Evaluation

The purpose of this midterm evaluation was to analyze progress towards meeting USAID/Ecuador's Strategic Objective 1 (conservation of biodiversity in selected protected areas and their buffer zones) and to recommend changes to enhance results achievement. A three-person team spent five weeks in Ecuador, visiting field sites and meeting with partners and a wide range of others involved in biodiversity conservation efforts. This document synthesizes the evaluation team's main findings and recommendations.

Given its scope of work, the team faced severe time constraints. Activities specified for the RP for Antisana and Cayambe-Coca alone, for example, were dispersed over a wide area. Site visits, therefore, could but skim the surface of a few of them. In particular, we found that our on-site interviews turned up issues and problems whose depth and dimensions we had no time to pursue. We often left a site with more questions than answers. Also, documentation for this region was less informative. For the Galápagos, which we did not visit, our findings are based entirely on what we could read, and on interviews in Quito with persons now or formerly affiliated with the Charles Darwin Foundation and the Galápagos National Park.

We thus have incomplete information for some of the thematic areas that our scope of work asks us to address. The reader should thus be aware, as we are, of the limits of some of our micro-level findings, and we hope that those findings and any companion suggestions will not be treated as definitive and final but rather as potential problem areas (or success areas) — as matters, that is, for further discussion and analysis. But this is what a midterm evaluation should be about anyway: an occasion for reflection on activities and directions. Moreover, the thrust of our mandate is to evaluate the SO1 investment strategy, not micro-level implementation issues. At this strategic level, we are indeed confident that our understanding of issues enables us to speak amply and with authority.

We should note that our mandate to work at both strategic and micro levels leads to some seeming contradictions in our recommendations. Our suggestion for a strategic reorientation of SO1, for example, renders several of its current activities irrelevant over the longer term-activities to which some of our micro-level recommendations nonetheless pertain. Two observations are in order here. First, our dual mandate may owe in part to the fact that SO1 was designed at a moment (1997) when the Ecuador Mission was to be closed within two to three years. SO1's activities clearly reflect that. And second, the contradictions are more apparent than real if one realizes that SO1 cannot be reoriented immediately (though it is urgent that work begins). We recommend, for instance, revaluing (using carbon setoffs, say, or genetic resources, or some mix thereof) the Cotacachi-Cayapas Reserve as a better long-term strategy to conserve its biodiversity than raising the incomes of buffer-zone populations. Yet current income-raising activities, including agroforestry, cannot cease immediately for at least four reasons:

(1) leaving buffer-zone populations without viable income alternatives would indeed imperil the reserve;

(2) the credibility of CARE-SUBIR (and thus its ability to contribute to the new strategy under the current cooperative agreement) may depend on its ability to deliver already promised "production projects" (for which we certainly found a strong local demand);

(3) it will take USAID and its partners at least two years to mount an income-generating revaluation scheme; and

(4) a cooperative agreement between USAID and CARE governs current activities.

Executive Summary

This document reports on the midterm evaluation of Strategic Objective 1 (SO1): "Biodiversity conserved in selected protected areas and their buffer zones." The protected areas include the Cotacachi-Cayapas Ecological Reserve (Ecuadorian Chocó), the Cayambe-Coca and Antisana Ecological Reserves (Condor Bio-Reserve), and the Galápagos Islands. The evaluation's purpose is to analyze the Environmental Support Program's progress towards meeting SO1 and to make recommendations to improve results achievement, management operations, the use of program resources, and output quality. The evaluation will also help the Mission chart future SO1 directions.

Contemporary Ecuador

Ecuador today is an impoverished land with deep political, social, and economic problems. Its remaining wealth in biodiversity looms in stark contrast to the rate at which that wealth is vanishing, after 40 years of abuse and mismanagement.

It is a paradox that the country's macroeconomic indicators are slightly positive, yet its fundamental economic structure remains weak. International financial institutions and large creditors cast about for hopeful signs and ways to help a struggling economy whose problems run deep. Dollarization was a much-needed measure; it worked as a convenient, one-stop proxy for many macroeconomic steps which would have been impossible, or very difficult, to implement on a piecemeal basis, as the tribulations of the "Trole" legislative packages suggest. It did not entirely succeed in suppressing inflation, but likely played a major role in reducing it. The fact that Ecuadorian exporters are now laboring under stringent competitive conditions is also a very good thing, in the longer run, especially if other forms of subsidies are also curtailed. Some of the most vexing economic problems, however, are going to require substantial additional reforms (e.g., stricter banking sector supervision, fiscal reform).

Damaged financial markets and losses in bank-based assets have weakened small businesses. Demand for their goods and services have plummeted because the bank deposit freeze and related financial-sector ills hit middle-class consumers hard. Investor confidence is low, in part because of uncertain policy and regulatory frameworks.

The country's marked political and institutional instability and corruption are symptoms of an ailing socioeconomic and political regime. The overall near-term prospects are not encouraging. Little change can be expected on the political scene. Confusion or carefully calculated ambiguity will likely continue, as will muddled policy signals from the executive and legislative branches. Pressure on natural resources will likely increase.

Conceptual Appropriateness of Strategic Objective 1

The logic for the strategic approach involving the three Intermediate Results (IRs) is summarized in the 1997 Biodiversity Support Program statement of Development Hypotheses and Critical Assumptions (attached). The logic is based on the premise that by raising the economic benefits — as locally perceived and obtained — of populations residing in protected area buffer zones, one can reduce their incentives to use the resources of those areas. A strengthening of legal, regulatory, and institutional processes was also part of the strategy. Nongovernmental action, from community to national levels, was to complement historically weak government institutions.

Such an approach may be quite suitable for resource conservation in the classic sense, but it is the opinion of the team that substantial changes are needed if real progress is to be made toward the Mission's Strategic

Objective. Given the political, economic, and social difficulties that Ecuador has traversed in the last few years, most of the critical assumptions no longer hold. But even if they did, a new approach would be called for.

We find, as did BSP's 1997 report, SO1's geographical focus on the three areas to be reasonable. We also find the IRs ("Strengthened capacity of targeted NGOs & CSOs active in biodiversity conservation," "Economically viable natural resource management practices adopted," and "Key policies and legal frameworks introduced and/or implemented to conserve biodiversity") to be appropriate. They represent a good mix of general areas where the more ambitious, yet realistic, gains the Mission has made could significantly contribute to SO1. However, serious limitations attend the translation of these IRs into Results Packages.

In our view, biodiversity, especially one with a high degree of endemism, is an extremely valuable resource. Although it can be perceived as highly valuable at the global level, particularly over the long term, populations living near it rarely have the chance to share in its benefits. Their perception of its value is limited to what they can extract from it to meet pressing daily needs, often in exchange for the pittance paid in highly distorted local markets. The Results Packages' logic holds that if local populations believe that the benefits they can derive from buffer-zone products are greater than those they can get from protected areas, then they will leave the protected areas alone. This may be a useful first step, and it does promote better local resource use, but it does not serve the purpose of biodiversity conservation over the longer term. It simply lowers the value of biodiversity to that of sustainable returns to better-managed buffer zones. A better strategy would be to express and capture more of the real value of biodiversity, and to allow local populations to share in its much higher rents.

This is not easy, but it is more consistent not only with SO1, but with Ecuador's dire economic reality and even official policy with respect to biodiversity. The nation's natural resources — oil, wood, agricultural land, and fisheries — will come under increasing pressure in the next few years. The value of biodiversity in protected areas will have to reach levels not only as high as those of production in buffer zones, but also match returns from the exploitation of oil, timber, lobster, or sea cucumber.

The inclusion of IR 3 in the project's overall strategy was especially appropriate; progress in the policy, legal, and regulatory areas could thus draw from and support activities at the local level. The linkage with support to NGOs at various levels was also logical. Indeed, this is one of the areas where SO1 has performed reasonably well. The resource management approach, however, did not stimulate those entities working on policy, legal, and regulatory matters to explore worthwhile state-of-the-art avenues of biodiversity valuation, custodianship, and rent management.

Recommendations for Revitalization of Strategic Objective 1

The Ecuador Mission faces a difficult task: to recover lost time in biodiversity conservation in a milieu of economic and social hardship, lack of purpose and clarity at political and policy levels, and continued weakness and uncertainty in public-sector institutions. To address these trying conditions, the team thinks the Mission should equip itself with a combination of (1) better defined and carefully targeted long-term activities and (2) a portfolio of specific actions which can be mobilized on short notice to tackle unexpected obstructions, or to take advantage of strategic opportunities. We first make our suggestions for the three SO1 geographical areas.

Cotacachi-Cayapas Ecological Reserve (Ecuadorian Chocó)

The key thrust here must be the revaluation of the reserve's biodiversity in order to assess its potential biodiversity rent value. We see no way to conserve the reserve's (or Ecuador's) biodiversity short of such a

revaluation, whether based on carbon sequestration, genetic resources, environmental services such as ecotourism, or some combination of these. The mechanics of setting up these schemes are complex and require a specialized knowledge of the Ecuadorian environment. Our team did not have the time in Ecuador to acquire this knowledge nor did we have a mandate to pursue what is essentially a redesign of SO1. We can here provide only some broad directions. In that regard, the following activities should take priority since they contribute directly to this reorientation:

- Work should begin immediately on the scientific research (to determine, say, the genetic resources should those form the basis for revaluation) to define the biodiversity of the reserve so would-be investors can assess a market value. This activity is urgent. Jatún Sacha might have a role here since they have experience in "bioprospection" (*bioprospección*). Whether Ecociencia could play a role is less clear. It is likely that even if both NGOs join forces, additional expertise will still be required.
- Work should also begin in order to establish the necessary institutional and legal framework for the revaluation scheme(s).
- CARE should continue its work (which has been quite effective) to strengthen the two regional organizations, the Palenque Regional Council and the Chachi Federation (FECCHE). These can be major revaluation stakeholders. But it will be very important to also have stakeholders that can wield power at the national level. In this regard, it may be advisable to consider including the powerful National Indigenous Confederation (CONAIE-FECCHE is an affiliate). But this assumes that CONAIE can overcome its current internal turmoil and effectively represent the interests of its constituents. CONAIE might also prove useful in future revaluation schemes in other Indian-occupied areas of high biodiversity. Links between the regional organizations (i.e., the Palenque Regional Council and FECCHE) and their grassroots constituents should also be strengthened. The strengthened regional structures could in turn
  - help provide data for the up-front scientific work,
  - fend off (with other key stakeholders) threats to biodiversity and help enforce laws,
  - exercise political pressure to insert the idea of biodiversity rents in the legal framework,
  - play a role in policy change negotiations to allow biodiversity rents to be captured and equitably distributed, and
  - play a key role in rent-sharing negotiations among legitimate stakeholders.

Cayambe-Coca and Antisana Ecological Reserves (Condor Bioreserve)

- The key activity and first priority must be the work on environmental services from public goods — namely, the water coming from the reserves. The work is urgent and should be conducted with more depth and diligence than has been the case in the past. The Water Fund (FONAG) is a laudable start. But it does not meet the objective of environmental services valuation. It merely collects a small share of water company revenue, which NGOs use to work on a variety of upper watershed conservation issues, including water quality. FONAG will not solve the fundamental problem: water is severely undervalued and underpriced. Biodiversity conservation requires at least a fuller accounting of the reserves' environmental services. This accounting must reflect, among other things, the environmental damage that water-related infrastructure has caused — including damage in local communities. While we are aware that this issue is as sensitive as it is urgent (in increase in water-user rates in Cochabamba, Bolivia, recently led to water riots and extreme unrest), we would also point out that TNC has extensive experience in the valuation of protected-area water resources; its Freshwater Initiative now includes 38 sites, six of which are in Latin America. TNC can help search for options.

- The project should define the range of biodiversity rents — including environmental services in the form of landscape aesthetics, or via consumer satisfaction (utility) derived from knowledge that the Andean bear or cóndor are protected from extinction — that can be expressed in the sprawling Cóndor Bioreserve. TNC has the international experience necessary to help provide a strategic vision of the variety of environmental services throughout this vast area.
- Training of park wardens is important, they are enforcers. And since they are from nearby communities, they also help protect community schemes that are consistent with biodiversity conservation — resource management plans, for example.
- The initial experience involving municipalities and parochial councils in resource management plans appears worth pursuing. The Antisana Foundation has expressed an interest in doing so, though its capacity is limited. This may be a useful approach if conducted on the right scale.

Galápagos Islands

Although legally part of Ecuador, the Galápagos Archipelago also represents a unique part of the world's heritage. The case for valuing the islands' environmental services, especially tourism, and for translating *pari passu* the value of biodiversity into tourism-centered environmental services, is compelling. If one considers the uniqueness of this high biodiversity with high endemism, and its historic role in revolutionizing biology and Western thought, the present tourism-generated income of $120-125 million per year represents but a part of the biodiversity's total value. That value may also lie in another source. Modern biological research on the islands' land reserve began more than 40 years ago. Research on the vaster and more complex marine reserve, however, has just begun. Its genetic resources could far exceed those of the land reserve, which are still being assessed. In the longer term, the greatest values from biodiversity and endemism in Galápagos may lie in the rare biological characteristics of local species. The Government of Ecuador and its main partners should ensure that biogenetic resources figure prominently in long-term plans for biodiversity-derived environmental services.

The evaluation team would suggest the following urgent actions as regards Galápagos:

- Help mobilize public interest groups with a stake in protecting the long-term viability of environmental services, including commercially exploited species.
- Continue to search for ways for island residents to capture more of the benefits from tourism. Both the Charles Darwin Foundation and Galápagos National Park should be aware of what appears to be a serious equity issue in Galápagos. Tour operators, typically from the mainland, seem to capture the lion's share of benefits from tourism. The local population cannot be expected to conserve biodiversity unless it has a clear economic incentive to do so. The current USAID-funded project (with the Galápagos National Park as partner) on Isabela Island to generate alternative income for those from the fishing sector is a good move and should be pursued, if not expanded.
- Work more directly with fishing cooperatives, municipalities, local NGOs, and private-sector entities — the set of stakeholders must be enlarged — to search for ways to oppose the skewed distribution of biodiversity derived benefits. One company, for instance, exports 50 percent of the dried sea cucumber.
- Assure that the main actors — CDF, GNP, and USAID — are consistent with their own logic of biodiversity conservation. Islanders are not likely to support conservation while some of the main beneficiaries of revenues from environmental services impose environmental costs on the local population. Some of the tour boat operators, for example, have long been flushing wastes into the islands' coastal waters.

- Continue with environmental education; include all those directly and indirectly involved in the fishing sector.
- Assure that biodiversity proponents continue to work closely with the fishing community on critical issues of common interest — e.g., the monitoring of commercial species, diving safety courses, and sea cucumber processing activities.

Crosscutting Issues/General Recommendations

We have a few crosscutting or general recommendations. These are:

- By all standards, Ecuador rates low in the areas of governance and rule of law. A lack of political will to enforce the country's laws, or to enact much-needed legislation, is patent and extends to all domains of public life. The failure of the government to deal effectively with the recent crisis in the Galápagos is a case in point. Under such conditions there is little hope of saving the country's remaining wealth in biodiversity. The notion that high endemism biodiversity can only be conserved if its potential value of unique environmental service is realized, however, has powerful political economy implications. Assessing, controlling and sharing in biodiversity rent may well be one of the few critical issues around which communities, federations, and indigenous groups can jointly wage political action against corrupt local and central governments. The USAID Mission might thus want to ensure that the political processes involving the sharing of rents from environmental services among legitimate stakeholders are supported in the design of a Democracy/Governance Strategic Objective.
- Given the rapidly shifting and uncertain socioeconomic and political environments, the Mission should give itself the means to support an array of activities on short notice. Well-timed and sharply focused support can do much to enhance the impact of long-term interventions. Such activities might include a media campaign, collaboration with another donor or NGO on a specific problem, support — perhaps through a national NGO — to a community involved in a landmark legal action, or support to indigenous groups (often occupying oil-rich high-biodiversity areas) contesting oil exploration or drilling. The Mission enjoys a variety of contracting instruments that can be employed.
- The Mission should consider funding radio campaigns, in indigenous languages, to support biodiversity conservation. Campaigns of a kind the Mission recently funded through OIKOS Corporation to raise the consciousness of the national press on the crisis in Galápagos appear to have a relatively high return.

In pursuing this new strategy, the Mission should recast its set of partners. Each of the current partners is better at some things than at others. In the past, partners have had little incentive to emphasize strengths and avoid those areas where they lack comparative advantage. A combination of inadequate design, undemanding supervision by project managers, and partner-NGO complacency during many years of costly activity has hampered the effort. A new design should feature:

(1) a refocusing of main partners in the domains where they can most contribute; and

(2) the participation of new actors with technical expertise in key complementary areas.

New areas of expertise that will be needed for the proposed scheme to reorient SO1 include biodiversity economics, environmental economics, environmental law (biodiversity focus), and environmental lobbying.

The evaluation team hopes that the suggestions and information above will help the USAID Mission redefine its orientation and assemble a powerful constellation of partners. In addition, the Mission might also wish to

review its overall capacity for supervision and strategic planning. The management of a large cast of actors working on such complex issues is a daunting task. It is of more than passing interest that the 1997 ESP report suggests that "USAID/Ecuador take a more active role in the management of the project…" (p. 22). We suggest that one person be fully dedicated to the task of providing overall management of the SO in addition to activity managers. This suggestion stems partly from our opinion that the redesign of SO1 may well require a lot of work, and constant monitoring on several fronts simultaneously. The SO1 manager, whoever it happens to be, should keep close tabs on the overall, strategic, master plan; and invest the time required to verify its consistency with current conditions, constraints and opportunities, and to work with partners and activity managers on necessary adjustments. However, the more fundamental issue is the extent to which a reliance on a combination of grants and cooperative agreements provides the Mission with the flexibility needed to manage such a complex program in the changing Ecuadorian environment. The team recognizes that the Mission is laboring under tight constraints, but also thinks that the magnitude and diversity of future funding might allow an innovative solution to this quandary.

I. The Evaluation Enterprise

A. Purpose

The Scope of Work (Annex A) states the purpose of the evaluation is to provide:

- An analysis of the Environmental Support Program's (ESP) progress towards the Mission Strategic Objective No. 1 (SO1) objectives, as set forth in the Design Document, Performance Monitoring Plan and annual work plans and as defined by goal and expected outputs/results, with discussion of impacts, both positive and negative.
- Recommendations to improve results achievement, management operations, use of program resources and quality of outputs.
- An analysis of prospects for sustainability of positive program impacts after USAID/Ecuador's funding ends.

In addition to improving program performance at all levels, the evaluation results will also be used to help determine future directions for SO1. It should therefore include specific recommendations for USAID priorities for further support to the environment SO, with discussion of the criteria/justification used to identify those priorities and USAID's comparative advantage to address them.

B. Structure of Results

SO1 has three Intermediate Results (IRs):

- "Strengthened capacity of target NGOs and CSOs active in biodiversity conservation" (IR1);
- "Economically viable natural resource management (NRM) practices adopted" (IR 2); and
- "Key policies and legal frameworks introduced and/or implemented to conserve biodiversity" (IR 3).

SO1 also has three "result packages," (RPs) one each for the geographic areas of high biodiversity where SO1 has been active:

- the Cotacachi-Cayapas Ecological Reserve (RP1),
- the Cayambe-Coca and Antisana Ecological Reserves (RP2), and
- the Galápagos Islands (RP3).

The several components of each package, with expected outputs/results and proposed activities for each component, are included as Annex D.

C. Team Composition and Methods Used

Three persons composed the evaluation team: Dr. James C. Jones, a social anthropologist and Latin America area specialist; Dr. Henri Josserand, ARD Senior Associate, and natural resource economist; and Dr. José Rosero, an environmental engineer and environmental economist.

The evaluation was conducted in Ecuador from November 6, 2000 until December 7. During the first week, the team held discussions with members of USAID's SO1 Team, individually and collectively, as well as with cooperating partners and other entities related to SO1 (see Annex B for a complete list of individuals

and organizations consulted). While assimilating and ordering this interview material, the team also sifted through an array of documents cogent to SO1 for the three-year evaluation period (1997-2000).

The team spent a total of six days visiting selected sites, beginning in the second week. Over a two-day period, we visited the Píntag area of Antisana Ecological Reserve, and the Cangahua and Oyacachi areas of the Cayambe-Coca Ecological Reserve. The Nature Conservancy (TNC) and collaborating partners have been active in this vast area stretching from the barren and frigid uplands of the volcanoes Antisana and Cayambe to the lush tropical lowlands of western Amazonia. This region (which TNC refers to as the Cóndor Bioreserve) is larger and far more complex ecologically and socioeconomically than the Cotacachi-Cayapas Ecological Reserve in Esmeraldas Province.

In the third week, we spent four days in the Ecuadorian Chocó (Pacific coast) visiting sites around the Cotacachi-Cayapas Ecological Reserve, just south of the Ecuador-Colombia border. After visiting Esmeraldas, Borbón, and San Lorenzo, we ascended the River Cayapas to visit Chachi Indian and Afro-Ecuadorian communities, where CARE-SUBIR and cooperating NGOs Jatún Sacha and Ecociencia have been active. SO1 has invested about 70 percent of its resources in this zone over the past three years. Activities here are geographically and thematically more "compact" than those in and around the sprawling Antisana and Cayambe-Coca Reserves.

Given its scope of work, the team faced severe time constraints. Activities specified for the Result Package for Antisana and Cayambe-Coca alone, for example, were dispersed over a wide area. Site visits, therefore, could but skim the surface of a few of them. In particular, we found that our on-site interviews turned up issues and problems whose depth and dimensions we had no time to pursue. We often left a site with more questions than answers. Also, documentation for this region was less informative. For the Galápagos, which we did not visit, our findings are based entirely on what we could read, and on interviews in Quito with persons now or formerly affiliated with the Charles Darwin Foundation (CDF) and the Galápagos National Park.

We thus have incomplete information for some of the thematic areas that our scope of work asks us to address. The reader should thus be aware, as we are, of the limits of some of our microlevel findings, and we hope that those findings and any companion suggestions will not be treated as definitive and final but rather as potential problem areas (or success areas) — as matters, that is, for further discussion and analysis. But this is what a midterm evaluation should be about anyway: an occasion for reflection on activities and directions. Moreover, the thrust of our mandate is to evaluate the SO1 investment strategy, not microlevel implementation issues. At this strategic level, we are indeed confident that our understanding of issues enables us to speak amply and with authority.

We should also note that our mandate to work at both strategic and micro levels leads to some seeming contradictions in our recommendations. Our suggestion for a strategic reorientation of SO1, for example, renders several of its current activities irrelevant over the longer term — activities to which some of our microlevel recommendations nonetheless pertain. Two observations are in order here. First, our dual mandate may owe in part to the fact that SO1 was designed at a moment (in 1997) when the Ecuador Mission was to be closed within two to three years. SO1's content (its activities) clearly reflects that. Second, the contradictions are more apparent than real if one realizes that SO1 cannot be reoriented immediately (though it is urgent that work begin). We recommend, for instance, revaluing (using carbon setoffs, say, or genetic resources, or some mix thereof) the Cotacachi-Cayapas Reserve as a better long-term strategy to conserve its biodiversity than raising the incomes of buffer-zone populations. Yet current income-raising activities, including agroforestry, cannot cease immediately for at least four reasons:

(1) leaving buffer-zone populations without viable income alternatives would indeed imperil the reserve;

(2) the credibility of CARE-SUBIR (and thus its ability to contribute to the new strategy) may depend on its ability to deliver already-promised "production projects" (for which we certainly found a strong local demand);

(3) it will take USAID and its partners at least two years to mount an income-generating revaluation scheme; and

(4) a cooperative agreement between USAID and CARE governs current activities.

II. Ecuador, 1997-2000: Economic, Political, and Social Setting

Ecuador is a land of troubling paradox. It is not a poor country, but a teeming nation of poor people. It is rich in natural resources, but growing rapidly poorer in human ones. Its wealth in biodiversity looms in stark contrast to the rate that wealth is vanishing after 40 years of abuse and mismanagement. An economist looking at Ecuador might conclude that biodiversity is treated as a luxury good, and natural resources as inferior goods.

It is a further paradox that the country's macroeconomic indicators are slightly positive, yet its fundamental economic structure remains weak. International financial institutions and large creditors cast about for hopeful signs and ways to help a struggling economy whose problems run deep. Dollarization was a much-needed measure; it worked as a convenient, one-stop proxy for many macroeconomic steps which would have been impossible, or very difficult, to implement on a piecemeal basis, as the tribulations of the "Trole" legislative packages suggest. It did not entirely succeed in suppressing inflation, but likely played a major role in reducing it. The fact that Ecuadorian exporters are now laboring under stringent competitive conditions is also a very good thing, in the longer-run, especially if other forms of subsidies are also curtailed. Some of the most vexing economic problems, however, are going to require substantial additional reforms (e.g., stricter banking sector supervision, fiscal reform).

Damaged financial markets and losses in bank-based assets have weakened the small-business sector. Effective demand for its goods and services has fallen sharply because the *congelamiento* and related financial sector ills hit the middle class, a major consumer, hard. Investor confidence is low, in part due to uncertainty about the policy and regulatory frameworks. Figures on domestic investment are encouraging, though much of that investment may be in areas that perpetuate or heighten fundamental social problems, since investment choice reflects the undervaluing of resources such as land, forests and water, and the 'mining' of high-value fish species. The figures may also include the 'laundering' of gains (e.g., via the flower sector) from unlawful pursuits in neighboring countries.

High political and institutional instability and corruption are symptoms of an ailing socioeconomic and political regime. The malaise extends to relations between the executive branch and the legislature, and to the profusion of laws, both on the books and in the making. Impermanence, instability, and confusion cloud the institutional arena. Relations between public-sector institutions and many nongovernmental organizations (NGOs) are close and complex — and at times unhealthy.

The overall near-term prospects are, therefore, not encouraging. Little change can be expected on the political scene. Confusion or carefully calculated ambiguity will likely continue, as will muddled policy signals from the executive and legislative branches. Pressure on natural resources will persist, if not increase.

The SO1 evaluation team has no brief to provide a macroeconomic assessment of Ecuador. Yet it is clear that key determinants of natural resource use and biodiversity conservation are rooted in the nation's political economy. In addition to analyzing 'technical' issues, we tried to understand and take into account the linkages between political, economic, and social events at the local, regional, and national levels.

III. Cotacachi-Cayapas Ecological Reserve (Results Package #1)

A. Introduction

Activities in this region are undertaken through a cooperative agreement with CARE, in collaboration with the Ministry of Environment (formerly INEFAN) and Ecuadorian NGO partners Ecociencia, Jatún Sacha, and CEDENMA. Their goal is to protect the unique biological diversity of the Ecuadorian Chocó through sustainable NRM and use in selected landscapes.

Project CARE-SUBIR (Sustainable Use of Biological Resources) began in 1991. It entered its third phase in 1997, as the period covered by this evaluation begins. SUBIR III has received, to date, about 70 percent of SO1 resources.

The area of Ecuador where SUBIR III is active is unique. It includes two of the world's ten biodiversity "hotspots" — Western Ecuador and the Ecuadorian Chocó. This biodiversity is seriously threatened; 70 percent of the plywood used in Ecuador, for example, comes from the area. Over the last four decades, 70 percent of Western Ecuador's original forest cover has disappeared. Most of CARE-SUBIR's work since 1997 has been in the buffer zone of the Cotacachi-Cayapas Ecological Reserve, which the government declared a protected area in 1979. Two ethnic groups reside there: the Chachis, an Amerindian group, and Afro-Ecuadorians. SUBIR III has worked with both.

From Esmeraldas, our team went first by land to San Lorenzo to meet with the Palenque Regional Council, a maximally inclusive (*tercer grado*—"third grade") organization representing Afro-Ecuadorian populations throughout northwestern Ecuador. We then returned to nearby Borbón, a river town and site of SUBIR's regional logistics base. From there we traveled up the River Cayapas to visit, over the next three days, project activities in Afro-Ecuadorian and Chachi Indian riverine communities. These included San Miguel (San Miguel Chachi and San Miguel Negro; also site of a SUBIR field base), Chispero, Guadual, and Majua. We returned to Esmeraldas on Friday, November 24, where we met with the Federación de Comunas Chachi de Esmeraldas (FECCHE). Because of limited time, we were not able to visit Afro-Ecuadorian communities along the River Santiago, where, among other activities, the project has promoted ecotourism.

This region, falling within the cantons of Eloy Alfaro and San Lorenzo, Esmeraldas Province, lies squarely in the Ecuadorian Chocó.

CARE-SUBIR III divides its work in this region into the following five components, which it uses to present its activities — and also used to structure the evaluation team field visit:

- *institutional strengthening and organizational development*: Jatún Sacha and Ecociencia are both active in these areas;
- *policy and legal issues*: training of paralegals, land titling, and conflict resolution;
- *improved land use*: agroforestry, small animals, communal forest management (Jatún Sacha is active here);
- *marketing of wood and other products*: wood is the chief product sold; and
- *biodiversity monitoring*: Ecociencia manages the component and works with Jatún Sacha to assess environmental impact. The component includes the monitoring of deforestation rates and the effects of project forestry interventions on local biology.

B. Institutional Strengthening and Organizational Development

i. Nongovernmental Organizations

With respect to the institutional strengthening and organizational development of NGOs, the team examined a number of questions, including:

- Did CARE and partner NGOs apply the appropriate expertise to the tasks?
- Did the partners use the support provided by USAID over time to strengthen their own capacity to intervene? What are some weak areas?
- Is CARE working harmoniously and efficiently with its partners? Is CARE helping to ensure that Ecociencia and Jatún Sacha have the sets of skills (given their basic orientations) that allow the RP group to bring the necessary expertise to bear on the problems?
- Is it reasonable to expect that CARE and other NGOs will be able to turn certain activities over to communities or other organizations?

All NGOs working with the SUBIR project are strong in a number of technical and nontechnical areas. This is due in part to the significant support they have received from USAID over time through SUBIR and other projects. Our assessment, therefore, emphasizes the appropriateness of expertise brought to bear on the project activities.

Generally speaking, NGOs have brought high quality expertise to the topical areas where they were expected to intervene. They have been, for example, relatively strong in forestry, biology, and ecology. CARE has been particularly competent in community training and organization, and in regulatory areas. The team, however, sees two main problems:

(1) there are weaknesses in certain areas where these organizations were supposed to intervene, and

(2) the organizations have not been proactive enough in working with USAID on identifying additional expertise in critical areas that are more consistent with biodiversity valuation.

Areas of weakness, and where more expertise should have been applied, include:

- low awareness of the need/capacity to analyze resource-oriented issues which extend beyond the project scope proper, but are likely to have an impact on SUBIR activities (One example is the population in-migration and land ownership consolidation taking place in the San Lorenzo area);
- production and marketing for non-wood and agricultural products;
- environmental monitoring - it is surprisingly difficult to obtain clear time-series information on basic environmental trends; the staff also appear to be focusing on suboptimal environmental indicators (beetles); and
- some tools, such as remote sensing, satellite or video imagery interpretation, have not been used to any large extent, certainly much less than appears warranted, although Jatún Sacha has plans to work with USGS on LANDSAT thematic mapper data interpretation.

The team generally found that CARE and partners used the support provided by USAID to strengthen their technical capacity to some extent, but mostly in the areas where they were already relatively strong. They did not make serious efforts to reinforce their skills in several relevant areas where they happened to be

weaker (e.g., agroforestry). The organizations thus either failed to recognize their shortcomings, or to use the opportunity to remedy them in order to play a more efficient role in the project.

The team found that the quality of relations among partners was very good. Organizations appear to work well and closely together, with a collaborative and participatory style. This has definitely been an advantage, while at the same time, there have been significant costs in terms of low levels of efficiency, innovation and dynamism.

Still, the team believes that some of the NGOs (especially CARE) are eager and ready to turn specific activities over to other actors. They have clearly done a lot to train people, to work with communities and with local organizations. They are willing to hand activities over to whichever group(s) can handle them. Other groups, such as individual communities, Palenques, and 'third level' organizations such as the *Consejo Regional de Palenques*, or the Chachi FECCHE, however, are not entirely ready to assume the management of most activities undertaken by CARE and others. It would make more sense for CARE and partners to turn some activities over to groups which can handle them, rely on other sources of expertise for activities where they are not convincingly strong (such as agroforestry, ecotourism), and focus more on the areas where they have a true comparative advantage.

ii. Community-Level Organizations

The project has expended much effort on local organizational development at the community, multicommunity, and regional levels. This is true with regard to the Chachis (from the community — the *centro* — to the FECCHE, or province-level federation) and the Afro-Ecuadorians (from the community, to multi-community groups, or *palenques*, to the Palenque Regional Council). Project efforts also include the development of function-specific organizational entities. Among these are a Community Forestry Network (operated by Chachis and Afro-Ecuadorians) formed to purchase wood from local communities, an agroforestry association, and two women's organizations (one Chachi, one Afro-Ecuadorian) whose primary activity is the production and sale of crafts.

The project's support to all of these organizations has taken the form of training (frequent workshops and trips), material contributions (equipment and supplies), and assistance in securing legal recognition (*personería jurídica*). In general, the project's work on the organizational front has been commendable. It has been part of a well-considered strategy to develop at the lowest level (the individual and the local community) a capacity to manage natural resources sustainedly, while developing at supra-community levels a capacity to manage these low-level technical and organizational processes so as to obtain a regional spread effect. Project consolidation will now involve a strengthening of links between these levels. In the end, assuming the existence of viable legal and policy measures at the national level (where CARE-SUBIR also works), this strategy should contribute substantially to biodiversity conservation in the Chocó.

It was the team's observations, however, that the strategy is working better with the Afro-Ecuadorians than with the Chachis. We were impressed with the way the project has supported and linked itself to the regional Afro-Ecuadorian ethnic movement that has gained force in recent years. The energy and intelligence that we observed in the Palenque Regional Council (whose legal recognition the project is now working to obtain) suggest that it could one day replace the project in many of its functions.

The project has made less progress in working with the Chachis. The reasons for this are complex, but may include the fact that Chachis, unlike Afro-Ecuadorians, do not speak Spanish as a first language — indeed, many (especially women) do not speak Spanish at all. Reasons may also include the fact that Afro-Ecuadorians share the national culture (and the project culture) in greater measure than do Chachis. While Chachis and Afro-Ecuadorians have many common characteristics (both having shared a geographical space

for four centuries), they seem to differ markedly in worldview — and in the way they view local resource management.

The project has worked to strengthen the provincial Chachi federation (FECCHE), yet relations between its leaders and the project seem to be strained. The Palenque Regional Council recently sought to form an alliance with CONAIE, Ecuador's powerful national indigenous organization to which FECCHE is affiliated. CONAIE refused and FECCHE is not supportive of the Community Forestry Network, the project set up (and which is administered by both local Chachis and Afro-Ecuadorians) to buy wood. It struck the team that FECCHE was not in touch with its "bases" in the same degree that the Palenque Regional Council is in touch with *its* bases. We felt that FECCHE's need for resources (communications gear, for example) may not alone explain this.

C. Policy and Legal Issues

i. Support for Policy Development and Legislation

In this particular area, the questions examined by the team included:

- Did the partners understand/use linkages between the micro and macro levels?
- Have CARE and partners fully used the experience gained in the project area (and other geographic areas) to develop appropriate policy and legislative strategies?
- What are some of the limitations or weaknesses?

The macrosectorial or macrolevel environment refers to the set of overall political, economic, legal, institutional and social conditions prevailing in Ecuador at a point in time. Some macrolevel conditions can be influenced through policy reform, while others may be externally determined, or are unlikely to change in the short or medium term. The microlevel environment, on the other hand, refers to conditions prevailing at a more local level, encompassing the geographic space of a community or of a set of communities.

The most obvious linkage between levels owes to the fact that the macro context partly defines the general parameters or conditions under which microlevel activities can take place — and thus, their potential for relative success. Within these parameters, local activities may be more or less successful, given the intrinsic characteristics of local systems. For instance, national legislation partly determines the extent to which a community can rely on a title to land to implement a management plan (*plan de manejo*). At the micro level, differences in culture and social organization between Afro-Ecuadorian and Chachi communities are an important factor in the establishment and management of local activities, including those along gender lines.

The CARE-SUBIR staff, more than the other two main partners, has integrated linkages between the macro and micro levels in their work. This is an important accomplishment but, as we see below, this vertical integration applies to certain topics where CARE has a strong comparative advantage (community-based rural development, for example) and much less so to topics more directly related to biodiversity valuation and conservation.

With respect to the development of pertinent and appropriate policy and legislative strategies, the CARE-SUBIR project has definitely accomplished much, mainly through its Policy and Legal Affairs Component. As we noted above, the project staff have well understood that the macro context defines the extent to which one can implement community-based NRM activities at the micro level. They are also well aware that the experience gained at the local level, and the evidence collected on the evolution of ecosystems, are essential to inform the broader policy analysis, policy-making, and legislative processes.

Among other things, the CARE-SUBIR project has developed and published materials, trained community members and other persons, and generally supported work in the areas of:

- collective rights of Afro-Ecuadorian populations;
- a proposal for a territorial grouping of Afro-Ecuadorians in Esmeraldas Province;
- the establishment of communes, associations, centers, and cooperatives;
- the legal aspects of community tourism;
- the legal aspects of mining and oil exploration/drilling; and
- the legal aspects of the distribution of benefits from the Convention on Biological Diversity, etc.

A lot of this information has been aimed at the training of paralegals (*paralegales*), but other groups in the NGO and donor communities have also used it. The team agrees with project staff that, in the short term, the problem is both one of drafting better new environment-related laws and of making sure that current laws and regulations are used by communities and other stakeholders to the full extent possible.

Nevertheless, there are a number of limitations in the CARE-SUBIR approaches. They have produced a paralegal booklet on intellectual property and have contributed to the recently published book '*El Cartel de la Biodiversidad: Transformación de los conocimientos tradicionales en secretos comerciales*'. However, they are relatively new to the more 'advanced' aspects of legislation on biodiversity such as legal and commercial aspects of expressing biodiversity value. Some of their partners, Ecociencia in particular, have much more technical expertise on biodiversity, but this is an area that has not been addressed by the RP partners. Again, one might argue that this was not in the purview of the partners, but it does seem odd they did little to press for greater involvement on the part of USAID in expressing biodiversity value, especially since they've never been considered, or treated as, minor partners by the Mission in Ecuador.

ii. Encouragement of New Technical Options

Within the context of biodiversity conservation and rural development, the active population of the River Cayapas watershed is notable.[1] There is a need to understand both the demograpahics of the region as well as the economics. Lengthy surveys are not necessary. All that is required is the random sampling of populations in the work area. The samples will provide data on socioeconomic dynamics for the target populations. It should be used to analyze community expectations regarding income levels as well as the characterization of local demand for consumer items.[2] This will enable an estimate of pressures on the natural forest and their direct effects.[3] The data can also be contrasted with the market demand from the agroforestry network. The idea is to have a database consistent enough to enable the preparation of land-ordering and NRM schemes from a legal environmental perspective and to compare tradeoffs on various income-generating activities.[4]

Rural labor markets in Ecuador are always changing, and are the source of dangerous residual distortions on the agricultural frontier.[5] In the SUBIR area, management policies can be affected not only by rural-urban

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1 It is significant that the team encountered settlements at no more than 15-minute intervals along the river. Active river traffic was also notable, especially at the hour of school dismissal.

2 The team observed this tendency in Afro-Ecuadorian communities.

3 When the time comes to draft management policies, it will be necessary to have a reliable demographic base in order to set more realistic norms.

4 Perez, Efrain, "Derecho Ambiental y los recursos naturales", USAID- IDEA, 1995.

5 Whitaker, Morris et al. "El rol de la agricultura en el desarrollo económico del Ecuador", p. 156. Fundación IDEA 1990.

labor-related population movements but also by community internal competition for labor between, say, community forest management and agroforestry activities. This seems to be the situation in Chispero.

In summary, population growth, an increase in expected family income, the adoption of Western consumption patterns, and a shifting rural labor market suggest that the project should analyze its technical options for defining a resource management policy appropriate to current community dynamics along the River Cayapas.

If the biodiversity conservation strategy, for example, seeks to reduce pressure on the natural forest by increasing family income through returns from agroforestry, then agroforestry activities will eventually expand and encroach upon community-managed forest areas.[6] It is likely that this expansion will in time encroach on the reserve itself.

At present, agroforestry in Chispero absorbs all of the community labor, to the detriment of community-managed forest. Wood could not be extracted from that forest this year, thus leaving community social development unfunded. Experience elsewhere[7] suggests that agroforestry in Chispero may give way to annual crop agriculture, which is typically followed by the establishment of pastures. A strategy to conserve biodiversity by increasing family income through agroforestry is thus dangerous. At present, residents of all of the communities that the team visited want SUBIR technical and economic support to develop agroforestry. The project should look for a biodiversity conservation strategy more compatible with the realities of the Cayapas communities and biodiversity conservation goals.

SUBIR has expended much effort on strengthening the Palenque Regional Council. The idea to regionalize the experience acquired over eight years on the Cayapas does seem opportune, but the strategy of "surfing" on a political opening like the expansion of the *palenques* in the project area could be problematic. First, the Chachis would see the move as an attack on their interests. The FECCHE has already asked for an agroforestry network separate from that of the Afro-Ecuadorians. And second, although the strategy might indeed succeed in creating a *palenque*-based regional government, it could also damage institution-building efforts now underway as part of the legal reform and policy change process in the national parliament. It could also clash with the project's land titling program. Again, more thought should be given to the strategy to regionalize project experience through the Palenque Regional Council.

iii. Biological Research in Support of Policy and Training

High endemism characterizes biodiversity in Ecuador.[8] Renewable NRM should consider this condition, and biological research in support of policy and legal change should be designed accordingly.[9] In natural resource terms, Ecuador's greatest wealth does not lie in its timber but rather in its endemism.[10]

Nonetheless, most of the institutions concerned with natural resources over the past 20 years, within the context of SUBIR and beyond, have refused to accept this. The Ministry of Environment and CEDENMA cite an agreement with the timber sector as a major contribution. From the subscribing of the debt-for-nature agreement between Fundación Natura and the Central Bank in 1987 to the implementation of several agreements of the World Bank's GEF Program during the 1990s, Ecuador's natural and protected areas have

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6 Edwards C., et al. "Sustainable Agricultural Systems", Soil and Water Conservation Society, Iowa, USA, 1990.

7 Proyecto San Miguel- Putumayo, "Informe de Evaluación" MAG- OEA, 1989.

8 Gentry, A. & Dodson, C, "Diversity and biogeography of neotropical vascular epiphytes", Ann. Missouri Bot. Gard. 74:205-233, 1987.

9 Gentry, A. & Emmons, L. "Geographical variation in Fertility, Phenology, and Composition of the understory of Neotropical Forests", BIOTROPICA 19(3): 216-227,1987.

10 Rosero, José "Selección de Germoplasma Nativo y Domesticación de especies silvestres medicinales", PROMSA, Quito, 2000.

been viewed exclusively from a forestry perspective.[11] This perspective has also permeated USAID's Environmental Support Program in Ecuador — including scientific and technical activities related to biodiversity conservation. Activities in the Galápagos Marine Reserve are the exception.

The research that Ecociencia conducts with the beetles (*escarabajos peloteros*) is a case in point. The abundance and distribution of the beetles is measured in order to establish differences between areas under SUBIR NRM and areas with no management. The beetles are a measure of the effects of deforestation. An abundance of beetles reflects, in principle, the optimal reincorporation of organic matter, thus assuring normal forest development. The beetles are a good indicator of the impact of deforestation, but they say little about forest biodiversity. Their use is linked more to the management of a tropical forest in its transition to tropical agriculture than it is to biodiversity conservation.[12] The beetle indicator does not allow the implementation of alternative forest management strategies of a kind considered below. In the same way, current biological research is inadequate for establishing a legal and policy framework compatible with the opportunities and needs of biodiversity conservation in Ecuador.

As already explained in the section on policy and legal matters above, doubts surround the economic viability of the community resource management plans. Do the community resource management plans provide the highest value for the forest or are there opportunity costs? A comparison of gross income from different segments of the project's NRM scheme is sufficient to reveal an urgent need for realistic approaches to management and the need to consider alternative management strategies. For example, the gross community income from community forest management in the case of a moderately aggressive extraction rate of five m^3/hectare/year, at a value of \$2/m^3, would be \$10/hectare/year. Under a carbon sequestration scheme, with participation of the U.S. Office of Joint Implementation, the same area (in Chispero) could yield a community income of \$80/hectare/year.[13] This level of income, which would extend over the entire area under management, would immediately resolve any labor availability problems. If the resource management strategy to conserve biodiversity were based on the real value of the environmental services that the forest offered for regional development, community income in Chispero would reach \$264/hectare/year.[14]

But even if such a proposed scheme to value resources were not viable, for whatever reason, one might also consider valuing forest biodiversity on the basis of its genetic resources.[15] Under that scenario, ethno-botanical collections and the related systematized information, all with community participation would form the basis for a community NRM plan.[16] Depending on the opportunities for "bioprospection", minimal community income from this activity for Chispero could vary from \$0.97/hectare/year to \$500,000/hectare/year. [17]

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11 Perez, Efrain "Derecho Ambiental y los recursos naturales", USAID-IDEA, 1995.

12 Committee on Sustainable agriculture and the environment in the humid tropics of the National Research Council of USA, "Sustainable Agriculture and the Environment in the Humid Tropics", Washington, DC, 1993.

13 Rosero, José, "Fijación del Carbono en el Bosque de los Guacamayos", PROBONA-UICN, 1997.

14 Rosero, José, "Determinación del valor de una hectárea de bosque tropical" en "Planificación Ambiental en el Nivel Regional", PROGRAMA BID- CONADE, 1996. Includes values for land (\$60), non-timber extraction (\$40), water (\$30), carbon sequestration (\$80), bioprospection (\$20), and ecotourism (\$34).

15 Rosero, José "Economía y Biodiversidad: un enfoque sistémico", Memorias del Simposio de Areas Protegidas, Pág. 80, Fundación Natura, Quito, 1995.

16 Vogel, Joseph, "El Cartel de la Biodiversidad, transformación de los conocimientos tradicionales en secretos comerciales", CARE 2000.

17 Rosero, José, "Determinación del valor de una hectárea de bosque tropical" en "Planificación Ambiental en el Nivel Regional", PROGRAMA BID-CONADE, 1996.

This all points to a need for a change of strategy. The current strategy of sustainable forest management and competition with timber interests should change. Another approach, as described above, would better conserve biodiversity and provide meaningful revenues.

If so, then biological research should support requirements for the alternative management schemes just described. If carbon sequestration is to be the scheme, there must be a technical basis to support legal and policy reforms. If there is to be an environmental service scheme, then, again, there must be appropriate biological indicators to support economic and legal policies for biodiversity conservation.

D. Sustainable Land-Use Management

i. Development of Realistic Natural Resource Management Plans

The team examined, *inter alia,* the following questions:

- How have CARE and partners perceived/managed the connection between biodiversity conservation and community-based natural resource management (CBNRM)?
- Have they identified and worked with communities on critical determinants of success for CBNRM activities?

Biodiversity, especially with a high component of endemic species, is an extremely valuable resource. Although it can be perceived as highly valuable at the global level, especially in a long-term sense, populations living near highly biodiverse resources have rarely had the opportunity to realize, and share in, its benefits. Their perception of the worth of biodiversity is limited to what they can extract from it today for a pressing need, or in exchange for the pittance paid on heavily distorted local markets. In very simple terms, the project's logic has been that if local populations believe that the benefits they can derive from various products in buffer zones are greater than what they can get from protected areas, they will tend to leave the protected areas alone.

This may be a useful first step, but in the longer term this logic is seriously flawed because it lowers the value of biodiversity to the equivalent (or less) of sustainable returns to better-managed buffer areas. The point should be, rather, to allow local populations to share as much as possible in the much higher rent from biodiversity. In any case, within the parameters of IR 2, our purpose was to look at the efficiency with which CARE-SUBIR and partners have tackled CBNRM.

Our assessment of the SUBIR project approach to CBNRM relied partly on factors found to be critical in determining the success or failure of such activities. The team attempted to gauge the extent to which these factors had been perceived, analyzed and — to the extent feasible — taken into account in the course of the project's CBNRM activities. These factors are of four types: political, economic, social, and biophysical.[18] Given the information and time available, the team had to pass a somewhat cursory judgment on the extent to which (ranging from good to poor) the project staff had taken into account and worked on these factors with various communities. Although there are very notable differences between Afro-Ecuadorian and Chachi communities, our assessment is that the project overall did a good job of initiating CBNRM activities with communities along the River Cayapas. Weaker areas appeared to involve an understanding of the extent of

[18] This refers to a set of analytical tools developed by the Working Group on CBNRM in Africa. The Group has been convened by USAID/AFR-SD as part of their Environmental Information Systems strategy. Led by Paul Bartel and Mike McGahuey, AFR-SD, the Group also includes Henri Josserand, ARD, Inc., Kathy Parker and Max McFadden, the Heron Group, LLC., Bruce Miller and Michael Saunders, Pennsylvania State University and Senior Associates, the Heron Group, LLC, and John Woodwell, University of Maryland.

community leadership responsiveness to members, and of the extent to which new NRM practices would be manageable by the community, especially given labor constraints.

Political		Economic	
Decentralization	N/A	Distribution of benefits (community)	Good
Authority of communities	Good	Sharing benefits w/ other stakeholders	Some
Legal Framework	Good	Management capacity	Some
Linkage to national policy	Good	Infrastructure	Good
Risk of conflict	Good	Level of innovation	Some
Security of tenure	Good	Perceived B/C ratio of CBNRM	Some
Competition over resources	Good	Financial resources	Some
Vertical communication	Good	Substitution for public investment	Some
Social		**Biophysical**	
Clear leadership	Some	Weather uncertainty	Some
Community cohesiveness	Some	Natural hazards	
Community organizations	Good	Resource manageability	Poor
Breadth of participation	Some	Resource use patterns	Some
Extent of ability to negotiate	Some	Extent of changes in NRM practices	Some
Labor mobilization	Poor		
Leadership responsiveness	Poor		
Quality of labor pool	Some		
Training	Good		

ii. Impact on Community through Adoption of Conservation Practices

Community impacts are visible. "Paratechnical" (*paratécnico*) leadership with regard to forest management is clear. In Chispero, the team saw the management plan (*Mapa Hablado* [19]) that the community had prepared. The plan charts the sustainable use of the forest and includes conservation zoning. The carpentry shop we observed in the Chachi community of Guadual seemed forced, and not to fit Chachi culture. The students in the shop were making beds and furniture for their houses — and several items under contract. Carpentry, unlike, say, the knowledge and use of medicinal plants, seems to be an activity that does not square with community strengths. Also, pigs had destroyed the project's small tree nursery near the carpentry shop.

The introduction of technologies for wood extraction has been important since earnings from wood sales are significantly higher than from other activities. The wood market, however, is not always reliable. Project struggles against the wood-buyers' monopoly make future prospects discouraging. Corruption in wood sales corrodes the region's commercial ethic.

Many in the region see the agroforestry network as a great hope for marketing all kinds of products. And indeed it is. At the moment, however, the network's opportunity costs compete with the expected returns from work undertaken in the community. Either the returns from the original investment are lost for want of accounting, or the marketing costs are too low to guarantee a reinvestment and subsequent return. There are problems with the use of the network — and FECCHE wants a special marketing network for the Chachis.

The team encountered requests for agroforestry projects in virtually all of the communities it visited. The demand squares with SUBIR's strategy in the buffer zone: to substitute/supplement income from the

[19] Methodology suggested and validated in the context of the Coastal Resources Program, an IDB project, with ten years of field experience.

community-managed zone with income from agroforestry. In this sense, conservation practices have been adopted, although in an indirect way since it is a matter of income substitution. Upon analyzing the Chispero case in greater detail, as argued above, forestry exploitation either wanes or ceases altogether because of labor bottlenecks, with the result that community income declines — and with it community development.

E. 1997 Environmental Assessment

In June of 1997, AID and CARE Ecuador, with the assistance of the Biodiversity Support Program (BSP) requested a programmatic environmental assessment (EA) of the proposed third-phase activities of the SUBIR Result Package in Ecuador. The purpose of the proposed results package extension was to:

- "continue and expand natural forest management, sustainable agriculture and agroforestry systems, ecotourism, institutional strengthening, commercialization, NRM policy, and biodiversity monitoring and conservation practices which are economically productive and contribute to the maintenance of forest cover in the buffer zone of the RECC".
- "….A broad-based programmatic approach was used by the EA team since detailed implementation plans are not yet available for specific phase-III component activities".
- "…However, due to the programmatic nature of this EA the SUBIR results package will need to prepare supplemental EAs for certain activities to be implemented during Phase III"[20].

i. Adequacy with which Potential Environmental Impacts Addressed

The above text states that the purpose of the EA was to guarantee "the continuation and expansion of the components defined in the paragraph of point A." The EA never intended that the components be questioned, or that a search for new orientations be undertaken.

It is troubling that the study is too general. The main reason seems to be a lack of documentation and the absence of solid written intervention plans. But since the evaluation had to present a concrete result, the SUBIR team was delegated to prepare the assessment needed in October of 1997. The present evaluation team is thus faced with uncertainty regarding the EA "of certain activities to be implemented during Phase III of the SUBIR Project."

Among the main difficulties is the absence of a demographic projection allowing an estimation of the potential community population pressure on natural resources. The assessment also fails to provide an acceptable baseline with regard to demographic, economic, scientific, cultural, biophysical, and natural resource matters. Nothing is known, for example, about the demands on family income in the communities that would allow the preparation of a socioeconomic profile. And even less is known about soil resilience under agroforestry.

Despite the assessment's suggestion for measures of "fragmentation of native forests and habit deterioration" that would allow the prediction of environmental impacts, Ecociencia does not take this requirement into account in its biodiversity-monitoring program.[21] USAID and its partners need to take care that "results package activities do not finance the conversion of native forests to agricultural or agroforestry lands."[22]

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[20] Tolisano, J and Howard, A. "A Programmatic Environmental Assessment of Proposed Phase III Activities of the Sustainable Uses for Biological Diversity Results Package" in Purpose and Scope of the EA, SUBIR-AID, 1997.

[21] Idem, Chap. III, 3.1 Issue: Conservation of Biological Diversity in Native Forests, p. 21.

[22] Idem, Sustainable use of productive and degraded agricultural lands, p. 22.

But perhaps most noteworthy of all is the EA's observation that not enough attention had been given to the use of non-wood resources of the natural forest. This activity has not been well developed by SUBIR III, despite the provision of concrete parameters for establishing and predicting the possible impact of this activity.[23]

Last of all, it is worth mentioning that the EA sets forth a series of alternatives for the implementation of SUBIR III. But the reader, upon a closer reading of these, quickly sees that the "alternatives" are really minor variations on a single technical arrangement. There are no mutually independent "alternatives."

ii. Sufficiency of Mitigation Measures

After displaying an ample number of alternatives, the 1997 assessment team selects Alternative II, but with mitigation measures.[24] As will be seen below, the suggested measures do not much change things.

Among the suggested mitigation measures are "small" commercial forest plots. First, one does not know how "small" these are to be. And second, the concept suggests a lack of understanding of forestry economics. Well-demarcated community forest areas exist, and these are determined on the basis of their economic viability. The mitigation measures also fail to address the issue of whether people are able to manage forest plantations, given the restrictions on the use of chemicals and the extreme poverty of the soils. Considering the well-known poverty of the native forest with regard to marketable species, a better idea would have been to suggest the enrichment of the forest with economically valuable species.

Another suggested mitigation measure consists of investing time and money in establishing territorial limits and in demarcating exclusion maps (i.e., management plans and zoning).[25] This vision permeates the project and is the focus of considerable effort with little understanding that what is needed is investment to set the norms for appropriate and sustainable natural resource use. Resources should be used to invest in training of better resource use and management practices and the opening of new markets.

iii. Implementation of Requirements and Recommendations

Despite the precise description of potential impacts and suggestions for GIS monitoring of vegetation cover, for biological monitoring of the extraction of non-wood products, and for monitoring of species threatened with extinction, the team did not observe the implementation of any of these practices during its site visit.[26] The EA team drafted almost a page on the importance of monitoring biodiversity and suggests that special attention be given to the monitoring of biodiversity related to the extraction of non-wood species and to the potential impact of ecotourism.[27] Ecociencia has not reported on any of these activities.

To address the problem of degraded forests, our team proposes the design of programs to enrich native forest through the use of natural disseminators. To do this, it will be necessary to redesign the current scheme of biodiversity monitoring.

We would also suggest that the present zoning scheme be replaced by one that is more inclusive and that has technical management criteria which recognize the "wise and persistent work of the wild's natural dynamic, especially that of the region's natives."[28]

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[23] Idem, 3.6 Sustainable Use of non-timber forest products in affected environment, p. 23.

[24] Idem, p. 54.

[25] Idem, p. 69.

[26] Idem, pp. 35,36,37.

[27] Idem, p.66.

[28] In the words of the Palenquero Mayor, during a team interview in Borbón.

F. Commercialization and Marketing

The questions examined by the team included the following:

- Did CARE and partners develop a detailed understanding of the relevant subsectors (mostly timber, but also cocoa, tourism, arts and crafts)?
- Did they develop appropriate strategies to contribute to greater market efficiency (more competition, reduced transaction costs, etc.)?
- Did they maximize the local value-added component of products from the project area?
- Did they identify viable alternative products?

CARE and partners (mostly CARE) have developed a good understanding of the timber industry and its market in Ecuador. The emphasis on timber obviously stems from its relative importance in the local economy. Although project staff working on the marketing component have not mounted a detailed and formal market structure-conduct-performance exercise, the information they have gathered on the timber industry in Esmeraldas Province serves the marketing purposes of the project, especially given the obvious degrees of concentration and distortions in the market. Project staff have tended to focus on the share of the timber industry directly relevant to the project area, but they have also taken up the use of wood products at a more general level, in particular through the "green vigilance" (*vigilancia verde*) program. They also have plans to analyze the general issue of the efficiency of domestic energy use in Ecuador.

The project staff have clearly documented the extent to which, and reasons why, timber is underpriced in Esmeraldas Province, and in the sector at the national level, both because producers and consumers value it much below its social worth, even compared to other countries in the region, and because of major market distortions.

In terms of their approach to greater market efficiency, the CARE-SUBIR project staff have followed classic lines: promoting increased competition through price information (including radio broadcasts), strengthening the bargaining position of producers by organizing them into a producers' association,[29] and developing alternative markets outside the province[30]. They have also tried to reduce marketing and transaction costs through technology (aerial cables to extract planks from felling/sawing areas[31]), economies of scale, intermediation on bulk purchases, etc. This strategy has been carried out in a very participatory fashion, with a good level of community involvement.

The project staff has also designed many ways to add value to local wood products: marketing planks rather than logs, improving the quality of the product, working on the establishment of norms and standards, etc. They have also worked on vertical integration of operations by working with small- and medium-scale industrial clients, and by establishing a retail outlet in Quito. These worthwhile actions are well documented and described in a number of reports and publications.[32]

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[29] The first of its kind in Ecuador, grouping 13 communities in the project area and six outside, potentially covering wood products from 30,000-35,000 hectares of forest. Sixty percent of communities in the Rio Cayapas area are members.

[30] CARE and Jatún Sacha are also working on Forest Stewardship Council certification.

[31] Still, about 80% of the wood continues to come out as logs, vs. 20% or so as planks.

[32] Including the collection of papers compiled in "Una Herencia al Futuro – Memorias del Primer Encuentro Comercial de Maderas Tropicales", CARE-SUBIR, et al. May 1999.

Although the emphasis so far has been on wood products, project staff are well aware of that people are looking for additional incomes from alternative products, even though net returns to labor on most activities are very low[33]. The potential for non-wood marketable forest products in the project area appears limited, although the area is somewhat suitable for a variety of agricultural products: cocoa, bananas, pineapple, pepper, as well as large and small livestock. Tagua is a product that should be investigated further. The project has also supported nonagricultural activities, such as a carpentry workshop, two women's organizations producing traditional crafts (one Afro-Ecuadorian, one Chachi), and ecotourism activities in Playa de Oro and San Miguel.

Although project staff are working on improved marketing for non-wood products, their experience with the economics and marketing applied to activities like cocoa, tourism, arts and crafts, is much more limited, and they could use some additional expertise in these areas. At the very least, they should try to work more closely with groups like MCCH (Maquita Cushunchic–Comercializando como Hermanos). Created in 1985, this organization aims to provide rural communities with alternative marketing channels and better access to basic products. MCCH operates in many provinces of Ecuador in such areas as community shops, basic staples — including certified organic cocoa — artisanal products, solidarity funds, responsible tourism, etc.

G. Biodiversity Monitoring

The evaluation team observed the biodiversity-monitoring scheme during its field visit. The quantity and distribution of beetles (*escarabajo pelotero*) is used to measure the impact of deforestation and to compare differences in that impact between areas under and not under SUBIR management. But as already indicated, what is needed is a measure of biodiversity to serve as technical basis in support of legal measures to change current NRM policy.

An interesting initiative could be the development of a biological-monitoring program based on the concept of "bioregion" — to integrate, that is, the biological uniqueness and state of conservation in the buffer zone and the reserve.[34] For this reason, it is urgent to know, among other things, the degree of habitat fragmentation, or simply to have a definition of habitat blocks.[35]

A less ambitious but still useful monitoring scheme would be one that allows for detection of changes in the diversity of plant communities[36] and in the floristic composition of small areas considered key for management.[37]

H. Dissemination of Activities and Results

Publications exist on activities related to the marketing of sustainedly harvested wood, and also on access to genetic resources. The existence of publications on these varied topics conveys some idea of the intense concern to find an appropriate NRM scheme.

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33 Ranging from $0.33 to $0.40/day on arts and crafts, for example.

34 Dinerstein Eric et al. "Una evaluación del Estado de Conservación de las Eco-Regiones Terrestres de America Latina y el Caribe", p. 23, Banco Mundial, Washington, 1995.

35 Idem, p. 53.

36 Gentry A. & Emmons, "Geographical Variation in Fertility, Phenology, and Composition of the Understory of Neotropical Forests", BIOTROPICA 19(3): 216-227, 1987.

37 Gentry A. "Changes in Plant Community diversity and floristic composition on environmental and geographical gradients" Ann. Missouri Bot. Gard. 75: 1-34, 1988.

I. Participation

i. Effectiveness of Approaches to Promote Participation

Fundamental to the project's participation strategy has been the use of community-based promoters charged with managing the project's several components. The goal has been to have one promoter per component per community. Accordingly, there are "social promoters" (*parasociales*), "biological promoters" (*parabiólogos*), "forestry promoters" (*paraforestales*), and "legal promoters" (*paralegales*). These act as bridges between the communities and project management in the several project activity areas.

The social promoters play a key role in all of the components, seeing that project interventions square with community attitudes and organizations, and acting as local monitors of project-community relations. Through their management of local training (frequent workshops), they also play a key role in local organizational strengthening.

The evaluation team feels that this approach has, in general, been effective, though more so with the Afro-Ecuadorians than with the Chachis, despite the use of Chapalachi-speaking promoters from Chachi communities. As one project technical staff member told us, "You must spend twice as much time working with the Chachis as with the Afro-Ecuadorians. They say they understand, but they really don't…" This accords with our observation that SUBIR has advanced more on all fronts with the Afro-Ecuadorians than with the Chachis.

Before entering a community to work, the project conducts a participatory diagnostic to determine ecological as well as socioeconomic opportunities and constraints. The community then participates (through assemblies) in decisions with regard to what activities are to be pursued. Furthermore, as one Afro-Ecuadorian official of the Palenque Regional Council noted, "SUBIR has been a pioneer in delegating (i.e., in letting communities do things on their own), even when failure has been the result."

ii. Reflection in Work Plans

SUBIR work plans reflect the same participatory mechanisms described above.

iii. Clients' View of Program Services

Our team was impressed with the frequency with which residents in project communities, Chachi and Afro-Ecuadorian, requested more attention to production activities — to income-generating activities, that is. The theme pervaded our interviews. The requests point clearly to the precarious nature of local economic activity — if not to the technical and economic limitations to local production as well. Soils in the area lend themselves only to forestry, or maybe to agroforestry, and the remoteness of these river-accessed communities poses formidable obstacles to marketing. An Afro-Ecuadorian woman, looking broadly at project interventions, expressed the dilemma: "Hunger is a harsh thing, it tears at the management plans… The more rational the extraction, the poorer the people… The management plans do not provide production alternatives…"

A reliance on management plans or production projects alone to conserve biodiversity may be hazardous in this refractory zone.

We always asked residents what they saw as the major project achievement. And almost always the titling of lands (most often prior to 1997, when SO1 began) ranked first. And with the titling of the lands (in the case of Afro-Ecuadorians) came the creation of *comunas*, a juridical form necessary for communal land titling. It was in this context that residents, Chachi and Afro-Ecuadorian, often mentioned the settling of conflicts

(over land and the resources associated with it) between the two groups (such conflicts have existed for 400 years) as an important project achievement. SUBIR has created and trained paralegals to deal with the conflicts. Most of the major conflicts, especially around San Miguel (there is a San Miguel Chachi and a San Miguel Negro), seem to have been resolved. The paralegals now work mostly to resolve community internal conflicts. By any measure, SUBIR's work with land titling and conflict resolution is commendable.

J. Human Behavior and Natural Resource Management

i. Environmental Consciousness of Inhabitants In and Around Protected Areas

We found inhabitants who have worked with the project to be conscious of the importance of the environment to their welfare. The project has worked well in fomenting this consciousness. But our observations also lead us to think that the consciousness is irrelevant unless inhabitants can meet their economic needs in a way that does not violate the environment.

ii. Community Participation in Protective Actions

Project interventions are such that the community must participate in community-management plans. The several *paratécnicos* are a further guarantee of this.

iii. Knowledge and Adoption of Conservation Practices

SUBIR has done a good job in training individuals in the communities where it works in managing community and individual forests. We often heard residents (mostly Afro-Ecuadorians) give detailed explanations of what they did and why, which suggests that the project has substantially "penetrated" at least a few communities with such knowledge. And residents at those sites have adopted the practices, although, as we have already indicated, this adoption may be tenuous.

iv. Women and Minority Groups

a. Modes of Inclusion in Field Activities

The project has addressed the needs of women in several ways. Three of the eight members of the Palenque Regional Council are women, for example, and several of the promoters who accompanied us during our visits were women. Those same visits revealed that women do indeed play an active role in the project.

CARE-SUBIR has fostered the creation of two women's organizations, Unidas Trabajan las Mujeres de Bella Vista (Afro-Ecuadorians) and María del Sol (Chachis). We visited them both. The purpose of the organizations is to organize the women around the production and sale of crafts as a way to increase family income. Our interviews, however, revealed that neither organization has enjoyed much success in selling their crafts. Many of the women in both groups have become disillusioned; effective membership in the Bella Vista group has dropped from an initial 120 to only 25.

The Chachi women asked our evaluation team to consider supporting them with a pisciculture project so they can improve the family diet. Fish in the River Cayembe are not as plentiful as they once were, and the women are not able to provide fish to the children (malnutrition is a serious problem). They say such a project could use the same species that are found in the river, species that the women would know how to manage. The team found this an interesting proposal. A pisciculture effort could reduce pressure on local resources, and thus contribute indirectly to conserving biodiversity.

b. Collection of Gender-Specific Planning Data

In the initial diagnostic that CARE-SUBIR conducts in communities before it mounts interventions, the sexual division of labor and the role of women are considered.

c. Suggestions to Improve Effectiveness in Addressing Gender and Ethnic Issues

Working simultaneously with two distinct ethnic groups like the Chachis and the Afro-Ecuadorians, who have reached an uneasy coexistence over four centuries, is no small challenge. CARE-SUBIR's work with land titling and conflict resolution is a major achievement. It is our sense, however, that there may be latitude to strengthen project work with the Chachis, especially on the resource management and production sides.

To that end, we would suggest that the project consider bringing onto its Borbón-based core technical staff an applied social anthropologist (the ideal), or a socioeconomist with experience working in rural interethnic settings. This person would focus on the structure of relations between Chachis and Afro-Ecuadorians as well as on Chachi resource management and production. The project might also consider bringing onto that core staff a Chachi or two (one of them a woman), assuming qualified Chachis can be found. With these staff additions, the technical team might then be in a better position to incorporate FEECHE into project activities and pursue a model akin to that of the Palenque Regional Council and the Afro-Ecuadorian communities. This incorporation would also contribute substantially to CARE-SUBIR's current pursuit of biodiversity conservation (through better resource management) on a regionwide basis.

A stronger social science capacity may also help to address gender issues, especially among the Chachis. There, the team felt that male domination might curtail women's participation in the project. By contrast, women seem to have considerably more equality vis-à-vis men in Afro-Ecuadorian society.

IV. Cayambe-Coca and Antisana Ecological Reserves (Results Package #2)

A. Introduction

Activities in this extensive region are undertaken through a cooperative agreement with TNC, in collaboration with Ecuadorian NGO partners FUNAN and FER, and the Ministry of Environment (formerly INEFAN). The goal is to protect the unique biological diversity of the Cayambe-Coca and Antisana Reserves through sustainable natural resource management and use in selected landscapes.

SO1 builds on the experience of SUBIR I and II (SUBIR began in 1991) in the Cayambe-Coca Ecological Reserve (RECAY), created in 1970 (limits defined in 1979), and seeks to extend activities to the Antisana Ecological Reserve (REA), established in 1993. The area of intervention of SO1 is thus much broader than that of SUBIR II.

TNC, supported by FUNAN and FER, proposed the creation of the Condor Bioreserve, a project that began in October of 1997. This reserve includes RECAY, REA, Sumaco-Napo Galeras National Park (founded 1994), and Cotopaxi National Park. The idea behind the reserve is to promote the integrated management of a wide area that shares many ecological characteristics and problems. The area is home to endangered species such as the spectacled bear, Andean condor, tapir, jaguar, ocelot, and macaws. The RECAY and REA supply water to metropolitan Quito. In one way or another, 2,060,000 people — 16 percent of Ecuador's population — depend on the natural resources of these two reserves. The Condor Bioreserve project has been active only in these two reserves over the past three years. The activities here considered by the evaluation are all part of this project.

B. Biodiversity Research

The project should institute methods to arrive at measurable and verifiable technical indicators. Local community opinion on the degree of biodiversity conservation is an important indicator, but is not as verifiable as, say, the reproduction rate of the spectacled bear (*oso de anteojos*).

Also, it has until now been assumed that the environmental impact to be measured is that caused by the local community. No effort has been made to separate this impact from that of global warming. We must demonstrate the impact of both on biodiversity.

There is an urgent need to strengthen biodiversity research in the Condor Bioreserve. With the exception of the spectacled bear, we do not seem to know well the vital habitat spaces that the reserve's major species occupy. And there is little concrete evidence of efforts to understand the seasonal dynamics of those species.

The monitoring of biodiversity still needs precise definition. Even the concept of biodiversity management remains unclear. The need seems to be for a change of indicators to measure the loss or change of distribution of key species. It would thus seem advisable first to understand the natural dynamic of the species so as then to be able to establish measurement indicators that are compatible with conservation logic. Also needed are efforts to establish predictive mechanisms and prevention measures so that the interactions between rural development and wildlife conservation are apparent. The intensive use of GIS might help to monitor, manage, and control, and thus in time to nudge this vast region toward biodiversity conservation.

C. Support of Policy Development for Protected Area Management

Given the low effectiveness of successive public institutions in charge of the environment, USAID/Ecuador officials have decided not to provide direct support to GOE agencies. Rather, they have opted to work

mostly through NGOs — which collaborate with communities, with other NGOs, and with public institutions. This is a logical strategy because a number of international and national NGOs have demonstrated a capacity to work on NRM and biodiversity conservation. Stakeholders have included communities, municipalities, government agencies, and the private sector. These actions contribute to the design and implementation of government policies, a task public institutions find it difficult to carry out with their limited authority and resources.

NGOs have also been active in promoting the process through which more informed, practical, and equitable environmental laws are drafted, promulgated, and enacted (see section on the role of CEDENMA below). In playing this and other roles, however, NGOs have become stretched very thinly and will undoubtedly be called on to do even more. There are several reasons for this:

- There is a constant pressure to do more, as Ecuador's unique biodiversity is increasingly vulnerable. The government has been preparing a series of ambitious plans, and has expanded or consolidated the limits of the nation's protected areas.[38]

- Partly as a response to weak public leadership, NGOs are furthering their involvement in various domains, some of which are new to them: facilitation of community NRM plans; promoting the participation of *municipios*, small-scale enterprises and the use of credit; and negotiations with private enterprise. In doing so, NGOs have acted in ways ranging from socially responsible to self-serving, and have learned a great deal by "doing."

There are real questions, discussed below, on the extent to which NGOs active in the *Bioreserva del Cóndor* have done an efficient job of supporting policy development relating to protected areas. Nevertheless, they have made real contributions, especially by bringing critical and pressing issues to the fore, including the problem of the water supply for the city of Quito.

It is clear that NGOs labor in a very difficult political and policy environment. As in many countries, the government has an ambivalent attitude toward them. On the one hand, they help the public sector indirectly through their actions supporting the environment and biodiversity. On the other, they are a thorn in the government's side because they oppose the actions of various actors who abuse resources, with the collaboration or tacit agreement of the public sector. In Ecuador, NGOs have also had to contend with frequent changes in institutions, mandates, and public interlocutors, and with a lengthy and chaotic legislative process. For instance, getting approval for operational plans has been time consuming and difficult. Past agreements can be questioned or ignored by any new Minister, and the process of contributing to a succession of draft bills is very long, frustrating, and opaque.

With respect to USAID-supported activities in the Cayambe-Coca Ecological Reserve, we have examined the role of TNC, FUNAN, FER, CEDENMA and other partners in order to answer the following questions:

- Have NGOs focused on the "right" issues" (i.e., do they reflect a broad consensus of opinions on what needs to be done?)
- Have they used all the information available efficiently, and mobilized all possible channels for information dissemination and policy/regulatory activism?
- Have they worked at various stages of the policy process (information, analysis, drafting, and implementation)?

[38] For instance, the Bioreserva del Cóndor now includes the Cayambe-Coca, Antisana, Gran Sumaco, and Cotopaxi Reserves.

Overall, the team found that the organizations' perception of environmental and biodiversity issues of public interest were adequate. The team cannot tell to what extent they reflect the popular aspirations of the Ecuadorian people, but they are generally consistent with the team's experience of policy issues in countries with similar environmental, political, economic, and social problems.

For example, the various NGOs seem to have a balanced approach to biodiversity conservation. As one of their leaders put it, "One does not conserve biodiversity by studying it, but by studying the uses of biodiversity as a valuable resource". As we discuss below in the case of water resources, they also have a keen perception of the relationship between the conservation of biodiversity and the proper management of more common natural resources inside of and near reserves. They also fully integrate the principles of decentralization in their policy thinking and actions.[39] The team did find that expertise and capacity to contribute in some more advanced or specialized policy areas appears limited among members of the smaller organizations. This, however, may be due to the fact that such issues as forest and other product certification, ethical trade, debt-for-nature swaps, etc. are more directly relevant in other geographic areas (Galápagos Archipelago or Esmeraldas Province).

FUNAN and FER, with their local partners (park rangers, *promotores*, communities, and members of *municipios* or *consejos*) are the direct operational arms of the RECAY component of the program. Although they only work in specific areas, they have access to basic information on conditions in the reserve and surrounding areas. In the team's opinion, they are able to collect information through various means (e.g., their partners, others active in the reserve area) which, if not very detailed, is useful for policy analysis. For example, they have provided policy usable information on what it takes to facilitate the process by which a community can mobilize itself to define a NRM Plan (NRMP). They are also contributing information on the role and limitations of local authorities (*municipios, consejos*) in biodiversity conservation and NRM. Finally, they are in a good position to provide detailed and precise information on the policy and regulatory aspects of critical issues, such as the multiple uses of water resources from the greater Antisana and Cayambe watersheds.

The consideration of policies that allow for the valuing of environmental resources is mandatory in the RECAY. Although efforts are underway to value water and set up a conservation fund, it is also important to determine how this water value relates to the value of the soil and the aesthetic landscape. The calculations to establish the value of water now going from the reserves to Quito are unclear and of uncertain origin.

While NGOs do receive funds for conservation and this can be reckoned a measure of organizational health, it is also the case that the NGOs are weak when it comes to interinstitutional cooperation and work. EMAAP-Q and other entities build infrastructure within the reserves, with very negative environmental impacts — in some cases irreversible (e.g., the construction of alternate road routes within the reserve) — yet project NGOs that work there cannot stop this, or even reduce the negative impacts. Coordination with government environmental offices is deficient, and even coordination with friendly communities is sometimes inefficient.

The database generated by several studies is not shared with other environmental NGOs, indeed, its public use is unknown. Neither have the data been adequately used to prepare policy or prescribe environmental behavior on the legal or economic fronts. The management of data from a multitude of studies has been deficient.

[39] For example, FUNAN supports the decentralization process by working with municipios; they can envision a situation where FUNAN and the Consejo Provincial de Napo could collaborate on management in the RECAY.

One solution to the above-cited weaknesses would be the adoption of environmental accounting as a method for generating policy and environmental strategy.[40] The inclusion of budget lines that would allow for satellite accounts in sectional governing entities (*municipios, cantones, parroquias*) linked to or bordering RECAY would encourage better regional environmental management in the RECAY.

D. Sustainable Use of Natural Resources

i. Development of Realistic Natural Resource Management Plans

In this instance, the team considered the following question: "As a result of project activities, are the populations in and on the fringes of the *Bioreserva del Cóndor* evolving toward a pattern of natural resource use which is more sustainable and consistent with biodiversity conservation? Furthermore, are they likely to 'stick' with current NRM plans and practices, and adapt them as needed?"

Because of limited exposure to field realities (in time and space), the team had to draw inferences and extrapolate from a combination of documents, personal and group interviews, and site visits. The main findings relevant to this section are that:

- the activities of TNC, FUNAN, FER and partners promote both biodiversity conservation and NRM;
- their recourse to information available has been adequate in some areas (biophysical) but much weaker in others (socioeconomic);
- the process of discussing and designing NRMPs has been participatory;
- the combination of several types of activities has often been judicious (e.g., local park rangers with NRMPs, extension of local research on appropriate technologies and small credit with NRM at the community level); and
- serious weaknesses remain, such as the belated and limited handling of key socioeconomic issues.

With the help of the project staff, several communities have developed management plans based on logic of resource management, rather than one of blanket prohibition of resource use. The staff have, therefore, "aimed to understand how communities perceive the value of biodiversity in their own terms, and in terms of their need for resources." They also felt that earlier phases of the program had placed too much emphasis on environmental education, rather than on understanding the people's own perceptions of resources and their uses.

Regarding the use of information, one of the SO1 Result Package activities refers to "Basic studies information on flora and fauna utilized for planning purposes and improved management of protected areas", more specifically, research on species in danger of extinction, including spectacled bears and condor, migratory birds in the upper areas (*páramos*), and more generally, to flora and fauna in the *Reserva*. A number of studies have been carried out and maps of vegetation types, land use, habitat, ecological pressure, etc. have been created. Some of this information has been used to work out agreements with the government on local resource use and management plans. For example, the NGO staff has relied on altitude isolines to separate ecological systems; these have also been the basis for agreements with the communities on resource use, including on communal pasture areas. Resource management plans with the Papallacta and El Chaco communities are also based on soil and resource maps combined with the knowledge of community members. On the other hand, little socioeconomic information has been integrated into NRMPs. The team

[40] Rosero, José "Un Sistema Integrado para la Planificación del Desarrollo: hacia las políticas específicas del ambiente en Ecuador." Tomo 09, "Programa y Proyecto Piloto de Cuentas Ambientales", Programa BID-CONADE, 1996.

believes the main explanations for this is that recent and readily available information on the area is more biophysical than socioeconomic in nature. In addition, project staff tend to have more expertise in the physical than in the social sciences.

The project staff has put together several judicious combinations of activities, which reinforce incentives to manage natural resources in a sustainable fashion. One example is the support of *guardaparques*, or park rangers, one of which is a woman. In addition to some maintenance work on interpretive trails, park rangers are the most tangible and visible expression of a real commitment to protect the *Bioreserva*. Because they are local people, their work also serves as an example and encourages other members of the communities who wish to preserve the productive qualities of the environment. Finally, their major contribution as park rangers may well be to help the community with the enforcement capacity essential for any NRMP.

In other areas, project activities have combined local NRM strategies with the extension to agricultural and livestock activities based on local research. Both traditional and new farming or animal husbandry practices are the subject of experiments. One of the organizations, FER, also manages a small borrowers program. Funds are only loaned for production, and require environmental measures on the part of borrowers, 40 percent of who are women.

The team does recognize that, at least in the case they were able to study directly, the process of mapping out local resources has been quite participatory, and has taken into account the need to reconcile the conservation of biodiversity and sustainable use of resources by the community. The Oyacachi resource mapping exercise reportedly revealed that some areas are shared by the Andean bear and by livestock; it also facilitated a zoning of the bear habitat. This map was apparently taken into account during the construction of the road linking the inner reaches of the *Reserva* and Oyacachi. Community members report that application of the management plan translates into much lower incidences of hunting, fishing, woodcutting, and wild grass burning. They point to the condition of the immediate environment as evidence of the change in practices. However, there are a number of nagging questions regarding the long-term sustainability of this experience, and on its replication to other areas of the RECAY.

Although the project has helped communities make significant progress toward sustainable NRM, very difficult issues remain, which could spell trouble in the long term. The community of Oyacachi, one of the few the team has visited, is a good example. Community spokesmen eagerly spoke of the management plan they had established, with the help of various groups and *promotores*, but they also pointed to the destructive construction activities of EMAAP-Q, to the fact that the area's water resources are tapped for the benefit of others, and to the disregard other communities have for the environment. They clearly would like higher incomes to offset/reward the conservation efforts they have undertaken. In this, however, they are frustrated by their incapacity to plan and invest effectively in tourism activities.[41] In spite of the great potential for low-impact tourism, there are few ideas or plans to develop foottrails to such obvious sites as nearby waterfalls, mountain tops or other observation points, bird or wildlife watching areas, etc. There are reportedly visitors who trek over three days from Oyacachi to El Chaco, but this requires a great deal of initiative on the part of such visitors.

It is clear to the team that 'transplanting' a modern tourism approach *à la* Papallacta is probably not the most suitable approach in Oyacachi. Yet, one does not get the sense that project staff fully appreciate the current dynamics within the community, or that they are in a position to facilitate a process whereby the people of Oyacachi could design, establish and manage the type of tourism which has high value to a certain kind of visitor and generates a good income without unduly increasing tensions in the community.

[41] For instance, the current hot springs pool design is structurally sounder than earlier attempts, but seems hardly appropriate in the context of a traditional Quichua village.

As an aside, one might note also that the consultants preparing the studies for the Oyacachi Management Plan seem not to have used an appropriate method to define the plan. They seem to have confused the methods of *Situational Strategic Planning*,[42] as developed by Matus for preparing government organizational plans on a macroeconomic basis, with the strategic planning methods of environmental regulation.[43]

TNC proposes to use their Site Conservation Planning methodology in Ecuador. This is a strategic planning methodology for determining appropriate interventions at a site. Social parameters are included at the beginning of the planning process. The methodology is new, having been developed only this year. TNC plans to use it eventually worldwide, at all sites where they work. This could be useful in Ecuador.

iii. Impact on Community through Adoption of Conservation Practices

The model used to promote the adoption of conservation practices is unclear. It seems to be an amalgam of various methodologies and memories of past participation that have been imprecisely carried into the present.

One way to promote the adoption of conservation practices is to institute a scheme allowing an approximate idea of the behavior and interrelation of land-use variables — pressure on natural resources, state of natural resources, response of environment, progress on biodiversity conservation.[44] Such a scheme would favor a technical program that might strengthen the community conservation bond as well as encourage the mounting of an appropriate monitoring and evaluation system.

One might also mention that methods for participation need to be looked at and strengthened. Some of the studies and investments in Oyacachi were not participatory. Several methodologies exist to promote community participation.[45] The team would recommend the use of clear and verifiable methodologies.

E. Strengthening and Training of Community Organizations

Projects have worked in several ways to strengthen community-level organizations and to train. Key to the strategy has been the use of promoters and park rangers, both of them community-based. These individuals serve as point persons for project activities in and around the communities. Training, sometimes in the form of workshops, and community strengthening are important aspects of the strategy to promote participation as well as to achieve "multiplier effects" in the realm of conservation practices.

There seems to be considerable variation as to how community strengthening operates. In the upper reaches of the reserves, communities tend to have their own organizations, especially in the *comunas*. There, the park rangers and promoters articulate with these organizations, and through them work with individuals. In our visit to the upland community of San Alfonso Píntag are of a Antisana Ecological Reserve, we observed a 12-person organization (El Condor — four of its five board members are women) whose creation FUNAN had encouraged and now supports to take the lead in managing a community tree nursery as well as several alternative production activities (guinea pigs, snails, family gardens), some of them still experimental.

In the lower reaches of the reserves — in the Quijos River Valley, for example (which we could not visit) — training and community strengthening are often complicated by a lack of strong pre-existing community organizations. Many of the occupants in this biodiversity-rich zone, where land and other conflicts abound, are subsistence colonists. FER has been active in Quijos, where it first had to organize people into work

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42 Política, Planifiación y Gobierno, Carlos Matus, 1970.

43 Cohen, Steven & Kamieniecki Sheldon, 1991. Westview Press.

44 Rosero, José "Pobreza y Medio Ambiente: Evaluación de Sustentabilidad en el Desarrollo de Cerro Azul, Provincia del Cotopaxi, Ecuador", UICN-PROBONA, abril de 1997.

45 Banco Interamericano de Desarrollo, "Libro de Consulta sobre Participación", 1997.

groups to receive technical assistance to produce cheese. Indigenous groups also occupy the lower areas, and they tend to have their own organizations. We were unable to visit sites in the lower areas of the reserves.

F. Dissemination of Activities and Results

Efforts undertaken to date to deal with the demands generated by environmental impacts in RECAY have mostly taken the form of studies whose knowledge can be applied in the future. But the negative environmental impacts in the zone (largely from the construction of roads to install the system to deliver water to Quito) — impacts whose mitigation measures are not appropriate — are highly visible and eclipse these studies.

As for households adopting improved management practices, the team observed only a small pilot program involving the application of a locally made organic compound to manage pests in a vegetable garden. The team observed no pasture improvements or soil-conservation efforts relying on the introduction of native species on the steep slopes.

Whereas NGOs' (FUNAN, FER) receipt of financing from non-USAID sources is a relevant indicator of organizational strengthening, other progress indicators for biodiversity conservation are either low or cannot as yet be observed.

The project uses the number of hectares in protected or buffer zones under participatory NRM as an indicator for biodiversity conservation. But the number of hectares under real management is not apparent. The indicator either needs to be modified — to effective management, say — or a new indicator is needed. And this should be one that points to the internal dynamic of the area delimited for management. It is one thing to define area limits, quite another to manage the area effectively.

The project plans to go from the "management" of 58,200 hectares to the management of one million hectares in two years. The number of negative environmental impacts the team observed during its field visits raises questions: either the planned objective is exaggerated or the conservation indicator is inconsistent. It may be feasible to have a map showing one million hectares by 2002, but it is unlikely that this area will be under effective management by then.

Even the project to monitor the spectacled bear is at risk. The uncontrolled construction of a road network to support several infrastructure projects (EMAAP-Q, HCJB, MICIP) within the protected areas, often with no environmental protection measures and with consequent reduction of the bear's habitat,[46] suggests that a program to monitor the bear could be easily established. But about all such a program could show is the destruction of that habitat, and thus an increase in the species' risk index.

The project to study poorly known ecosystems (e.g., montane forest) depends on a prior knowledge of the dynamics of already known ecosystems. It would be interesting to move from taxonomic lists to an understanding of the behavior of these known ecosystems — the econo-ecosystems related to the functioning of the areas of Oyacachi and Sinangue, for example.

G. Participation

i. Effectiveness of Approaches to Promote Participation

The projects' participation strategy at the community level rests fundamentally on the training and deployment of community-based forest wardens and technology promoters.

[46] On-site verbal communication with Technical Director of FUNAN.

The team found both FUNAN and FER personnel admirably sensitive to the importance of local participation in biodiversity conservation activities. FUNAN well noted that park rangers represented the interests of the community as well as those of the reserves. Indeed, it plans to use them as well as local promoters to promote production alternatives (and alternative technologies) in the Cangahua area above the Cayambe valley, where Quichua-speaking peasants are being pushed increasingly upwards onto fragile *páramo* lands bordering the Cayambe-Coca Reserve. Our team visited this area and was struck by the large numbers of these peasants, by the power of the economic and political interests driving them onto the fragile slopes, and by the huge potential for resulting environmental harm.

The use of community-based promoters also responds to a peculiar characteristic of communities organized as *comunas* — as many communities are in the upland areas of the reserves. By law, the *comunas* must select new leaders yearly. Community policies and interests, which these leaders typically define, often change whimsically. It is hard for projects to work with local leaders under such unpredictability. The promoters, being community-based, are thus a source of stability in an otherwise unstable setting.

The evaluation team finds this FUNAN-FER strategy for promoting local participation to be adapted to local circumstance, and thus reasonable and effective. On the basis of our site visits and discussions with FUNAN and FER staff, however, we think the strategy could be yet further strengthened by the stable (in-house rather than contracted out) incorporation of the social sciences to programming and field-based activity. We think there is an opportunity to build on what we found to be sensitivity among personnel in both foundations to a need to understand the ideas, practices, and organizational forms in local communities. These personnel constantly reminded us that biodiversity conservation could only be achieved through the participation of local communities. The incorporation of the social sciences is especially important given the diversity of communities and cultures residing in and around these protected areas.

In this regard, we would further suggest that the foundations consider bringing Quichua speakers onto their staffs. The promoters and park rangers, being community-based, will speak Quichua in those areas where it is spoken. But having Quichua speakers on the foundation staffs could make their work even more effective than it is now. It is fortunate that TNC is a major partner in SO1, for they recognize the need for local participation in the conservation enterprise as well as have experience in bringing the social sciences to bear on it. They can assist with this incorporation.

We might also remark a laudable instance of participation, one perhaps little considered. FER, unlike FUNAN, is an organization that grew out of the peasant grassroots in the Papallacta area. Its partner role in SO1 is itself an instance of grassroots participation.

ii. Reflection in Work Plans

Participation is reflected in the annual work plans. The Condor Bioreserve's annual operating plan for 1999-2000, for example, cites several participatory processes. These range from strengthening the work of park rangers in the communities to broadening project contacts with residents to help them prepare farm management and NRM plans.

iii. Clients' View of Program Services

Time and logistical constraints gave the evaluation team only the narrowest exposure to primary clients' perceptions of project activities. Nor did we find any project-executed survey of those perceptions — of a kind that could usefully be part of a monitoring and evaluation scheme — which might have filled the gap.

Our talks with officials in the Quichua community of Oyacachi, in the Cayambe-Coca Reserve, revealed their appreciation for the advocacy role that FUNAN is now playing on behalf of the community in its contentious relations with the Quito Water Company (EMAAP-Q). The company broke its promises to the community when it built a nearby infrastructure to pipe water from the Reserve to Quito. The construction companies failed to comply adequately with environmental mitigation measures, with consequent harm to the environment and to related community interests (e.g., trout fishing in local streams). FUNAN is now advising the community as it negotiates an agreement with the company.

This 500-year old community, today about 75 percent Protestant, is the supposed origin of Ecuador's acclaimed Virgin of Quinche. More than three years ago, the SUBIR project built bathing facilities here to take advantage of the area's hot springs and support local tourism. However, those facilities have had problems that have since required remedial construction. Maintenance remains problematic today. While Oyacachi does receive some tourists who use the baths (or make pilgrimages), it is our team's view that the community may not be able to manage tourism of a kind that would be required to meet its expectations. We think the current project should carefully assess what sort of tourism is feasible, and should look for ways to salvage this bathing infrastructure so as to meet community expectations in some measure. A total failure of ecotourism here could have a negative impact on project relations and interests.

Our visit to the community of San Alfonso (Antisana Reserve) revealed substantial satisfaction among those primary clients with whom we talked and who had received assistance from FUNAN with alternative forms of production.

On a somewhat different level, there is evidence that USAID-funded interventions to conserve biodiversity, from the SUBIR period forward, have altered the views of primary and other clients, at least in the immediate areas of the interventions, in a way that increases the chances of reaching the biodiversity goal. The direction of this change has been away from viewing conservation as a matter of isolating and policing what is to be protected toward the participation of stakeholders in the conservation enterprise. This has meant broadening the research and policy focus to include not only the biology of species, but also the wider human environment in which those species exist. There is some evidence that residents *in communities in and near protected areas where projects have been active* feel less intimidated and more inclined to collaborate. And public officials there — Protected-Area Chiefs (*Jefes de Area*), for example — rely less on coercion and more on cooperation. Some now see buffer zones as part of protected areas. As one high official said, "To talk only of conservation is only to talk" ("*El hablar solo de conservación es solo hablar*").

H. Interactions Between the Public and Non-Public Sectors

In Section IV.C, we referred to the ambivalent attitude of the public sector toward NGOs. On the one hand, they help the State by implementing environmental programs; on the other, they publicize abusive uses of natural resources condoned by the public sector. One of the SO1 Result Package activities is to address specifically "Closer coordination among the various actors around the protected areas: communities, government agencies, private owners & businesses, state-owned enterprises involved in development projects, local NGOs". The team believes that the use of water resources from the greater Antisana watershed is an excellent illustration of the strengths and weaknesses of the project.

Project staff are keenly aware that water use in the Cayambe Valley and in the city of Quito is a critical resource issue. Water requirements for agriculture in the same valley have been growing rapidly these past few years, and are now considerable. Numerous large floriculture operations are established in the valley, many on historical hacienda sites. These industrial producers operate most of the year (peaking in December through May) and use water from the surrounding watersheds. Some water is tapped directly from local springs, while some is paid for at a cost equivalent to \$1/1,000 m^3. The team was not able to obtain a good estimate of acreage or water consumption, but both are considerable: Ecuador is the second largest exporter

of cut flowers in Latin America (after Colombia) and most of the country's production is located in the Antisana and Cayambe watersheds. These operations require large investments, and belong to influential Ecuadorian families, some of which are reported to have close ties with Colombian investors. In addition to flower producers, a large population of peasant farmers occupies the surrounding uplands, some of whom rely on irrigation infrastructure.

The growing city of Quito is already looking for ways to tap more water from the greater Antisana watershed, which currently provides about 85 percent of the capital's water. Project NGOs have been working with various parties (city government, water company, RECAY communities) to address the problem. The NGOs have collaborated since 1996 with EMAAP-Q on monitoring the impact of its activities — including road construction and maintenance — on the Bioreserve. They are also monitoring the condition of water reserves in the upper watershed, from the Antisana glaciers to Lake Micacocha and surrounding areas. In order to mitigate the effects of water extraction from the area, they have promoted the creation of a special fund, FONAG, which is to receive up to one percent of the value of water EMAAP-Q sells.

One of the fundamental issues is that the Cayambe-Coca Ecological Reserve, now included in the *Bioreserva del Cóndor*, is superimposed on pre-existing patterns of resource ownership and use. In the case of the upper Antisana watershed, a family owns large highland pasture areas, which they use for free-range livestock raising. This land, and the profitable resource-intensive, low-capital input activity, is not something this family is about to give up. In exchange for water resources, the family also receives some undetermined compensation from the water company.

The upper Antisana watershed illustrates the confluence of varied and divergent interests:

- First, the land-owning family wants to retain its rights to land or water resources, and is not about to let anyone interfere with this use (mostly free-range livestock raising).
- Second, the State, which by establishing this *Reserva* wants to reinforce its image as a custodian of biodiversity as an element of national patrimony.
- Third, environmental interest groups, which would like the *Reserva* to be a haven for rare species as well as a source of clean water.
- Fourth, the water company, which wants access to good-quality water for the city of Quito, and wants to minimize expense for purification before it is put into the system.
- Fifth, local communities, which live off of livestock raising and small family plots. Some are willing to give up destructive practices (grass burning, unregulated hunting, overfishing) in exchange for alternative activities yielding a combination of more nutritious foods and higher incomes, while others are not willing to give up the benefits they derive from environmentally costly practices.
- Sixth, project organizations, especially FUNAN, which is trying to reconcile some of these interests, are working with some communities to provide environmental education, agricultural extension, and alternative opportunities. Many of these are, in fact, a reintroduction of traditional techniques and practices. They also work with the water company in helping clean up the immediate environment around the lake, and by contributing to the monitoring of water quality. Their contribution to the State is in the tangible form of salaries to park rangers, and because the protected area is more protected than it would be without them, in providing the State with a bit more credibility in the environmental area.

- Seventh, users of water resources can themselves be divided into several groups: flower producers, horticulturists, and industrial as well as household consumers in the capital.

With respect to the water problem, FUNAN is playing an important role, but is limited by its means, its expertise, and powerful organized interests. In addition, placing the emphasis on getting a percentage of the water company's receipts to reinvest them into the upper watershed area is a partial approach, somewhat like adding water to a leaky bucket. The real problem is that users, including large users like the floriculture industry and industries in Quito, are not paying for all of the water they use, and what all of the users pay does not reflect the resource's value. Working on putting back a percentage of EMAAP-Q revenues into the upper watershed is a start on addressing the real problem, but much more needs to be done to solve the problem long term. Our team recognizes the challenge, given the economic and political power of the flower growers and other special interests.

I. Human Behavior and Natural Resource Management

i. Environmental Consciousness of Inhabitants In and Around Protected Areas

Again, the evaluation team enjoyed too little exposure to inhabitants to comment authoritatively on their environmental consciousness. And again there seems to be no project-generated information on this complex issue that might fill the gap.

The comments of officials in Oyacachi, however, suggest that projects have raised environmental consciousness — less burning of grasses, and less uncontrolled hunting and fishing — at least at the relatively small number of geographic points where they have intervened. In Oyacachi, the pernicious environmental effects of the Quito Water Company, whose construction crews fouled the streams with motor oil and fuel, thus diminishing local trout, a community food source, seem to have heightened local awareness of the fragility of resources and the need to protect them. The project has played on this awareness.

ii. Community Participation in Protective Actions

Communities in and around the reserves select the park rangers, who represent community as well as reserve interests. Community-based promoters further broker community and project interests.

Local communities, including Oyacachi, have participated in the preparation of resource management plans. Officials in Oyacachi told the team that community residents had largely ceased to burn grasses, and had also substantially reduced their hunting and fishing activities. They were also planting trees. Participation is likely to be stronger in communities like Oyacachi, which has a strong community organization. Indeed, according to FUNAN, Oyacachi asked for help in protecting its environment.

Here, we must also cite the findings of an environmental diagnostic survey conducted recently by OIKOS in the Antisana Reserve. The survey found that practices (e.g., the burning of grasses, a longstanding practice) among populations living in the reserve's buffer zones continued to threaten the ecology of the reserve. The survey further cited the weakness of local environmental education; park rangers, for instance, who are to serve as "multipliers," did not understand even basic concepts of environmental education.

iii. Knowledge and Adoption of Conservation Practices

The evaluation team enjoyed too little exposure to inhabitants to comment authoritatively on their knowledge and adoption of conservation practices. Again there seems to be no definitive project-generated information on the matter. What is written in the two prior sections, however, would suggest some knowledge and adoption in Oyacachi.

It is the team's sense that at those points where FUNAN and FER have mounted interventions — management plans and production projects — the ultimate clients have in some measure learned about and implemented conservation practices. However, in relation to the total population in and around Antisana and Cayambe-Coca Reserves, to the size of the territory in question (the Condor Bioreserve is enormous), and to the magnitude of the environmental threat, the environmental impact of this work is small indeed. The same seems to be true for project work with park rangers. The above-cited findings of a brief diagnostic environmental survey conducted recently by OIKOS Corporation in the Antisana Reserve buttress these assertions.

iv. Women and Minority Groups

a. Role in Environmental Support Program

Women and indigenous groups — Quichuas — have played an active role as primary clients in projects in both reserves. This will be increasingly so as numerous Quichuas from the Cangahua area on the fringe of the Cayambe-Coca Reserve come to participate in the project, and as the Condor Bioreserve moves from paper figment to material reality.

b. Modes of Inclusion in Field Activities

The team found women playing an active role as project recipients of production alternatives and technologies in the community of San Alfonso, Píntag area of the Antisana Ecological Reserve. Indeed, women comprised four of the five board members of an organization in San Alfonso whose founding FUNAN supported to promote the alternatives.

In the Quijos River Valley, FER has worked actively with women, who comprise a large share of the credit users. FER has also provided technical assistance to a group of women who manage a nursery in the valley's El Chaco area.

Of FUNAN's 16 or so community-based promoters in the Píntag area, one is a woman. And there is one woman park ranger — who replaced her father when he died.

c. Collection of Gender-Specific Planning Data

The team found no evidence of the gathering or use of gender-specific planning data.

d. Suggestions to Improve Effectiveness in Addressing Gender and Ethnic Issues

The in-house presence of social scientists and Quichua speakers, as we have suggested above, should go far in helping the project better address gender and ethnic issues. A good social scientist will be sensitive to gender and ethnic differences with regard to division of labor and other activities, as well as with regard to attitudes, values, and social organization. Such differences will then be given due weight in the planning, implementation, evaluation, and monitoring of project activities. The evaluation team would also suggest more women community-based promoters.

Beyond this, we would note that TNC has led international environmental NGOs in incorporating social parameters, including gender, into its site conservation planning methodology — a strategic planning tool for determining and including appropriate interventions at the beginning of the planning process. This new tool could be useful to TNC programs in Ecuador. Also, gender figures importantly in TNC's Community Conservation Program. TNC should thus be well positioned to address social and gender issues.

V. Galápagos Islands (Results Package #3)

A. Introduction

Activities in Galápagos are undertaken through a cooperative agreement with the Charles Darwin Foundation (CDF), in collaboration with the Galápagos National Park and the Gálapagos Marine Reserve. SO1 works with both CDF and GNP. The goal: to promote the conservation of the Galápagos Marine Biological Reserve.

Founded in 1959, the CDF is an autonomous entity internationally headquartered in Belgium (research headquarters are on Santa Cruz island, Galápagos) and charged with Galápagos scientific research. It also advises the government on protection matters. Its operations arm, the Charles Darwin Research Station (CDRS), dates from about 1961. The islands have two protected areas: the Galápagos National Park, or land part of the archipelago, and the Galápagos Marine Reserve, or sea part. The Galápagos National Park Service, active since 1968 and today part of the Ministry of Environment, administers both areas. The marine reserve, created in 1998 by the Galápagos Special Law, is the world's second largest (after Australia's Great Barrier Reef).

The archipelago's 15 islands, set in a varied confluence of currents and other natural phenomena, present distinctive climates. Life forms range from tropical coral to penguins. Local economic activity also responds to this variation. Almost the entire population of Isabela is dedicated to fishing, whereas Santa Cruz is a focus for tourism. The islands' population (15,000 to 17,000) has doubled in ten years (6.7% annual growth rate) as impoverished mainlanders (now 75% of the total) have gone there. The migrants, from populous sectors, have little education and have brought with them political, social, and cultural forms that do not square well with the new environment.

Most of this migrant population lives from fishing. Seventy-five percent of the fishermen have arrived since 1993 and are now among the island's 1,000 or so fishing families. Lobster has been taken increasingly since 1980, sea cucumbers and sharks (for fins) since 1990. Few mainland economic activities can match the earnings from these catches. When the government tried in November 2000 to enforce the 1998 Galápagos Special Law fixing controls (seasons and quotas) on fishing, leaders (mainlanders) of the islands' four fishing cooperatives, supported by local politicians, called for demonstrations. These turned violent, with rioters vandalizing facilities at CDF and in Galápagos National Park. Also affected were USAID-funded biodiversity-conservation efforts on Isabela Island, where, unlike some of the other islands, fishing interests are strong.

Whereas incoming "exotic" species (e.g., pigs, chickens, goats, donkeys, cats, rats, 460 plant species) have long imperiled the Archipelago's land biodiversity, uncontrolled fishing is now threatening its marine biodiversity. And whereas research on its land ecology goes back more than 40 years, research on its marine ecology is recent. The full ecological effects of intensive lobster and sea cucumber extraction are thus not known.

B. Applied Research

The studies that CDF has conducted are indeed relevant. The biological research on pest control (*Icerya purchase*, *Polister versicolor*) and introduced "exotic" species (e.g., goats) is very important to maintenance of the islands' biological equilibrium. Also important is biological knowledge of the principal commercial species in the marine reserve — lobster, sea cucumber, sharks, and species of white fish (*pesca blanca*).

One of the crucial tasks of CDF has been the search for biological indicators that can be used for basic management. After five years of research, however, it would seem necessary either to change the indicators under investigation or include other indicators that are more consistent with resource management and control.

i. Focus and Relevance to Policy

The scientific and technical knowledge that CDF has acquired through research is shared with the community. CDF plays an important role as environmental advisor in the formulation of laws, regulations, and policies in the archipelago. Much of CDF's scientific work has been used to prepare the management plan and to zone the Marine Reserve. Both were participatory, and so represent a vigorous communication effort as well as an increase in public awareness of conservation. In recent years, CDF has increasingly focused its work on advising the Ecuadorian government, on developing communication and external relations, and on training youth. The belated design and setting in motion of the Inspection and Quarantine System is definitely an activity with positive impact on biodiversity conservation in Galápagos.

ii. Role of Charles Darwin Foundation Research Station

The CDF has been an important stimulus in scientific investigation at the national and international levels. In its research station it has trained and supervised hundreds of researchers, including those participating in its voluntary program, those preparing academic theses, and participating in its international marine research program. CDF's research on the functioning of marine ecosystems and the conservation of key species shows its scientific leadership. But it also plays a social role. CDF has been working with island youth through its support of formal education as well as the creation of conservation clubs.

C. Institutions and Capacity for Collaborative Management

i. Impact on Community through Adoption of Conservation Practices

Scandals precipitated by illegal fishing are increasingly frequent in Galápagos. There is today a need to review and strengthen CDF's social leadership so that it can respond to new social demands on the islands. The continuation of harmful overfishing, unopposed by most of the local population, suggests that the community's adoption of conservation practices is not altogether a tangible reality.

ii. Support of Policy Development for Protected Area Management

A key section of the CDF institutional mission statement states: "To provide the knowledge and support to ensure the conservation of biodiversity in the Galápagos Archipelago through scientific research and complementary actions". The general public has perceived CDF for some time as "the people who do terrestrial and marine biology research, and bring them really cool photos and video documentaries." The CDRS is, after all, a research station, and the Foundation's activities are still very much basic research and science-oriented. Both the organizational chart (three out of six divisions focus on terrestrial and marine biology) and the Foundation's budget show the emphasis on research. This is understandable, and one suspects that the emphasis was even more on the research side in past years. Since the early 1990s, however, CDF has become increasingly aware of, and active in, a number of pressing issues:

- galloping increases in the number and populations of invasive species;
- runaway immigration, with obvious impacts on the islands' infrastructure, terrestrial and marine ecosystems; and

- huge increases in the number of fishermen, fishing boats, and effort focused on all commercial species.

These issues are now seriously out of hand, with dire consequences for biodiversity in the islands and for the future of a promising tourism industry. The situation, especially in the Galápagos Marine Reserve, had become so bad by the late 1990s that the islands almost lost their UNESCO status as a World Heritage Site.

Gradually, CDF came to do less "scientific research" and more "complementary actions". The rate of change has been slow. With the information available to the team, it's hard to say to what extent this has been due to CDF's own inertia, and to what extent due to institutional problems among their national partners and opposition from powerful vested interests. The overall assessment is that CDF eventually undertook a set of actions in critical areas and played an important role to support the development (and implementation) of policies for the protected area known as the Galápagos National Park. Important areas where CDF has been, and remains, instrumental are discussed below.

Of equal or more importance than having contributed to the development of policies, is the fact that CDF has positioned itself to be a strategic actor in the actual implementation of conservation law and regulations applying to the Galápagos. The fates of the Islands and of the Foundation are closely tied, and from CDF's point of view, the strategy has to be crystal clear: conservation laws must be passed, laws must be implemented through broad agreements based on solid information, institutional collaboration (in this case, with the SPNG) must be close and effective, and additional resources must be attracted to reinforce the system. The often heard rationale applies fully: "If it doesn't work in the Galápagos, it's not going to work anywhere else in Ecuador — or perhaps in the world."

- The fact that nearly three-fourths of revenues from Galápagos tourism were redirected from the general 'environmental' budget to various Galápagos stakeholders (including the SPNG) is consistent with this joint strategy.
- Close collaboration between the CDRS and the SPNG in critical technical areas also fits in well with the overall logic.[47]
- Finally, it is extremely likely that the extent to which the Government of Ecuador is able to attract additional resources for its biodiversity conservation programs in general, and for the Galápagos Archipelago in particular,[48] will depend much on CDF's support in establishing investment plans, and demonstrating significant biodiversity management capacity.

The overall conclusion is that CDF has, perhaps belatedly, provided much scientific, technical, and strategic support to the process of policy development and implementation for the Galápagos National Park.

To support implementation, the CDRS has helped SPNG and other interested parties with access to scientific and management information in several critical areas of the terrestrial and marine ecosystems — e.g., the introduction of "exotic" terrestrial species and the monitoring of key marine species, several of which are fished commercially.

To help implement the new Galápagos Special Law, and to promote biodiversity conservation in general, the CDRS has been supporting — directly or through a donor's program — a number of complementary actions: support to the quarantine system, environmental education (mostly participative) at many levels, training in agriculture, the monitoring of commercial fishing activities, diving safety courses, etc. Finally, the

[47] In fact, CDF allocates about 5% of its own budget to the SPNG, and funds a joint project on Isabela with them (about 12% of CDF budget).

[48] Especially since some donors prefer to channel funds through CDF than provide grants to national institutions.

Foundation, in partnership with SPNG, has begun to explore innovative ways to work with tourism operators and to raise additional funds through them. Again, without detailed information and more time, it is hard for the team to assess the effectiveness of such measures, but they make sense and are consistent with a strategy of biodiversity conservation in the Archipelago.

A number of difficult issues, however, stand in the way of a full and efficient application of the special laws on biodiversity in the Galápagos.[49] The most critical is that of uncontrolled high-value coastal and long-distance fisheries, especially sea cucumber, lobster, and shark (for fins).

The net returns to fishing sea cucumber and lobster are, by any standards, very attractive and a lot of fishermen, fishing vessels and equipment have migrated from the mainland to Galápagos in the last few years. Less-detailed information is available on the shark fishery, but this lucrative activity also attracts a good number of continental and foreign vessels (e.g., from Costa Rica). On the islands, the number of artisanal fishermen went from few in 1971 to 1,600 in 1998. The population of Isabela, where fishing is important, has doubled in the last four years, and tripled in the last ten. The major reason has been the influx of fishermen. It is estimated that 60 to 65% of fishermen currently operating in Isabela have come to the islands in the last seven years. As far as the highly profitable sea cucumber fishery is concerned, numbers are eloquent: there were 377 boats and 1,387 fishermen in 1999, which represented about 74 percent more fishermen and 76 percent more fishing boats than in 1998.

Artisanal fisheries amount to a relatively small total tonnage, but they are very intensive. Line fishing (*pesca de línea*) involves 12 species, mostly pelagic, and amounts to about 230 mt/yr. Dive fishing (*pesca de buceo*) is aimed at four species, especially lobster and sea cucumber (total 150 mt/yr). Beach fishing (*pesca de playa*) adds up to landings of about 140 mt/year.

Estimated gross revenues from the lobster fishery were about $750,000 in 1998 and $1.1million in 1999. Estimates for the two-month sea cucumber fishing season range from $5 to $7 million in gross revenues. As is often the case for artisanal fishing applied to high-value species, incomes from fishing are unevenly divided with big export companies getting the lion's share of profits.[50] Still, fishing incomes generate a strong multiplier effect in the local economy, and per capita income on the Islands is about four times higher than on the continent. The problem is that

(1) heavily exploited stocks cannot sustain this level of fishing effort for long, and

(2) there are poorly understood but likely strong repercussions on the biodiversity of marine ecosystems.

The CDRS, in collaboration with SPNG, artisanal fishermen, and the Ecuadorian Navy, monitors catches of key species. This involves a combination of logbook reviews, spot checks at sea, onboard observers, and dockside surveys (including prices). At the same time, CDRS samples the evolution of the density of sea cucumber and lobster in selected areas. Data are compiled daily — essential given that most of the catches of sea cucumber take place during the first five weeks of a two-month fishing season.

Various types of information are also collected on the type and amount of effort applied to the fisheries (type of boats, equipment, number of trips, fuel use, crew size, etc.). By daily tracking of the combination of catch per unit of effort (CPUE), type and size of individuals landed, density and type of individuals remaining undersea in sampled areas, and comparing this information to historical data, the fishery can be managed very adequately. In fact, the information from each year is to serve as an input to set various limits on

[49] This law is far from perfect, and much work has been necessary to come up with efficient and acceptable regulations. Much more will doubtless be needed.

[50] A single trading company exports about half of all dried sea cucumber from the islands.

upcoming seasons with representatives from the CDRS, SPNG, and fishing communities. One of the team members' technical field is marine fisheries economics; his assessment is that 'on paper' this is as good a system of artisanal fishery monitoring for sustainable management as one can expect to find anywhere, or better.[51]

The current regulations limit lobster fishing to a four-month season (September 1-December 31) or 50 metric tons, whichever comes first. This limit reflected last year's good catches. Catches of sea cucumber are usually expressed in numbers (about 4 million this year) and must take place between April 1 and May 31.

Decisions on the management of fisheries are participatory and must be taken on the basis of a consensus among members of the Participatory Management Group (*Junta de Manejo Participativo*). There is also a public-sector entity, the Inter-Institutional Management Authority (*Autoridad Interinstitucional de Manejo*), which includes the Ministry of Commerce and Fisheries and Ministry of Environment (CDF has observer status). The *Autoridad* is supposed to have the final word on regulating fisheries.

During the recent unrest, Galápagos fishermen forced a 30-ton extension of lobster catches, and the usual December warmup makes it likely that they will meet this higher quota, especially since many of them are illegal additions to the numbers of legally registered Galápagos boat *patrones*. The pressure on the lobster fishery has been high, and although conditions have been favorable for fast reproduction and growth, this extension may be a bit much. The sea cucumber fishery is in a much more precarious situation. Both CPUE and density of individuals/m^2 have fallen drastically in the last few years. Fishermen now have to dive as deep as 18-20 meters for sea cucumbers. The species' reproductive cycle in the unique Galápagos environment is not well understood. But there is little reason for optimism; both sea cucumber and lobster populations previously collapsed following overfishing on the continent.

CDRS plays an advisory role for marine resources, has a good local image, and is not directly involved in enforcement. It has thus not born the brunt of violence and vandalism. However, the government has clearly emerged from the recent bitter 'lobster war' with diminished authority and credibility. Indeed, it may not tackle lobster/sea cucumber interests unless strong international pressure is applied.

CDF is doing an excellent job in most areas, and a good one in others (complementary measures). However, the seriousness of the situation calls for additional steps to be taken urgently.

The team has not been able to review some of the recent work on the artisanal fisheries (WWF,1999, Jacques Ramirez, U Catolica), but their findings are unlikely to change the basic and, in our opinion, very clear, situation. The team believes USAID should do two things:

1. Support the kind of activities CDF (and others) have been undertaking: environmental education, alternative incomes, and more efficiency in processing of sea products.

2. At the same time, feed the fires of international forces which will compel GOE to take a stronger stance and demand serious negotiations with fishing groups (some of which are quite aware that long-term insular interests are undermined by continental opportunists). USAID may not want to apply 'international pressure' on its own or directly, but much can be done (as was with the OIKOS grant, but at a higher level of media influence) to publicize the harm that a few vested interests do to the Galápagos, to Ecuador, and to the wider community.

[51] In addition, since 1998, exchange/training programs have taken place with other lobster fishery grounds in Colombia, Scotland, and Greece.

In a more general sense, the team found that, all things considered, the biodiversity rent through environmental services ($120-125 million/year in tourism revenues) is still low. The considerably greater value of biodiversity in the Galápagos Archipelago lies in the biogenetic resources contained in terrestrial and marine species. Given the uniqueness and complexity of the milieus, it will take time for some first valuations to take place, but the GOE and its international partners need to start work on this issue.

D. Management of Wetlands on Isabela Island

The government has without effect sought since 1993 to reverse the tendency toward the growth of fishing on Isabela. Mainlanders coming to fish have doubled the island's population in only the last four years. Isabela is unique: it has perhaps the greatest biodiversity of Galápagos (including the giant tortoise after which the islands are named), the best mangroves, more flamingos, the best beaches — in a word, the greatest tourist offerings. And, unlike elsewhere, the offerings are all within reach.

To provide nonfishing alternatives to the local population, USAID, in partnership with the Galápagos National Park, has funded a tourism development project. The effort involves construction of an interpretive boardwalk trail through the wildlife-rich wetlands bordering two of Isabela's lagoons. Also, courses are to be offered to fishermen interested in becoming tourist diving guides (they now dive for lobster and sea cucumber, an increasingly perilous pursuit that some of them might quit if they could); there is a growing demand for diving tours. Courses in hotel service and cooking are also to be offered. The trails are now under construction.

The idea of this project is to promote biodiversity conservation by showing people that they too can share in the revenues from tourism, which in turn, depends on biodiversity. This is a sound idea, but given the high earnings from fishing, it is not likely that this strategy will have much impact in the near term. Whether it will have an impact before fishermen are forced to turn to other pursuits — at which time the damage to biodiversity may already have been done — remains to be seen. Other pressures must be brought to bear on part of the fishing industry.

E. Participation

i. Effectiveness of Approaches to Promote Participation

Examples of participation in the Galápagos are not hard to find. An estimated sixty to eighty percent of the fishermen participate in fish-monitoring schemes. And the Marine Reserve has a Participatory Management Board (*Junta de Manejo Participativo*) in which all reserve interests (fishing, tourism, conservation) are represented. Indeed, these same interests participated in the resource-use zoning of the reserve.

The approaches to promote participation are sound. The project on Isabela, as just described, relies on finding attractive economic alternatives to fishing. USAID is also supporting (CDF) the strengthening of the fishing cooperatives, helping them to improve their management as well as training their leaders so they can understand the risks to overfishing.

If the measure of "effectiveness" of approaches to participation is "taking part," the approaches have been effective. If the measure is commitment to conservation, the approaches have not, at least not yet (the recent riots are proof). As "hunger" (low income) can "tear at the management plans" of Afro-Ecuadorians near Esmeraldas, high fishing income can derail participatory management in Galápagos.

ii. Reflection in Work Plans

The participation, as already described for Isabela, is reflected in work plans, as is also support to CDF for the activities just described.

iii. Clients' View of Program Services

The evaluation team could not visit Galápagos, but the recent riots would suggest that at least some clients — the fishing cooperatives, for example — are indifferent if not hostile to program services. The view of the government itself is ambiguous.

F. Human Behavior and Natural Resource Management

i. Environmental Consciousness of Inhabitants In and Around Protected Areas

Inhabitants' environmental consciousness seems to vary by island, or by its dominant economy activity. Our interviews in Quito point to a less-developed consciousness on Isabela, where most of the residents rely directly on fishing for income, and to a more-developed consciousness on Santa Cruz, where residents rely mostly on tourism.

Perhaps this is no surprise. Tourism-dependent residents directly observe the environment-tourism-income links. Fishing-dependent residents, on the other hand (and perhaps especially those of mainland origin), do not so observe environment-fishing-income links since the environment lies in an invisible underwater world of great complexity. This difference poses special challenges to environmental education (in terms, say, of media and images used) directed at a (recent) fishing population.

It is safe to conclude, because of the relative flood of mainlander migrants in recent years, that environmental consciousness in general in the Galápagos is poorly developed. The Galápagos need to have a sharper environmental education strategy, designed to recognize differences among the populations and the islands, and tightly linked to economic pursuit. And it must have the genuine support of government and political interests at all levels.

ii. Community Participation in Protective Actions

This is well described in Section V.E.i. And again, the economic interests of the islands' fishing industry override any effective participation in protective actions. Furthermore, the locus of those interests is largely on the islands. The locus of tourist interests, by contrast, often lie on the mainland — typically in Quito. And tourist interests do not rely exclusively on Galápagos, but rather are diversified over other tourist areas.

iii. Knowledge and Adoption of Conservation Practices

The evidence is that the knowledge and adoption of conservation practices in Galápagos are at best incipient. The USAID-funded project with CDF is working to this end with fishermen, through their cooperatives. And a just approved IDB loan of $10.4 million (with $2.6 million counterpart from entrance fees to Galápagos National Park) to fund the Environmental Program for the Protection of the Galápagos Islands (EC-0134) also stands to contribute.

iv. Women and Minority Groups

a. Modes of Inclusion in Field Activities

The USAID-funded project with CDF began working in a small way with the wives of cooperative-affiliated fishermen in February of 2000. According to Foundation staff, these women are interested in industries

other than fishing — in crafts, for example. The income from such activities would in theory supplement family income, thus reducing the need to fish. The Foundation would also like for the women to take part in the Participatory Management Board.

b. Collection of Gender-Specific Planning Data

The work with women is incipient. The team found no evidence of such data.

c. Suggestions to Improve Effectiveness in Addressing Gender and Ethnic Issues

The evaluation team does not have enough information to make concrete suggestions for better addressing gender issues in Galápagos. We would, however, note what seems to be an abiding association of women and crafts in the projects we have seen in Ecuador. We would suggest that other activities might also be considered for women.

VI. Performance of Results Packages: Findings and Lessons Learned

Our assessment of activities in the three Results Packages falls into five categories, as stipulated in our Scope of Work: field-level integration of activities, which activities have and have not worked, pace of activity implementation, partner capacity to implement activities, and progress toward biodiversity conservation and lessons learned. We should here point out that performance should be reckoned in terms of the original orientation of SO1, as it was designed three years ago. By the standards of some of the indicators, performance has been quite good, even exceeding targets. But this does not necessarily mean that programs implemented under SO1 are conserving biodiversity, or will do so in the future. If one accepts, as we suggest, that SO1 programs need to be redesigned, some of the current activities must be considered either irrelevant or not entirely consistent with biodiversity conservation.

A. Field-Level Integration of Activities

In the Cotacachi-Cayapas Ecological Reserve (RECC), the evaluation team found that activities related to policy and legal matters linked well to those of improved land use. We found that biodiversity monitoring, however, did not link well with other components.

In the *Bioreserva del Cóndor*, the team found good integration between the support for park wardens and the community management plans; the mutual reinforcement is strong. The relationship between several of the studies (the Andean bear, the birds) and the rest of the project is unclear, and the water study is not well integrated with other components.[52]

In the Galápagos National Park, the team found most of the activities to be well integrated.

B. Which Activities Have and Have Not Worked

RECC activities in the legal and policy areas have enjoyed much success. These include contributions to forestry and other legislation, land titling, and legal recognition of communities and organizations. Training (part of organizational strengthening), especially of the promoters (*paratécnicos*) has also been effective. natural forest management through community management plans is strong; sustainable extraction is well done. The project has also successfully implemented ways to organize collective bargaining for improved wood products by rural communities — a first in Ecuador. Also, working at both community and supra-community levels, with a view to one day turning activities over to a supra-community entity such as the Palenque Regional Council, is a good strategy for social sustainability.

Small animal production projects have been problematic, and the agroforestry interventions appear weak on technical, environmental, and socioeconomic grounds and need further thought. The production projects might better match their activities to the ethnic groups. Furniture making may not, for instance, be the best activity for Chachis, and Chachi women seem more interested in pisciculture than in crafts. They indicated to the team that they were now buying fish to feed their children — fish that were once abundant in local streams. Pisciculture, using species from those streams and which the women could manage, would thus reduce a need for income — and pressure on natural resources and biodiversity.[53]

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[52] It is of interest that the BSP report in 1997 recommends, as regards conservation of the Andean condor, that the "project clarify the exact results it is trying to achieve" (p. 20). The report further suggests "improved documentation of the community-based aspect of the work" in Cayambe-Coca (p. 22).

[53] The 1997 BSP report (pp. 2, 19) questions the viability of crafts as an income-generating activity among these "isolated and marginalized populations."

The Palenque Regional Council and the Chachi federation seem not to mix well. CARE-SUBIR should continue to look for ways to help the two entities work better together; they clearly have common (objective) interests. A better understanding of the historical dynamic between Chachis and Afro-Ecuadorians might be a start. A good social scientist could be useful in this endeavor.

The major production-marketing chain focuses on wood at the expense of possible alternatives. Some of the gender activities are weak; there may be a better fit between what women want to do and what is realistic or culturally acceptable for them. The project shows little interest in some of the well-known, larger resource-use issues in the area — e.g., palm plantations, continued deforestation, and the impact of a newly constructed highway to the Colombian border.

In the *Bioreserva del Cóndor*, the training of park wardens is a good beginning toward biodiversity conservation in the reserves. Imputing a much higher resource value to water taken from the reserves, however, is urgent and deserves more attention than it has received.

The team also felt that the protected area management plans were not always grounded in a good understanding of the local environment or of communities in and around the areas. Furthermore, it was our sense that the project's ecotourism component in Oyacachi (whose origins antedate SO1) needs attention, though we had too little time to pursue the matter adequately, to speak with greater authority. But it does seem that the community may now need help in making the most of what might have been an injudicious investment in the thermal baths. If so, this would again point to a need to make better use of the social sciences in defining and implementing project interventions. Also, the project's inability to help this community obtain compensation from the water company for damage to the local environment, with effects on income and food sources (e.g., trout in the streams), may reduce the staff's credibility.

In the Galápagos Islands, activities related to legal, institutional, and regulatory matters have been for the most part effective. The CDF has been keenly aware of the need to support national institutions — especially the Galápagos National Park Service — in order to protect terrestrial and marine areas. Environmental education activities are well-directed, although there is room for improvement, as we explain below.

The CDF and partners must look for alternative biological indicators that can be used to prepare and strengthen biodiversity protection policies (economic and otherwise) as well as monitor their implementation. They should also strengthen their use of the social and economic sciences to help regulate the exploitation of species in the marine reserve. In the same vein, it should work increasingly with municipalities, parish councils, and other local organizations.

C. Pace of Activity Implementation

In the RECC area, the SUBIR project has done a good job of ordering activities by giving priority to securing land titles and legal status for communities, and dealing with land conflict issues early on — all to create a stable working environment and pave the way for other interventions.

In the *Bioreserva del Cóndor*, project review meetings held to prepare annual operating plans for the reserve cite coordination problems between partners as well as a disruptive differential capacity of the partners to keep the same implementation pace. Given the large size of this reserve, we suggest in Section VII (Conclusions and Recommendations) a sharper focus on priority actions.

Galápagos Islands partners have been slow in taking into account important socioeconomic dynamics, especially with regard to commercially harvested fish species, which are an integral part of marine ecosystems.

D. Partner Capacity to Implement Activities

In the RECC area, the evaluation team found that partner capacity to implement activities was good.

In the *Bioreserva del Cóndor*, project review meetings note an uneven capacity for implementation among the several partners. The meetings further note the incapacity of INEFAN (now the Ministry of the Environment) to play the role envisioned for it. The evaluation team also observed a weak partner capacity to use the social sciences in a productive way.

Galápagos Islands partners have clearly shown a capacity for activity implementation. SO1 management, however, should encourage the participation of other stakeholders, such as NGOs and municipalities.

E. Progress towards Biodiversity Conservation, and Lessons Learned

Our team did not find any reliable measures indicating that biodiversity had been conserved, or likely would be, as a result of SO1 interventions. And as we note elsewhere, the current orientation of SO1 is not likely to conserve significant amounts of biodiversity in the future.

In the RECC, valuable experience has been gained which could be useful under a new project design. Lessons learned:

(1) Biodiversity cannot be conserved in the long term so long as the value of its economic rent is underestimated through buffer-zone management accounting.

Lessons learned in the *Bioreserva del Cóndor*:

(1) A direct relationship must be obtained between the amount of resources invested and the scale of the objective. This reserve is a sprawling and varied realm with few project interventions and staggering environmental threats. The resource objective relationship is highly unbalanced.

(2) Valid and measurable indicators are required to monitor biodiversity.

In the Galápagos, researchers and authorities (local and national) have been slow to react to threats to local species from uncontrolled migration. The fishing interests' continued assaults on various marine resources, despite ample warnings and pressures that have been mounting for nearly a decade, caught all parties in a poor state of readiness. Lessons learned:

(1) Programs to conserve area biodiversity must better take into account nonbiophysical dynamics of the area — human populations, incomes, and cultural patterns.

(2) International pressure can be an important force in mustering national political will to enforce laws related to the environment and biodiversity conservation.

VII. Conclusions and Recommendations

A. Conceptual Appropriateness of Strategic Objective 1

The logic for the strategic approach involving the three IRs is summarized in the 1997 Biodiversity Support Program statement of Development Hypotheses and Critical Assumptions (Annex E). The logic is based on the premise that by raising the economic benefits — as locally perceived and obtained — of populations residing in protected area buffer zones, one can reduce their incentives to use the resources of those areas.[54] A strengthening of legal, regulatory, and institutional processes was also part of the strategy. Nongovernmental action, from community to national levels, was to complement historically weak government institutions.

Such an approach may be quite suitable for resource conservation in the classic sense, but it is the opinion of the team that substantial changes are needed if real progress is to be made toward the Mission's Strategic Objective. Given the political, economic, and social difficulties that Ecuador has traversed in the last few years, most of the critical assumptions no longer hold. But even if they did, a new approach would be called for.

We find, as did BSP's 1997 report, SO1's geographical focus on the three areas to be reasonable. We also find the IRs ("Strengthened capacity of targeted NGOs & CSOs active in biodiversity conservation," "Economically viable natural resource management practices adopted," and "Key policies and legal frameworks introduced and/or implemented to conserve biodiversity") to be appropriate. They represent a good mix of general areas where the more ambitious, yet realistic, gains the Mission has made could significantly contribute to SO1. However, serious limitations attend the translation of these IRs into Results Packages.

In our view, biodiversity, especially one with a high degree of endemism, is an extremely valuable resource. Although it can be perceived as highly valuable at the global level, particularly over the long term, populations living near it rarely have the chance to share in its benefits. Their perception of its value is limited to what they can extract from it to meet pressing daily needs, often in exchange for the pittance paid in highly distorted local markets. The Results Packages' logic holds that if local populations believe that the benefits they can derive from buffer-zone products are greater than those they can get from protected areas, then they will leave the protected areas alone. This may be a useful first step, and it does promote better local resource use, but it does not serve the purpose of biodiversity conservation over the longer term. It simply lowers the value of biodiversity to that of sustainable returns to better-managed buffer zones. A better strategy would be to express and capture more of the real value of biodiversity, and to allow local populations to share in its much higher rents.

This is not easy, but it is more consistent not only with SO1, but with Ecuador's dire economic reality and even official policy with respect to biodiversity[55]. The nation's natural resources — oil, wood, agricultural land, and fisheries — will come under increasing pressure in the next few years. The value of biodiversity in protected areas will have to reach levels not only as high as those of production in buffer zones, but also match returns from the exploitation of oil, timber, lobster, or sea cucumber.

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[54] The 1997 BSP report notes (Annex A, p. 2) that "The common assumption…that improvement in local incomes, combined with environmental education, will result in reduced pressures on biological resources in nearby parks or reserves is not proven." The BSP team suggested no alternatives and noted that the matter should be judged empirically.

[55] In the view of the Minister of the Environment and other top officials, the only way to conserve biodiversity is to make it as valuable as oil, timber and other prized resources.

The inclusion of IR 3 in the project's overall strategy was especially appropriate; progress in the policy, legal, and regulatory areas could thus draw from and support activities at the local level. The linkage with support to NGOs at various levels was also logical. Indeed, this is one of the areas where SO1 has performed reasonably well. The resource management approach, however, did not stimulate those entities working on policy, legal, and regulatory matters to explore worthwhile state-of-the-art avenues of biodiversity valuation, custodianship, and rent management.

B. Recommendations for Revitalization of Strategic Objective 1

The Ecuador Mission faces a difficult task: to recover lost time in biodiversity conservation in a milieu of economic and social hardship, lack of purpose and clarity at political and policy levels, and continued weakness and uncertainty in public-sector institutions. To address these trying conditions, the team thinks the Mission should equip itself with a combination of

(1) better defined and carefully targeted long-term activities and

(2) a portfolio of specific actions which can be mobilized on short notice to tackle unexpected obstructions, or to take advantage of strategic opportunities. We first make our suggestions for the three SO1 geographical areas.

i. Cotacachi-Cayapas Ecological Reserve (Ecuadorian Chocó)

The key thrust here must be the revaluation of the reserve's biodiversity in order to assess its potential biodiversity rent value. We see no way to conserve the reserve's (or Ecuador's) biodiversity short of such a revaluation, whether based on carbon sequestration, genetic resources, environmental services such as ecotourism, or some combination of these. The mechanics of setting up these schemes are complex and require a specialized knowledge of the Ecuadorian environment. Our team did not have the time in Ecuador to acquire this knowledge nor did we have a mandate to pursue what is essentially a redesign of SO1. We can here provide only some broad directions.[56] In that regard, the following activities should take priority since they contribute directly to this reorientation:

- Work should begin immediately on the scientific research (to determine, say, the genetic resources should those form the basis for revaluation) to define the biodiversity of the reserve so would-be investors can assess a market value. This activity is urgent. Jatún Sacha might have a role here since they have experience in "bioprospection" (*bioprospección*). Whether Ecociencia could play a role is less clear. It is likely that even if both NGOs join forces, additional expertise will still be required.
- Work should also begin in order to establish the necessary institutional and legal framework for the revaluation scheme(s).
- CARE should continue its work (which has been quite effective) to strengthen the two regional organizations, the Palenque Regional Council and the Chachi Federation (FECCHE). These can be major revaluation stakeholders. But it will be very important to also have stakeholders that can wield power at the national level. In this regard, it may be advisable to consider including the powerful

[56] Carbon sequestration may not be the panacea that many once thought. Difficult technical and transactional issues regarding Certifiable Tradable Offset (CTO) bonds remain. There is still no international treaty to regulate the issuance of CTOs and monitor the conservation or management of carbon-absorbing forests. Countries attending the recent UN meeting in The Hague on Global Climate Change failed to reach an agreement. On the other hand, some big businesses have changed their attitude since the 1997 Kyoto agreement. According to *The Economist*, "even business has come to realise that global warming is a problem that needs some response, and is actively lobbying for a market-friendly version of Kyoto to be brought in... the most dramatic example of action is Royal Dutch/Shell.... Its board of directors recently decided that all big projects must take into account the likely future costs of carbon emissions, as well as meeting the company's required internal rates of return."

National Indigenous Confederation (CONAIE-FECCHE is an affiliate). But this assumes that CONAIE can overcome its current internal turmoil and effectively represent the interests of its constituents. CONAIE might also prove useful in future revaluation schemes in other Indian-occupied areas of high biodiversity. Links between the regional organizations (i.e., the Palenque Regional Council and FECCHE) and their grassroots constituents should also be strengthened. The strengthened regional structures could in turn

- help provide data for the up-front scientific work,
- fend off (with other key stakeholders) threats to biodiversity and help enforce laws,
- exercise political pressure to insert the idea of biodiversity rents in the legal framework,
- play a role in policy change negotiations to allow biodiversity rents to be captured and equitably distributed, and
- play a key role in rent-sharing negotiations among legitimate stakeholders.

ii. Cayambe-Coca and Antisana Ecological Reserves (Condor Bioreserve)

- The key activity and first priority must be the work on environmental services from public goods — namely, the water coming from the reserves. The work is urgent and should be conducted with more depth and diligence than has been the case in the past. The Water Fund (FONAG) is a laudable start. But it does not meet the objective of environmental services valuation. It merely collects a small share of water company revenue, which NGOs use to work on a variety of upper watershed conservation issues, including water quality. FONAG will not solve the fundamental problem: water is severely undervalued and underpriced. Biodiversity conservation requires at least a fuller accounting of the reserves' environmental services. This accounting must reflect, among other things, the environmental damage that water-related infrastructure has caused — including damage in local communities. While we are aware that this issue is as sensitive as it is urgent (an increase in water user rates in Cochabamba, Bolivia, recently led to water riots and extreme unrest), we would also point out that TNC has extensive experience in the valuation of protected-area water resources; its Freshwater Initiative now includes 38 sites, six of which are in Latin America. TNC can help search for options.
- The project should define the range of biodiversity rents — including environmental services in the form of landscape aesthetics, or via consumer satisfaction (utility) derived from knowledge that the Andean bear or cóndor are protected from extinction — that can be expressed in the sprawling Cóndor Bioreserve. TNC has the international experience necessary to help provide a strategic vision of the variety of environmental services throughout this vast area.
- Training of park wardens is important, they are enforcers. And since they are from nearby communities, they also help protect community schemes that are consistent with biodiversity conservation — resource management plans, for example.
- The initial experience involving municipalities and parochial councils in resource management plans appears worth pursuing. The Antisana Foundation has expressed an interest in doing so, though its capacity is limited. This may be a useful approach if conducted on the right scale.

iii. Galápagos Islands

Although legally part of Ecuador, the Galápagos Archipelago also represents a unique part of the world's heritage. The case for valuing the islands' environmental services, especially tourism, and for translating *pari passu* the value of biodiversity into tourism-centered environmental services, is compelling. If one

considers the uniqueness of this high biodiversity with high endemism, and its historic role in revolutionizing biology and Western thought, the present tourism-generated income of $120-125 million per year represents but a part of the biodiversity's total value. That value may also lie in another source. Modern biological research on the islands' land reserve began more than 40 years ago. Research on the vaster and more complex marine reserve, however, has just begun. Its genetic resources could far exceed those of the land reserve, which are still being assessed. In the longer term, the greatest values from biodiversity and endemism in Galápagos may lie in the rare biological characteristics of local species. The Government of Ecuador and its main partners should ensure that biogenetic resources figure prominently in long-term plans for biodiversity-derived environmental services.

The evaluation team would suggest the following urgent actions as regards Galápagos:

- Help mobilize public interest groups with a stake in protecting the long-term viability of environmental services, including commercially exploited species.
- Continue to search for ways for island residents to capture more of the benefits from tourism. Both the CDF and Galápagos National Park should be aware of what appears to be a serious equity issue in Galápagos. Tour operators, typically from the mainland, seem to capture the lion's share of benefits from tourism. The local population cannot be expected to conserve biodiversity unless it has a clear economic incentive to do so. The current USAID-funded project (with the Galápagos National Park as partner) on Isabela Island to generate alternative income for those from the fishing sector is a good move and should be pursued, if not expanded.
- Work more directly with fishing cooperatives, municipalities, local NGOs, and private-sector entities — the set of stakeholders must be enlarged — to search for ways to oppose the skewed distribution of biodiversity derived benefits. One company, for instance, exports 50 percent of the dried sea cucumber.
- Assure that the main actors — CDF, GNP, and USAID — are consistent with their own logic of biodiversity conservation. Islanders are not likely to support conservation while some of the main beneficiaries of revenues from environmental services impose environmental costs on the local population. Some of the tour boat operators, for example, have long been flushing wastes into the islands' coastal waters.
- Continue with environmental education, include all those directly and indirectly involved in the fishing sector.
- Assure that biodiversity proponents continue to work closely with the fishing community on critical issues of common interest, e.g., the monitoring of commercial species, diving safety courses, and sea cucumber processing activities.

iv. Crosscutting Issues

We have a few crosscutting or general recommendations. These are:

- By all standards, Ecuador rates low in the areas of governance and rule of law. A lack of political will to enforce the country's laws, or to enact much-needed legislation, is patent and extends to all domains of public life. The failure of the government to deal effectively with the recent crisis in the Galápagos is a case in point. Under such conditions there is little hope of saving the country's remaining wealth in biodiversity. The notion that high endemism biodiversity can only be conserved if its potential value of unique environmental service is realized, however, has powerful political economy implications. Assessing, controlling and sharing in biodiversity rent may well be one of the few critical issues around which communities, federations, and indigenous groups can jointly

wage political action against corrupt local and central governments. The USAID Mission might thus want to ensure that the political processes involving the sharing of rents from environmental services among legitimate stakeholders are supported in the design of a Democracy/Governance Strategic Objective.

- Given the rapidly shifting and uncertain socioeconomic and political environments, the Mission should give itself the means to support an array of activities on short notice. Well-timed and sharply focused support can do much to enhance the impact of long-term interventions. Such activities might include a media campaign, collaboration with another donor or NGO on a specific problem, support — perhaps through a national NGO — to a community involved in a landmark legal action, or support to indigenous groups (often occupying oil-rich high-biodiversity areas) contesting oil exploration or drilling. The Mission enjoys a variety of contracting instruments that can be employed.
- The Mission should consider funding radio campaigns, in indigenous languages, to support biodiversity conservation. Campaigns of a kind the Mission recently funded through OIKOS Corporation to raise the consciousness of the national press on the crisis in Galápagos appear to have a relatively high return.

v. The Partners

In pursuing this new strategy, the Mission should recast its set of partners. Each of the current partners is better at some things than at others. In the past, partners have had little incentive to emphasize strengths and avoid those areas where they lack comparative advantage. A combination of inadequate design, undemanding supervision by project managers, and partner-NGO complacency during many years of costly activity has hampered the effort. A new design should feature:

(1) a refocusing of main partners in the domains where they can most contribute; and

(2) the participation of new actors with technical expertise in key complementary areas.

New areas of expertise that will be needed for the proposed scheme to reorient SO1 include biodiversity economics, environmental economics, environmental law (biodiversity focus), and environmental lobbying.

vi. Final Word: USAID/Ecuador

The evaluation team hopes that the suggestions and information above will help the USAID Mission redefine its orientation and assemble a powerful constellation of partners. In addition, the Mission might also wish to review its overall capacity for supervision and strategic planning. The management of a large cast of actors working on such complex issues is a daunting task. It is of more than passing interest that the 1997 ESP report suggests that "USAID/Ecuador take a more active role in the management of the project…" (p. 22). We suggest that one person be fully dedicated to the task of global SO1 management, in addition to activity managers. This suggestion stems partly from our opinion that the redesign of SO1 may well require a lot of work, and constant monitoring on several fronts simultaneously. The SO1 manager, whoever it happens to be, should keep close tabs on the overall, strategic, master plan, and invest the time required to verify its consistency with current conditions, constraints and opportunities, and to work with partners and activity managers on necessary adjustments. However, the more fundamental issue is the extent to which a reliance on a combination of grants and cooperative agreements provides the Mission with the flexibility needed to manage such a complex program in the changing Ecuadorian environment. The team recognizes that the Mission is laboring under tight constraints, but also thinks that the magnitude and diversity of future funding might allow an innovative solution to this quandary.

Annexes

Annex A: Evaluation Scope of Work
Annex B: Individuals and Organizations Consulted
Annex C: Bibliography
Annex D: Results Packages
Annex E: Development Hypotheses and Critical Assumptions
Annex F: Photos

Annex A
Scope of Work

SO1 MIDTERM EVALUATION

I. PURPOSE OF EVALUATION

The purpose of this evaluation is to provide the following information:

A. An analysis of the Environmental Support Program's (ESP) progress towards the Mission Strategic Objective No. 1 (SO1) objectives, as set forth in the Design Document, Performance Monitoring Plan and annual work plans and as defined by goal and expected outputs/results, with discussion of impacts, both positive and negative.
B. Recommendations to improve results achievement, management operations, use of program resources and quality of outputs.
C. An analysis of prospects for sustainability of positive program impacts after USAID/Ecuador's funding ends.

In addition to improving program performance at all levels, the evaluation results will also be used to help determine future directions for SO1. It should therefore include specific recommendations for USAID priorities for further support to the environment SO, with discussion of the criteria/justification used to identify those priorities and USAID's comparative advantage to address them.

IError! Bookmark not defined.I. BACKGROUND

Ecuador's biodiversity is unquestionably one of the richest in the world. With only 2% of South America's area, Ecuador contains numerous habitats of globally and regionally outstanding biological value: the southernmost extension of the lowland Choco-Darien forests, the mountain forests of the northwestern Andes, the Galápagos National Park and Marine Resource Reserve (the second largest marine reserve in the world) and more than 12 million hectares of Amazon forest. Two of these, El Choco and the uplands of the Western Amazonia, are included among the world's five most important biological regions, or "hot spots". These top ten hot spots cover just 0.2% of the Earth's surface and about 3.5% of remaining rain forest, yet they contain a majority of all the plant species found in tropical forests and nearly 14% of all the flowering plant species on Earth. Approximately the size of the state of Colorado, Ecuador is home to twice as many bird species as can be found in the entire United States, and more than twice as many native plants as exist in the entire European continent. In fact, Ecuador has the most biological diversity per hectare of any country in South America. [Myers, Norman. 1988.- Threatened Biotas: "Hotspots" in Tropical Forests. The Environmentalist, V. 8, No. 3. 1 - 20.]

This environment, however, is seriously threatened, in part because Ecuador has the highest population density (and ranks third in population growth rate) and one of the lowest per capita income levels in South America. Large segments of Ecuador's population, particularly in the rural areas, live in conditions of extreme poverty, with incomes well below the national per capita average. This poverty has been greatly exacerbated by the country's current economic crisis, and per capita income fell 33% in dollar terms during the past year. Roughly two-thirds of the country's total population is poor, with half of those (roughly 4 million people) living in extreme poverty (i.e. they could not meet basic nutritional requirements even if their entire incomes were spent on food). Additionally, income distribution in Ecuador is among the worst in the Andean region, with roughly 20% of the population enjoying 80% of the income share of GDP. The worst banking crisis in Ecuador's history erupted in March 1999, and the Government of Ecuador's response (printing more money) quickly fueled inflation. Ecuador's debt to domestic and foreign creditors exceeded 124% of GDP and debt servicing reached 54% of the national budget, putting severe pressures on the

country's ability to finance badly needed social sector programs, including environmental management. As if all this were not enough, the eruption of two volcanoes in areas well-known for tourism further weakened this important industry and the country's economy.

Not surprisingly, these kind of conditions make sustainable resource management difficult, and poor people who are getting even poorer can inflict serious damage to the ecosystems and the natural resource base where they live. Ecuador suffers the highest rate of deforestation among the Amazonian countries (200,000 hectares per year) and has the third highest deforestation rate in the world, partly as a result of colonization and agricultural expansion by poor people seeking to meet their economic needs. Timber extraction, expansion of commercial oil palm plantations, and petroleum production have also taken their toll. [Clark, Howard et. al 1997. Recommendations for a Strategic Objective Results Framework. Report to USAID/Ecuador. Biodiversity Support Program, 23 pages ; annexes.]

The Cotacachi-Cayapas Ecological Reserve (RECC) and its buffer areas include part of the Choco-Darien forest that is rapidly being depleted and is one of the sites where USAID works. The RECC covers approximately 205,000 hectares and includes some ten distinct ecological life zones, ranging from tropical wet/Choco rain forest at 100 meters altitude to cloud forest and high tundra at nearly 5,000 meters. This unique Ecuadorian Choco Formation (of which the lowland wet forest of the RECC makes up a part) has been designated a worldwide top priority for conservation and a regional critical priority by the World Bank and World Wildlife Fund (1995). The lowland tropical forest of this area is internationally recognized for the high levels of diversity and endemism among non-vascular plants, amphibians, butterflies and birds. However, recently the forests which border the RECC have been significantly reduced by commercial forestry and colonization. Roughly 75 percent of Ecuador's domestic wood production comes from the lowland buffer zone of the RECC. [Clark, H. Op.cit.].

The Cayambe-Coca Ecological Reserve (RECAY) is found in the uplands of the Andes in the western Amazon and is another very fragile ecological area where USAID supports conservation action. The RECAY ranges from nearly 5,000 meters to just a few hundred meters above sea level. These uplands are the habitat for condor, tapirs, ocelots and spectacled bears, all on the endangered species list. In addition, the area is very important for ecotourism because of its proximity to Quito. A large portion of the RECAY is the high "paramos" or near tundra, with high precipitation patterns and a unique environment that acts as a sponge to absorb precipitation and release its waters to several rivers and tributaries. As a result, the RECAY provides over 50 percent of the potable water for metropolitan Quito and a large percentage of the region's hydroelectric power. The majority of the water however, flows to the Quijos River that drains into the Amazon Basin. The valley of the Quijos River forms a corridor separating the RECAY from two other adjacent parks/reserves (the Antisana Ecological Reserve and the Grand Sumaco National Park) which serves as the main route to the Ecuadorian Amazon. This valley, functioning as a conduit for people from the Quito urban area to the Amazon, has resulted in increasing pressure on the reserves in recent years in the form of hunting, fishing, and resource extraction. [INEFAN, 1996. Sistema Nacional de Areas Protegidas del Ecuador. Map and information text.]

Similarly, the Galápagos Marine Reserve (another priority area for current USAID assistance) faces enormous challenges. Over the past few years, conflicts between fishermen and researchers have led to fierce rhetoric and violent action. Endangered species such as sea-cucumbers and other fisheries are being overexploited to the point of local extinction.

The effective, permanent protection of the Galapagos Islands is an integral component of sustainable development in Ecuador. Formerly ignored, they have now become an integral part of Ecuador's economy, politics, and institutions. Of the terrestrial area, 97 percent is in the Galapagos National Park, owned directly by the national government. The surrounding waters are a Marine Ecological Reserve, also under the direct control of the government. The population, although growing fast, remains under 15,000, and is concentrated in three municipalities. Tourists pay the government over US$3 million per year in park entrance fees, and Ecuador

earns over US$100 million per year from Galapagos tourism. The majority of Galapagos residents realize that they live from nature-based tourism and support measures to protect the Galapagos' natural environment. In short, conditions exist in the Galapagos for sustainable development. If sustainable development does not happen in the Galapagos Islands, where will it happen in Ecuador?

Sustainable development, however, is no more occurring in the Galapagos than in the rest of Ecuador. The mainland's problems reach out to the islands, although perhaps take special forms when they get there. The flood of tourists stimulates rapid population growth by attracting migrants to the services sector. Weak institutions, with conflicting legal mandates and affected by corruption, cannot control or manage the effects of this population increase. High rates of unemployment and underemployment on the mainland further fuel local migration to the islands. Powerful financial interests dominate decision making and sometimes purposely stir up local passions, causing chaos rather than management and resolution of conflicts. As on mainland Ecuador, unsustainable development often comes at the expense of the environment. But in the case of the Galapagos this environment is particularly unique and internationally important.

USAID/Ecuador believes that the principal responsibility for protecting the Galapagos environment must inevitably fall on the people who live on the islands. These people must develop a culture, supported by capable institutions, that lives from the sustainable use of the islands' terrestrial and surrounding marine resources rather than from their exploitation. The national government of Ecuador, and international organizations, have an important role in helping the islanders to create the legal and institutional basis for such a culture so that the people of the Galapagos themselves can effectively protect this unique, world-important ecosystem.

Summary of the Strategic Objective 1 (SO1)

USAID/Ecuador's Strategic Objective 1, "Biodiversity conserved in selected protected areas and their buffer zones", support the US national interest of promoting sustainable use and responsible stewardship of Ecuador's unique biodiversity. Ultimate beneficiaries will be the majority of the nation's poor, especially women, children, and Ecuador's indigenous communities who directly depend on sustainable use of natural resources.

Key Results:

Key intermediate results are: IR 1, "Strengthened capacity of target NGOs and CSOs active in biodiversity conservation"; IR 2, "Economically viable natural resource management (NRM) practices adopted"; and, IR 3, "Key policies and legal frameworks introduced and/or implemented to conserve biodiversity".

Appendix 1 provides information related to the activities and results undertaken by each results package.

III. SCOPE OF WORK

A. **Preliminary Research:** The contractor shall review the Environmental Support Program and USAID/Ecuador files to familiarize her/himself with the Mission's Strategic Objective No. 1 program outputs/results and progress indicators, as well as with result packages activities and planned outputs of work plans. The evaluation team should read the following documents for background information: USAID/Ecuador Strategic Plan 1998-2002, Customer Service Plan, Performance Monitoring Plan, Results Review and Resource Request Document, Validation of USAID/Ecuador Indicators, ESP Design Document, Environmental Assessment Agreement, Cooperative Agreements, Annual Work Plans and Annual Progress Reports.

Based upon the preliminary research, the contractor shall develop a Work Plan that includes a proposed schedule to address the key evaluation issues and completion of the scope of work.

B. **ADS Requirements:** USAID ADS 203.5.6 "Evaluation" and ADS 203.5.6a "Planning and Conducting Evaluations" require that evaluations activities examine several broad concerns that are applicable to any type of development assistance and provide the needed insight to:

- assess why unexpected progress, either positive or negative, towards planned results is occurring;

- determine whether conditions for sustainability related to USAID assistance exist;

- re-examine or test, when necessary, the validity of hypotheses and assumptions embedded in strategic objectives and results frameworks;

- determine whether the needs of intended customers are being served;

- identify, probe, and understand positive and negative unintended consequences or impacts of assistance programs;

- distill lessons learned which may be useful elsewhere in the Agency; and,

- assess the effectiveness of Agency strategies across countries and within sectors.

The evaluation team is expected to go beyond the simple examination of inputs, outputs/results and the design document to explore these broader issues and in particular to assess the utility of the ESP as a model to be used for assisting USAID in attaining its environmental goal. The team must also assess whether the current ESP model is the most appropriate one to meet Ecuador's (and USAID's) emerging environmental priorities.

C. Illustrative Issues and Questions to be Addressed:

1. Environmental Assessment

Does the environmental assessment adequately address potential environmental impacts of result package activities and has the result package implemented sufficient mitigative measures for potentially negative impacts? Also, assess if the requirements and recommendations from the Environmental Assessment were followed, as such: a) whether site-specific environmental reviews of Forestry Management Plans incorporated guidance provided by the Programmatic Environmental Assessment for SUBIR's forestry activities, and by USAID/Ecuador February 14, 1999 letter; b) local environmental impacts of SUBIR-assisted forestry activities in the Choco; and c) ways that the environmental sustainability of SUBIR-assisted forestry activities could be improved.

2. Implementation Phase (October 1997 to present)

a. What has been the overall impact of the ESP? What are the most significant accomplishments? Have Result Packages interventions enhanced the conservation of biological diversity? The list should cite past significant accomplishment by each component.

b. How effective have been the approaches to promote participation? Do the work plans reflect participation? What do the principal clients of the ESP say about the nature and quality of the services provided by the ESP?.

c. Are the activities of the components integrated at the field level? Which have worked well and why? Which did not produce expected results and why?

d. Has ESP activities occurred at the right pace, too fast, or too slow, given the partners' capabilities and the establishment of selected protected areas program? Do the activities per result package reflect the partners' capability to execute programmed activities?

e. What have been the extent and impacts of public and private sector cooperation and collaboration in the planning, financing, and execution of ESP activities? What recommendations can be made for strengthening this collaboration and cooperation? Suggested institutions to contact include CEDENMA, Ministry of Environment, INDA, etc.

f. What has been the role of women and other minority groups (in particular indigenous peoples and Afro-Ecuadorians) in the ESP? How have women and other minority groups been included in field activities? Are gender-specific data collected and used for project planning? As necessary, how can the project improve its effectiveness in addressing gender and minority related issues?

g. How effective is the administrative support provided by CARE/SUBIR, The Nature Conservancy, and the Charles Darwin Foundation for implementation of field activities? As appropriate, how can administrative support from these partners be improved to facilitate ESP implementation?

h. Assess the performance monitoring system. Is it functioning in terms of reporting requirements, and as it was described in the design document? Provide recommendations to improve results packages reporting, documentation management, and distribution of information within the ESP and to clients.

i. ESP calls for a variety of activities that address the relationship of human behavior to natural resources utilization and management, which should be assessed for their impact. These include:

- awareness raising among selected protected areas and their buffer zones inhabitants of the value of actions and practices to promote a sound environment,
- broad community participation in actions to protect the environment, and
- increased knowledge and adoption of practices in support of conservation.

j. Evaluate the role partners have had on Ministry of Environment's (former INEFAN) ability to influence decision-making on natural resources and biodiversity matters.

k. How effective has been the coordination by ESP partners with other donors in the execution of the Program?

l. How effective has been the financial management of the ESP? How can financial management be improved?

m. CARE/SUBIR Result Package Components are: Institutional Strengthening and Organizational Development, Policy and Legal Issues, Sustainable Land Use Management, Commercialization and Marketing, and Biodiversity Monitoring.

Assess if they:
- have had a significant impact on local communities, through the adoption of practices in support of conservation;
- have developed realistic natural resources management plans;
- have carried out biological research programs sufficiently focussed, organized, and financed to result in relevant policy information and well-trained Ecuadorians;

- have strengthened the local institutional capacity among NGOs, community groups, and indigenous groups;
- have encouraged the development of institutional policies regarding protected areas management;
- have encouraged the adoption of new technical options, e.g., improved access to markets, land tenure arrangements, shares of revenues from community managed timber production.

n. The Nature Conservancy Result Package components are: Biodiversity Research, Protected Area Management, Sustainable Use of Natural Resources, Institutional Strengthening and Training, and Dissemination of Activities and Results.

Assess if they:
- have had a significant impact on local communities, through the adoption of practices in support of conservation;
- have developed realistic natural resources management plans;
- have carried out biological research programs sufficiently focussed, organized, and financed to result in relevant policy information and well-trained ecuadorians;
- have strengthened the local institutional capacity among NGOs, community groups, and indigenous groups;
- have encouraged the development of institutional policies regarding protected areas management;
- have disseminated activities and results at a national and international level.

o. The Charles Darwin Foundation Result Package components are: Applied Research, and Capacity for Collaborative Management.

Assess if they:
- have had a significant impact on local communities, through the adoption of practices in support of conservation;
- have carried out biological research programs sufficiently focussed, organized, and financed to result in relevant policy information and well-trained Ecuadorians;
- have encouraged the development of institutional policies regarding protected areas management;
- have disseminated activities and results at a national and international level.

Also, assess if Charles Darwin Foundation/Research Station (CDF/RS) is capable of expanding its role in the Galapagos; has CDF/RS reached its absorptive capacity; what would have to happened to allow CDF/RS to expand its role and into what area(s)?

p. Also, through a Limited Scope Grant Agreement signed with the Government of Ecuador on April 23, 1999, USAID/Ecuador is supporting the conservation and management of Salinas Lagoon and other wetlands in Puerto Villamil, Isabela Island, Galapagos Province. The Galapagos National Park is the implementing entity.

Assess if they:
- have carried out the construction of simple infrastructure for tourism at the lagoons.
- have promoted among the Isabela Island population the importance for conserving the biodiversity which shelters and promotes locally based sustainable tourism.

IV. METHODS AND PROCEDURES:

Methodologies and outputs of the evaluation will follow those prescribed in USAID ADS 203 "Managing for Results: Monitoring and Evaluating Performance" and Section V. "Performance Monitoring and Evaluation" of the Design Document. In addition to a Work Plan as described in Section III. A. above, the contractor will visit the Mission for a briefing and planning session. Prior to leaving Ecuador, the team is to hold a final debriefing with the Mission.

The evaluation team will conduct site visits to selected field activities in all three protected areas and their buffer zones to directly observe implementation and to interview local NGOs, GOE personnel, local inhabitants, indigenous groups, and others.

A six-day work week without premium pay is authorized. All logistical requirements will be arranged by the supplier.

V. DELIVERABLES AND REPORTING REQUIREMENTS:

A. Report Structure

The report structure will include an executive summary, body of the report and relevant annexes. Both the draft and final versions shall be provided in both hard copy and electronic formats (Microsoft Word 97, on 3.5 inch diskettes).

The executive summary will include the development objectives of the ESP, purpose of the evaluation, findings, conclusions, and recommendations.

The body of the report should include: 1) the purpose of the evaluation; 2) description of the ESP/result packages structure; 3) team composition and study methods; 4) observations and comments supported by findings; 5) conclusions and related recommendations stated as actions to be taken to improve program/result packages performance; 6) lessons learned; and 7) recommendations for future directions for the SO. It shall not include a repetition of descriptive material available elsewhere in the ESP documentation.

The report should not exceed fifty pages (excluding annexes) and should be submitted in English. However, the Executive Summary (which should not exceed five pages) and Recommendations should be submitted in both English and Spanish. Annexes should include a copy of the scope of work for the evaluation and a list of documents and individuals consulted.

B. Schedule

Upon arrival in Ecuador, the contractor will meet with USAID/Ecuador ENRO and other Mission staff to discuss and approve the work schedule and any proposed changes in this scope of work

An initial draft of the report should be delivered (10 copies) to USAID/Ecuador within 18 working days after initiation of the work order. USAID/Ecuador will return the draft report with comments within two working days after receipt of the draft report. The final report will be delivered (10 copies) within 29 days after initiation of the work order.

An oral presentation of the initial draft will be made by the team to USAID/Ecuador, CARE/SUBIR, The Nature Conservancy, the Charles Darwin Foundation, and the Galapagos National Park approximately 22 working days after initiation of the work order. The exact date will be arranged

between the USAID/Ecuador ENRO Director and the Team Leader. A final exit briefing to USAID/Ecuador and the SO1 Partners will be made by the team before departing Ecuador.

C. Performance Period

The evaluation is to commence on November 6, 2000 for a period of approximately 5 weeks. Timing of deliverables are outlined in the draft work plan already sent to consultants. The draft work plan will be refined within the first week with USAID for a final schedule.

APPENDIX 1
RESULT PACKAGES

RP 1 - Reserva Ecologica Cotacachi-Cayapas (RECC)

These activities are undertaken through a Cooperative Agreement with CARE and with the collaboration of: (1) Ecuadorian NGO partners Ecociencia, Jatun Sacha, and CEDENMA; and (2) Ministry of Environment (former INEFAN).

Goal: *To protect the unique biological diversity of Ecuadorian Chocó and the upland western forests of Amazonia through sustainable natural resource management and use in selected landscapes.*

1.a. Institutional Strengthening and Organizational Development

Expected Outputs/Results

- Two NGOs with diversified funding bases executing conservation-related projects.
- RECC buffer zone communities and SLOs capable of developing and expanding environmentally sustainable natural resource management activities.
- UONNE, FECCHE, ONHAE and the Unidad Coordinadora de Esmeraldas capable of negotiating with development and conservation organizations for projects to be implemented in their respective areas.
- EcoCiencia and Jatun Sacha will produce strategic plans and annual reports closing their respective fiscal years.
- Strengthened relations with the Project counterpart, Ministry of Environment (former INEFAN).

Proposed Activities

1. Training and technical assistance in administrative, financial and managerial aspects of three national level NGOs and two SLOs.
2. Organizational strengthening assistance in planning and implementation of community natural resource management plans.
3. Budget support to EcoCiencia and Jatun Sacha to address fiscal year reporting in strategic planning and annual reports.

4. Creation of INEFAN liaison positions in EcoCiencia and Jatun Sacha for the community park guard program and forestry policy initiatives, respectively.

5. Technical assistance to the Unidad Coordinadora de Esmeraldas.

1.b. Policy and Legal Issues

Expected Outputs/Results

· National and international promotion of the paralegal program, and establishment and implementation of the national paralegal network. 60 paralegals trained.

· Legal title for 80 communities.

· The legal formation of two SLOs in lowland RECC.

· Production of planimetric maps of the Ethnic Reserve for lowland RECC and for the Huaorani Ethnic Territory Reserve.

· Formal decree legally establishing an Ethnic Reserve for lowland RECC.

· Policy proposals for reforming the Ley de Comunas, the formation of the Ethnic Reserve, Forestry Regulations, and Intellectual Property Rights.

· Strengthened Unidad de Coordinadora de Esmeraldas in environmental legal affairs.

Proposed Activities

1. Expand the Paralegal Program, with a special focus on the legal aspects of forest management, which will assist paralegals to contribute to the implementation of community management plans.

2. Continue with the legalization process of organizations and land tenure, working closely with INDA, MAG and MBS.

3. Facilitate grass-roots and national level policy initiatives to promote changes in the Ley de Comunas, the Ley Forestal, and to formalize the operational base for the Community Forestry Network and the Ethnic Reserve.

4. Provide environmental legal assistance to the Unidad Coordinadora de Esmeraldas.

1.c. Sustainable Land Use Management

Expected Outputs/Results

· A regional management plan for the lowland RECC buffer zone covering approximately 300,000 hectares.

· A natural resource management plan for the Comuna Rio Santiago-Cayapas, covering 62,000 hectares.

· A natural resource management plan for the Huaorani Ethnic Territory Reserve, covering 610,000 hectares.

· Formation of at least twenty community forestry committees.

· Design at least twenty community forestry plans.

· Development of replicable agroforestry models in approximately twenty Chachi and Afro-Ecuadorian communities.

· Trained community members in forest management and agroforestry.

· Strengthened Unidad Coordinadora de Esmeraldas in forestry management.

· Partner NGO staff, including private and key public sector representatives, familiar with sustainable native forest management system in other countries.

Proposed Activities

1. Preparation of a regional natural resource management plan for 300,000 hectares in the lowland RECC buffer zone.

2. Design and implementation of community-based commercial forestry units in selected RECC buffer zone communities.

3. Para-technician training in small animal husbandry, small-scale forestry, and non-timber agroforestry.

4. Forestry-related technical assistance to the Unidad Coordinadora de Esmeraldas.

5. Preparation of a natural resource management plan for the Huaorani Ethnic Territory Reserve. [Note: This activity is subject to availability of USAID funds resulting from increased involvement of other donors in the RECC area.]

6. Development of environmental impact methodologies for wood extraction to be carried out by Ecuadorian forestry technicians.

7. Observational travel to Chile and Costa Rica by partner NGO staff, private and key public sector representatives to visit private sector firms engaged in the sustainable management of native forest, plantations and marketing of wood products.

1.d. Commercialization and Marketing

Expected Outputs/Results

· A portfolio of eight economic and marketing studies to guide strategy development.

· Establishment of a community managed timber production clearinghouse.

· Promotion and marketing of project facilitated timber and non-timber projects.

· Training of two commercialization and marketing paratechnicians from each of twenty communities.

· Incentive program developed for communities managing natural forests in a sustainable manner.

· Strengthened *Unidad Coordinadora* in commercialization and marketing of timber products.

· Forest certification obtained for communities managing natural forests in a sustainable manner.

Proposed Activities

1. Commission contracting of economic and marketing studies to develop strategies related to timber and non-timber products.

2. Implementation of economic and marketing strategies for ecotourism, sisal pulp and paper and wood products.

3. Execution of the marketing strategy, promotion and sales for ecotourism, sisal pulp and paper and wood products.

4. Development of training programs for community members in commercialization and marketing of ecotourism, sisal pulp and paper and wood products.

5. Implementation of recommendations and strategies related to forestry economic policy.

6. Participation in the Unidad Coordinadora de Esmeraldas in commercialization and marketing activities.

7. Budget support to develop a forestry certification program for communities involved in forest management.

1.e. Biodiversity Monitoring

Expected Outputs/Results

· Increased capacity of young professionals and local parabiologists to manage natural resources and biodiversity both at the institutional and community levels.

· Land use maps produced of the lowland RECC and Huaorani Ethnic Territory Reserve to monitor habitat changes and for planning purposes.

· Robust experimental design methodology developed and executed to determine effects of Project related activities on landscapes.

· Manuscripts prepared for submission to peer-reviewed scientific journals.

Proposed Activities

1. Assess the changes in the natural vegetation cover in landscapes in and around the lowland RECC.

2. Assess the ecological effects from the utilization of timber and non-timber forest products in the RECC buffer zone.

3. Assess the differences in biodiversity, through the use of indicator species, within and outside of the lowland RECC as an indication of the effects of varying land uses on biodiversity.

4. Provide training to young professionals and parabiologists.

5. Develop the community park guard program.

6. Promote the peer-reviewed publication of biodiversity and conservation related studies carried out by conservation oriented NGOs.

RP 2 - Reserva Ecológica Cayambe-Coca/Reserva Ecológica Antisana (RECAY/REA)

These activities are undertaken through a Cooperative Agreement with The Nature Conservancy and with the collaboration of: (1) Ecuadorian NGO partners FUNAN and FER, and (2) Ministry of Tourism and Environment (former INEFAN).

Goal: *To protect the unique biological diversity of the Cayambe-Coca and Antisana Reserves through sustainable natural resource management and use in selected landscapes.*

2.a. Biodiversity Research

Expected Outputs/Results

· Increased capacity at both institutional and community levels to manage natural resources and biodiversity.

· Basic studies information on flora and fauna utilized for planning purposes and improved management of protected areas.

· Biodiversity research studies disseminated locally, nationally, and, as appropriate, internationally.

Planned Activities

1. Analyze natural vegetation cover and land use in RECAY and REA.

2. Undertake research on species in danger of extinction, including spectacle bears and the Andean condor.

3. Map species distribution in RECAY and REA.

4. Undertake basic studies of little known mountain forest ecosystems in RECAY and REA with respect to forest structure, environmental conditions, and species of flora and fauna.

5. Study migratory birds in the "paramo" in RECAY and REA; monitor fauna and flora in RECAY and REA.

2.b. Protected Area Management

Expected Outputs/Results

- Closer coordination among the various actors around the protected areas: communities, government agencies, private owners and businesses, state owned enterprises involved in development projects, local NGOs, and others.

- Integrated management of the RECAY and the REA strengthened; in close coordination with Gran Sumaco National Park management, establishment of a Condor Bioreserve.

- The fund for financing implementation of the RECAY management plan replicated for the REA.

Planned Activities

1. Promote the technical basis for determining the feasibility of creating a Condor Bioreserve as an integrated conservation unit

2. Financial support to Community Park Guards which will cover three key aspects of the administration of the two protected areas: access control and patrolling the reserves, education and environmental interpretation , and support for biological research and monitoring. Although the initial proposal is to work with twenty park guards, it is expected that by 1999 the sustainability fund managed by the reserves will generate sufficient resources to gradually absorb the costs of this program and will permit the broadening of its coverage.

3. Complete two management plans initiated in 1997.

4. Support to resolve conflicts related to land tenancy in RECAY and REA. The process of developing management plans has identified a series of conflicts related to the lands in and around the two reserves, which have impacted negatively on efforts to incorporate the participation of local communities in the conservation of natural resources. Workshops, agreements, and legalization activities will be used to resolve these conflicts.

5. Support the management of the sustainability fund managed for RECAY and REA. Assuming that this fund will be established by the end of 1997, financial support will be provided for the promotion and management of the fund.

2.c. Sustainable Use of Natural Resources

Expected Outputs/Results

- Strengthened participation of the various natural resource users in the sustainable use of those resources: land, forest and, biodiversity.

Planned Activities

1. Promote community initiatives located around RECAY and REA to investigate the problems of resource use in order to generate sustainable productive alternatives. The activities undertaken by FUNAN in the Cosanga Valley and in Pintag will be replicated, with support from the International Institute of Rural Reconstruction (IIRR) and the Programa de Bosques Nativos Andinos (PROBONA).

2. Develop tourism micro-planning for the Quijos Valley as one approach to environmentally sustainable productive activities under the responsibility of FER.

2.d. Institutional Strengthening and Training

Expected Outputs/Results

· NGOs capable of developing and expanding environmentally sustainable natural resource management activities in the RECAY, REA and SUMACO.

Planned Activities

1. Partially cover the need for technical assistance, training, and equipment and materials for FER and FUNAN.

2. Provide support for the Corporación Centro de Datos para la Conservacion (CDC-Ecuador), and other, similar institutions implementing activities related to biological research and managing geographic information.

3. Undertake community training to: strengthen the research programs carried out with local participation; promote the ecotourism program in Oyacachi with follow-up and promotion; define the technical bases of the ecotourism program in Sinangue; and initiate education and environmental interpretation activities by means of workshops, construction of infrastructure.

2.e. Dissemination of Activities and Results

Expected Outputs/Results

· Dissemination of National and international activities and results.

Planned Activities

1. Publication in reputable national and international scientific and professional publications of articles covering main activities/accomplishments.

2. Publication and effective dissemination of appropriate, effective training material for community park guards.

3. Publication and effective dissemination of reports prepared by technical advisors.

4. Publication and effective dissemination of management plans for the areas in which activities are undertaken.

RP 3 - Galapagos Islands

These activities would be undertaken through a Cooperative Agreement with the Charles Darwin Foundation, with collaboration from the Galapagos National Park and the Galapagos Marine Reserve.

Goal: *To promote the conservation of the Galapagos Marine Biological Reserve.*

3.a. Applied Research

Expected Outputs/Results

· Scientific information on marine ecosystems and marine-dependent organisms readily available both in scientific publications and in a form accessible to the Park and its collaborators in management.

· Use of the technical information for adaptive management of the marine reserve.

· Enhanced technical capabilities in marine and coastal ecosystem management for the Charles Darwin Research Station (CDRS), the Park, and user groups.

Planned Activities

1. Expand applied marine research programs of the CDRS in order to guide planning and decision-making for marine reserve management. Areas of research will include study of selected target species, marine ecological monitoring and survey work, and impacts of management on associated species, e.g., seabirds, marine reptiles, and mammals.

2. Provide training for personnel of CDRS and the Galapagos National Park Service (GNPS), and for key people in partner organizations, such as marine reserve user groups and the National Fisheries Institute. Training may take the form of formal courses, participation in conferences, and locally organized training activities.

3.b. Capacity for Collaborative Management

Expected Outputs/Results

· Increased local understanding of, and support for, marine conservation.

· Fishing and tourism operators better organized and able to participate in planning and management, through recognized structures and procedures.

· Enhanced education and extension skills for personnel of CDRS and the Park.

· Increase of at least 30 percent in CDF revenue derived from visitors and "Friends of Galapagos," including revenue specifically raised on the basis of marine conservation work.

Planned Activities

1. Carry out, in accordance with the CDRS Communications Strategy, a range of educational activities intended to build understanding of, and support for, marine conservation among the people of Galapagos. Major activities include dissemination of research findings and other information, youth education, and public seminars.

2. Provide training in environmental education and extension for personnel of CDRS, GNPS, and collaborating local groups.

3. Assist marine reserve user groups, such as fishermen and tourism operators, to become better organized, more representative of membership, better able to negotiate responsibly, etc. Care will be taken to avoid generating a sense of paternalism or undue expectation.

4. Disseminate information internationally in order to expand CDF international support networks and hence enhance financial sustainability for marine research, training, and education work. International dissemination through scientific publications can also help to promote collaborative research with universities, which can also contribute to sustainability.

Annex B
Persons and Organizations Consulted

CARE (SUBIR)

Baca, Paulina	Marketing Expert
Corozo, Betty	Expert, Social Component
Freire, José Luis	Policy Expert
Hayum, Brian	Monitoring and Evaluation Coordinator
León, Marcelo	Marketing Coordinator
Morales, Manolo	Legal and Policy Coordinator
Ramírez, Fanny	Social Affairs Technician
Stallings, Jody	Chief of Party
Villacrés, José	Coordinator, Social Component
Yarad, Williams	Logistical Coordinator, Borbón

Charles Darwin Foundation

Hernández de la Obra, Joaquín	Chief, Communication and Education
Toral, Veronica	Marine Research and Conservation
Espinoza, Fernando	Secretary General

Comité Ecuatoriano de Defensa del Medio Ambiente (CEDENMA)

Polet, Vicente	Executive Director

Corporación OIKOS

Bastidas, Rocío	Educación Ambiental y Comunicación
Martínez, Ernesto	Producción Limpia
Romero, Juan Carlos	Gestión Sobre el Entorno Natural

Ecociencia

Carrera, Carlos	Expert, Aquatic Ecology
Celi, Jorge	Expert, Terrestrial Insects
Cueva, Rubén	Expert, Habitat Structure
Garcia, Mario	Executive Director
Rodríguez, Fernando	Expert, Geographic Information Systems

European Union

Schmidt, Wini	European Co-director, Petramaz Project

Fundación Antisana (FUNAN)

Jervis, Francisco	Financial Administrator
Mosquera, Gustavo	Technical Director
Alarcón, Dominique	Biologist

Galápagos National Park

Chávez, Juan	Chief, Technical Office for Isabela Island

Fundación Rumicocha

Alquinga, Irene	Financial Administrator
Tituaña, Fausto	Executive Director
Colcha, Juan	Environmental Expert (works with wardens)

Inter-American Development Bank

Martínez Bravo, Carlos	Agricultural Sectorial Specialist

Jatún Sacha

Cadena, Luis	Expert, Carpentry
Palacios, Walter	Coordinator, Land-Use Management
Thomas, David	Forestry Technical Advisor (from WCS)
Villacrés, Damián	Expert, Forest Management
Zambrano, Fernando	Expert, Agroforestry

Ministry of the Environment

Benitez, Lilian	Undersecretary for Environmental Affairs
Bustamente, María Inés	Liaison, International Donors
Carrasco, Alfonso	Coordinator, Galápagos Unit
Chamorro, Carlos	Institutional Strengthening Coordinator
Kingman, Santiago	Technical Advisor
Peter, Edgar	Regional Planning Expert, Galápagos Unit
Rendón B., Rodolfo	Minister

The Nature Conservancy

Granizo, Tarsicio	Protected Areas Specialist
Troya, Roberto	Director, Ecuador

United States Agency for International Development (USAID)

Alvarado, Luisa	Financial Analyst, SO1 Team
Cedeño, Rocío	Environment Manager, SO1 Team
Cornwell, Laura	Science and Diplomacy Fellow, LAC
Granja, Hernán	Contract Officer, SO1 Team
Laso, María Cristina	Financial Analyst, SO1 Team
Villalba, Sofía	Program Manager, SO1 Team (Gender Issues)
Yates, Michael	SO1 Team Leader
Zavala, Paola	Training Specialist, Environment Assistant, SO1 Team
Zuquilanda, Mónica	Environment Manager, SO1 Team

Wildlife Conservation Service (WCS)

Thomas, David	Forestry Advisor to Jatún Sacha

World Bank

Arcos Olarte, Gabriela	Operations Officer

World Food Program

Salgado, Wilma	Consultant

Field Visits

Antisana Ecological Reserve, Píntag Zone

Ordónez, Pedro	Park Guard, Micacocha Lake
Bravo, César	Farmer/Resident
Bravo, Cayetano	Farmer/Resident
Bravo, Blanca	Farmer/Resident
Five Unidentified Persons	Farmers/Residents

Asociación de Mujeres Chachis "María del Sol" (Loma Linda and Elsewhere, River Cayapas)

Añapa, Alicia	President
Añapa, Angela	Treasurer
Añapa, Margarita	Vice President
Pianchiche, Rosa	Paratécnica Social
20 unidentified women	Residents of Loma Linda

Asociación Afro-Ecuatoriana Majua (River Cayapas)

Caicedo, Bolívar	President
Caicedo, Delfido	Paratécnico Agroforestal
Nazareno, Marco	Paratécnico Forestal
Nazareno, Wiltón	Vice President
Ortíz, Winer	President, Forestry Committee

Bella Vista (Asociación "Unidas Trabajan las Mujeres"—River Cayapas)

Nazareno, Corina	President
Vallejo, Marta	Vice President

Cayambe-Coca Ecological Reserve

Parión, Teófilo	President, Oyacache Comuna
Quinatea, Fidel	Park Guard, Oyacachi
Twelve Unidentified Persons	Farmers/Residents

Centro Chachi Guadual

Añapa, Antolín	President
Añapa, Daniel	President, Community Forestry Network
Añapa, Félix	Paralegal
Nazareno, Virgilio	President, Forestry Committee
30 Unidentified persons (8 women)	Farmers/Residents

Comuna Bella Vista (Afro-Ecuadorian, River Cayapas)

15 Women	Members of Bella Vista Womens' Association

Comuna Chispero (Afro-Ecuadorian, River Cayapas)

Corozo, Fanny	Parasocial
Corozo, José	President, Forestry Committee
Corozo, Marlene	Paralegal
De la Cruz, Victor	Forestry Promoter
Ortíz, Eberto	Vice President of Cabildo
Ortíz, Samuel	President of Cabildo
20 Residents (7 women)	Community residents present for interview

Consejo Regional de Palenques (San Lorenzo)

Chirán, Fausto	President (Palenquero Mayor)
Corozo, Trífilo	Palenquero (UONNE)
García, Juan	Advisor
Márquez, Angela	Palenquera
Morales, Inéz	Secretaria
Quintero, Jairón	Palenquero
Quintero, Hisfele	Regional Counselor

Comuna San Miguel Negro

Orobio, Joffre	President of Cabildo
Orobio, Soyander	Vocal, Eco-tourism Committee

Federación de Comunas Chachi de Esmeraldas (FECCHE)

Añapa Chapiro, Donaldo	Secretary
Añapa M., Lidia	Director of Women's Affairs
Cipriano López, Orlando	Director of Youth and Sports
Pianchiche, Freddy	President
Simarrón, Wilson	Vice President

Red Forestal Comunitaria

Añapa, Danner	President
Nazareno, Tahuar	Vice President
Nazareno, Wiltón	Administrator

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Rosero, José "Un Sistema Integrado para la Planificación del Desarrollo: hacia las políticas específicas del ambiente en Ecuador" Tomo 09, "Programa y Proyecto Piloto de Cuentas Ambientales", Programa BID-CONADE, 1996.

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Annex D
SO1 Intermediate Results, Result Packages, Activities

SO: Biodiversity conserved in selected protected areas and their buffer zones

Indicators: Rate of loss of the abundance and distribution of key species reduced in selected protected areas and their buffer zones

	IR 1 – Strengthened capacity of targeted NGOs & CSOs active in biodiversity conservation	IR 2 – Economically viable NRM practices adopted	IR 3 – Key policies and legal frameworks introduced and/or implemented to conserve biodiversity
RP 1: CARE, Ecociencia, Jatun Sacha, CEDENMA, Min Env **"to protect unique biological diversity of the Ecuadorian Chocò & upland western forests of Amazonia through sustainable NRM in selected landscapes"**			
Two NGOs with diversified funding bases executing conservation related projects *(Training and Technical Assistance)*	Contributes		
RECC buffer zone communities & SLOs develop and expand environmentally sustainable NRM activities *(TA in planning & implementation)*		Contributes	
UONNE, FECCHE, ONAHE and Unidad coordinadora Esmaraldas capable of negotiating w/ development and conservation organizations for pjcts in their respective areas *(TA in planning & implementation)*	Contributes		
Ecociencia & Jatun Sacha produce strategic plans and annual reports @ end of their fiscal years *(budget support for reporting)*	Contributes		
Strengthened relations with project counterpart, Min of Env (formerly INEFAN) *INEFAN liaison positions in Ecociencia & Jatun Sacha)*			Contributes

National/international promotion of the paralegal program, establishment & implementation of national paralegal network. 60 paralegals trained			Contributes
Legal title for 80 communities *(legalization process of organizations and land tenure, with INDA, MAG, MBS)*			Contributes
The legal formation of two SLOs in lowland RECC	Contributes		
Production planimetric maps of Ethnic Reserve for lowland RECC and for the Huaorani Ethnic Territory Reserve		Contributes	
Formal decree legally establishing an Ethnic Reserve for lowland RECC			Contributes
Policy proposals for reforming the Ley de Comunas, the formation of the Ethnic Reserve, Forestry Regulations, and intellectual property rights *(grass-roots and national level policy initiatives to promote changes in the Ley de comunas, ley forestal, formalize operational base for the community forestry network, and the Ethnic Reserve)*			Contributes
Strengthened Unidad Coordinadora de Esmeraldas in environmental legal affairs	Contributes		
A regional management plan for the lowland RECC buffer zone covering approximately 300,000 hectares		Contributes	
A NRM plan for the Comuna Rio Santiago-Cayapas, covering 62,000 hectares (forestry)		Contributes	
A NRM plan for the Huaorani Ethnic Territory Reserve, covering 610,000 hectares		Contributes	
Formation of at least 20 community forestry committees		Contributes	
Design at least twenty community forestry plan		Contributes	
Development of replicable agroforestry models in approximately twenty Chachi and Afro-Ecuadorian communities		Contributes	
Trained community members in forest management and agroforestry *(Development of environmental impact methodologies for wood extraction to be carried out by Ecuadorian forestry technicians)*		Contributes	
Strengthened Unidad Coordinadora de Esmeraldas in forestry management		Contributes	

Partner NGO staff, including private and key public sector representatives, familiar with sustainable native forest management in other countries *(Chile and Costa Rica)*	Contributes	Contributes	
Portfolio of eight economic and marketing studies to guide strategy development		Contributes	
Establishment of a community managed timber production clearinghouse		Contributes	
Promotion and marketing of project-facilitated timber and non-timber projects *(Execution of marketing strategy for ecotourism, sisal pulp and paper and wood products)*		Contributes	
Training of two commercialization and marketing paratechnicians from each of twenty communities		Contributes	
Incentive program developed for communities managing natural forests in a sustainable manner		Contributes	
Strengthened Unidad Coordinadora in commercialization and marketing of timber products		Contributes	
Forest certification obtained for communities managing natural forests in a sustainable manner *(Budget support forestry certification program)*		Contributes	Contributes
Increased capacity of young professionals and local parabiologists to manage NR and biodiversity both at the institutional and community levels		Contributes	
Land use maps produced of the lowland RECC and Huaorani ethnic territory reserve to monitor habitat changes and for planning purposes *(assess changes in natural vegetation cover in and around the lowland RECC)*		Contributes	
Robust experimental design methodology prepared and executed to determine the effects of Project related activities on landscapes (Assess differences in biodiversity, through indicator species within and outside of lowland RECC as indication of effects of varying land uses on biodiversity)		Contributes	
Manuscripts prepared for submission to peer-reviewed scientific journals *(prepared by NGO staff)*		Contributes	

RP2 – TNC, FUNAN, FER, Min Env "to protect unique biological diversity of the Cayambe-Coca and Antisana Reserves through sustainable NRM in selected landscapes"			
Increased capacity at both institutional and community levels to manage NR and biodiversity *(Analyze natural vegetation cover and land use in RECAY and REA)*		Contributes	
Basic studies information on flora and fauna utilized for planning purposes and improved management of protected areas *(Research on species in danger of extinction, including spectacled bears and condor) (study migratory birds in the paramo, monitor flora and fauna in Reservas)*		Contributes	
Biodiversity research studies disseminated locally, nationally and, as appropriate, internationally		Contributes	
Closer coordination among the various actors around the protected areas: communities, government agencies, private owners & businesses, state owned enterprises involved in development projects, local NGOs, etc. *(Support to resolve conflicts related to land tenancy… workshops, agreements, legalization activities)*		Contributes	
Integrated management of the RECAY and REA strengthened; in close coordination with Gran Sumaco National Park management, establishment of a Condor Bioreserve		Contributes	
Replicate in REA the fund for financing the implementation of the RECAY management plan		Contributes	
Strengthened participation of the various natural resource users in the sustainable use of land, forest and biodiversity		Contributes	
NGOs capable of developing and expanding environmentally sustainable natural resource management activities in the RECAY, REA and Sumaco *(Replicate FUNAN activities in the Cosanga valley and in Pintag, with support from the IIRR and the Programa de Bosques Nativos Andinos PROBONA)*	Contributes	Contributes	
Dissemination of activities and results at the national and international levels		Contributes	

RP3 – CDF, Galapagos National Park, Galapagos Marine Reserve "to promote the conservation of the Galapagos Marine Biological Reserve"			
Scientific information on marine ecosystems and marine-dependent organisms readily available both in scientific publications and in a form accessible to the Park and its collaborators in management		Contributes	
Use of the technical information for adaptive management of the marine reserve		Contributes	
Enhanced technical capabilities in marine and coastal ecosystem management for the Charles Darwin Research Station (CDRS), the Park, and user groups		Contributes	
Increased local understanding of, and support for, marine conservation		Contributes	
Fishing and tourism operators better organized and able to participate in planning and management, through recognized structures and procedures		Contributes	
Enhanced education and extension skills for personnel of CDRS and the Park		Contributes	
Increase of at least 30 percent in CDF revenue derived from visitors and "Friends of Galapagos" including revenue specifically raised on the basis of marine conservation work	Contributes	Contributes	

Annex E
Development Hypothesis and Critical Assumptions

Biodiversity Support Program – Recommendations for a Strategic Objective Result Framework, May 1997. BSP Technical Assistance Team

Critical Hypotheses

Note: These are not development hypotheses in the classic sense of the Result Framework process but, rather, elements of the general logic underpinning the approach.

a) Greatest threats to biodiversity: demands on natural resources from colonization, logging, oil exploration, mining, and infrastructure (esp. roads) built to serve these industries, often at government expense.

b) Incursions into protected areas and their buffer zones occur in response to perceived economic necessity. If people have more economic alternatives, and are aware of the benefits of longer-term NRM, then the destructive use of protected areas is reduced.

c) Better decisions on the sustainable use of natural resources depends on the perception by "target populations" of the economic and social value of the resources, including knowledge of marketing opportunities.

d) Model community-level environmental actions must be linked with national conservation initiatives. Participation is critical at the community level and among other stakeholders.

e) At the national level, NGOs, SLOs and Government decision makers must be identified and strengthened so that they can contribute to activities defining and/or enhancing legislation and regulations to achieve the IRs.

Critical Assumptions

a) The GOE continues to place a high priority upon environmental policy reform.

b) The GOE, NGOs, PVOs and other cognizant entities and the citizenry sustain their commitment to the precepts outlined in the 1996 National Environmental Action Plan.

c) Reasonably stable social, economic, political and natural conditions prevail.

d) National environmental institutions continue the process of "modernization" whereas their role is increasingly normative rather than implementational, and the process of increasing delegation of central authority and resources to local authorities and citizens continues.

e) The participation of NGOs, PVOs, local community, municipal and regional government authorities and civilian institutions remains strong; the judicial branch at every level exercises due regulatory and enforcement.

f) The projected levels of funding (and other resources) provided by donor/lending agencies are sustained.

g) The GOE 'solidarity fund' nourished by a percentage of the profits from the divestiture/privatization of state enterprises (and a source of funding for the Environmental Trust Fund) is sustained and continuously endowed at projected levels.

Annex F
Photos