



USAID
FROM THE AMERICAN PEOPLE



FINAL REPORT

USAID SUSTAINABLE FORESTS AND COASTS

JUNE 16, 2014

This publication was produced for review by the United States Agency for International Development. It was prepared by Chemonics International Inc.



The project introduced agricultural practices to farmers in the Ayampe and Galera San Francisco watersheds to help them reduce agrochemical use and support conservation.

FINAL REPORT

USAID SUSTAINABLE FORESTS AND COASTS

Contract No. EPP-I-00-06-00013-00TO #377

Photo credit:All photos courtesy of the Sustainable Forests and Coasts Project.

This report has been made possible through the generous support of the American people through the United States Agency for International Development, USAID. The opinions expressed do not necessarily reflect the views of USAID or the United States Government.



Straw harvested from toquilla palm in the coastal community of Dos Mangas. The project promoted sustainable management techniques for toquilla palms, resulting in longer cap straw for which harvesters received a better sale price on the local market.

CONTENTS

SECTION I: ACRONYMS	1
SECTION II: EXECUTIVE SUMMARY	3
SECTION III: INTRODUCTION	9
PART I: CONSERVING BIODIVERSITY: IMPROVED MANAGEMENT OF CRITICAL TERRESTRIAL AND COASTAL MARINE HABITATS	
SECTION IV: STRENGTHENING PARTICIPATION IN ACTIVITIES TO PROTECT REMAINING FORESTS	17
A. Helped communities access economic incentives to establish and protect ecological corridors	18
B. Supported crab associations to protect mangroves and their livelihoods	23
SECTION V: IMPROVING INTEGRATED PLANNING FOR NATURAL RESOURCE MANAGEMENT	27
A. Developed and implemented watershed-level land use plans	27
B. Developed and implemented community-level land use planning	29
C. Developed and implemented farm-level planning	30
SECTION VI: INTRODUCING MECHANISMS FOR IMPROVED PROTECTED AREA MANAGEMENT	31
A. Introduced land use zoning for communities residing inside PAs	31
B. Encouraged participatory planning and management tools for fisheries regulation	32
C. Regulated extraction of non-timber forest products for commercial use	33
D. Reduced negative impacts from tourism	34
E. Strengthened effectiveness of PA administration	36

PART II: IMPROVING LIVELIHOODS: LINKING CONSERVATION TO ECONOMIC BENEFITS

SECTION VII: PROMOTING SUSTAINABLE PRODUCTIVE ACTIVITIES AND ECONOMIC INCENTIVES	41
A. Disseminated cost-saving good agricultural practices	42
B. Promoted biocommerce in areas critical to biodiversity conservation and established commercial linkages	45

PART III: INCORPORATING CLIMATE CHANGE ADAPTATION INTO CONSERVATION AND LIVELIHOODS OBJECTIVES

SECTION VIII: DEVELOPING CLIMATE CHANGE ADAPTATION STRATEGIES	57
A. Strengthened adaptation efforts made by local governments and PAs	57
B. Trained residents on climate change awareness	59
C. Promoted agricultural practices that improve food security	59
D. Provided additional benefits for climate change mitigation	60

PART IV: BUILDING PARTNERSHIPS FOR BIODIVERSITY CONSERVATION

SECTION IX: SUPPORTING NATIONAL-LEVEL POLICIES	63
A. Provided technical input for a revised forestry law	63
B. Assessed Protected Forest management legislation	64
C. Designed tools and training for MAE Protected Area staff	65

SECTION X: STRENGTHENING LOCAL CAPACITY FOR NRM	67
A. Generated conservation coalitions	67
B. Built capacity of implementing partners	72

SECTION XI: CONCLUSIONS AND LESSONS LEARNED	75
--	----

ANNEX 1: PERFORMANCE INDICATORS	81
--	----

ANNEX 2: MULTIMEDIA PLATFORM (TECHNICAL DOCUMENTS) (CD)	86
--	----

SECTION I

ACRONYMS

APAREBAFIE	Coalition of the <i>Asociación de Pescadores Artesanales Bioacuaticas y Afines de Isla Escalante</i>
ATAM	Association of Autonomous Agricultural Workers of Manglaralto (<i>Asociación de Trabajadores Agrícolas Autónomos de Manglaralto</i>)
APROCA	Association of Organic Cacao Producers of Muisne Canton (<i>Asociación de Productores de Cacao Orgánico del Cantón Muisne</i>)
CIIFEN	International Research Center on El Niño (<i>Centro Internacional para la Investigación del Fenómeno de El Niño</i>)
C&D	Conservación y Desarrollo
DNB	National Biodiversity Directorate
ECOLEX	ECOLEX Corporation for Environmental Management and Rights (<i>La Corporación de Gestión y Derecho Ambiental ECOLEX</i>)
FECCHE	Federation of Chachi Centers of Ecuador
FAO	Food and Agriculture Organization of the United Nations
GIZ	Gesellschaft für Internationale Zusammenarbeit
IDB	Inter-American Development Bank
GOE	Government of Ecuador
INP	National Fisheries Institute
MAE	Ministry of Environment

MAGAP	Ministry of Agriculture, Livestock, Aquaculture and Fisheries
M&E	Monitoring and evaluation
NGO	Non-governmental organization
NRM	Natural Resource Management
PNM	Machalilla National Park
PA	Protected Area
PF	Protected Forest
PGOA	Annual Operating Management Plan (<i>Plan de Gestión Operativa Annual</i>)
PMI	Integrated Resource Management Plan (<i>Plan de Manejo Integral</i>)
PMP	Performance Management Plan
POAM	Environmental management plan (<i>Plan de Ordenamiento Ambiental</i>)
POT	Land use plan (<i>Plan de Ordenamiento Territorial</i>)
RPFMS	El Salado Mangrove Wildlife Production Reserve (<i>Reserva de Producción de Fauna Manglares El Salado</i>)
SECAP	Ecuadorian Professional Training Service
SNAP	National System of Protected Areas
TULAS	Unified Secondary Environmental Legislation (<i>Texto Unificado de Legislación Ambiental Secundaria</i>)
UOPROCAE	Esmeraldas Union of Cacao Producers' Organizations (<i>Union de Organizaciones Productoras de Cacao de Esmeraldas</i>)
USAID	United States Agency for International Development
USG	United States Government

SECTION II

EXECUTIVE SUMMARY

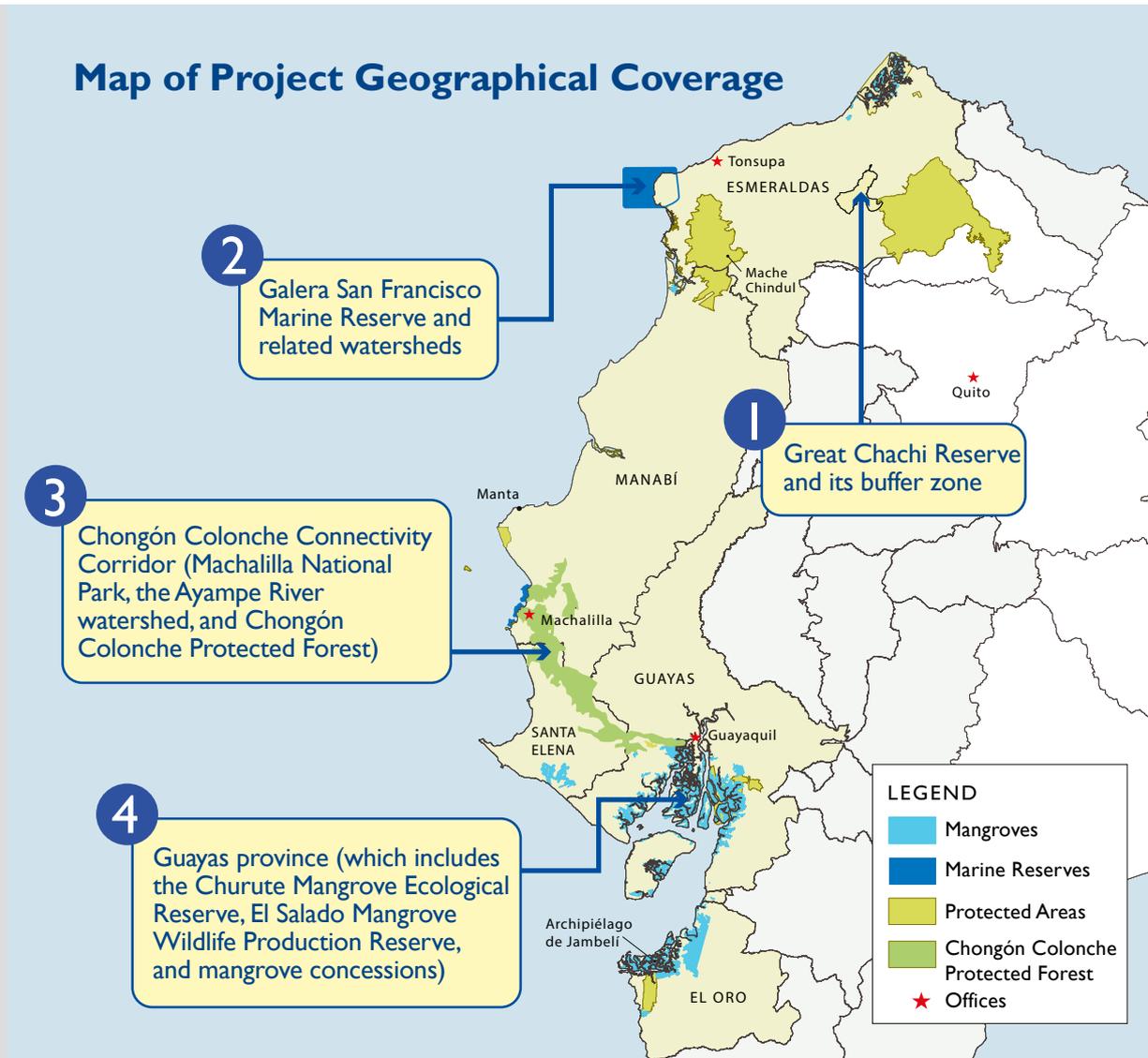
Ecuador ranks among the top 17 megadiverse countries in the world. Recognition of its vast natural heritage is enshrined in the country's 2008 Constitution, and celebrated in the constitutional principal of *Buen Vivir* — the coexistence of humans with nature. For several decades the Government of Ecuador (GOE) has led internationally recognized efforts to slow deforestation of Ecuador's natural forests and mitigate additional damage to marine and terrestrial ecosystems caused by over-exploitation of resources, population pressures, and climate change.

To complement the GOE's efforts, the USAID Sustainable Forests and Coasts Project aimed to simultaneously create long-term improvements in conservation and the lives of the poor along Ecuador's coast through a \$15.7 million initiative implemented from June 15, 2009, to June 14, 2014. The presence of large human settlements along the coast — including Guayaquil, Ecuador's largest city — have resulted in the coast experiencing some of the severest threats to biodiversity. The project worked closely with the Ministry of Environment (MAE), local governments, communities and producer groups along the coast to promote practices, processes, and GOE programs that connect economic benefits with improved management of the natural resource base upon which the livelihoods of Ecuador's residents depend.

PROJECT SITES

The project undertook a participatory process with USAID, the MAE, local governments, and communities that resulted in the selection of four geographical areas along the coast that presented a high value for conservation, and also demonstrated a high risk for biodiversity loss (Exhibit 1): Great Chachi Reserve and its buffer zone; Galera San Francisco Marine Reserve and related watersheds; Chongón Colonche Connectivity Corridor (including Machalilla National Park, the Ayampe River watershed, and the Chongón Colonche Protected Forest); and Guayas Province (including the Churute Mangrove Ecological Reserve, the El Salado Mangrove Wildlife Production Reserve, and mangrove concessions).

EXHIBIT 1:
Map of Project Geographical Coverage



OBJECTIVES AND ACCOMPLISHMENTS

The project's main goal was to conserve biodiversity in critical habitats along the Ecuadorian coast and benefit communities that live in and/or around these areas while forming lasting partnerships for conservation.

The project's implementation approach focused on reducing key threats to biodiversity. Within each site, the project established priorities and guided work planning based on analysis of the following threats to conservation: (1) loss and/or alteration of critical habitats, (2) climate change, (3) lack of economic alternatives, and (4) insufficient institutional capacity for biodiversity conservation.

In response to these threats, Sustainable Forests and Coasts developed activities that provided complementary benefits across the project's three main objectives: (1) Improvement of biodiversity conservation in critical habitats; (2) Improvement in local livelihoods; and (3) Formation of partnerships for ongoing support for biodiversity conservation. The project advanced a wide set of practices, methodologies, and tools to benefit stakeholders ranging from rural farmers to MAE staff, and also furthered multi-stakeholder platforms to bring actors together and coordinate shared conservation goals.

Biodiversity conservation: Since much of the forest coverage has vanished on the Coast of Ecuador, the project's primary objective was to preserve the remaining critical areas of biodiversity. Most of these areas are government managed Protected Areas (PA) and their buffer zones, as well as indigenous lands. Project interventions resulted in 427,227 hectares of terrestrial area of biological significance under improved management, 317,105 hectares of coastal marine area under improved management, and 4,838 people trained in natural resource management and or biodiversity conservation.

Noteworthy project successes included:

- Expansion of conservation corridors by assisting communities and individuals to apply for the MAE's *Socio Bosque* cash-for-conservation program and mangrove concession partnerships, in addition to streamlining application procedures to facilitate future applications to the programs;
- Support for two extensive monitoring and surveillance systems;
- Introduction of land use planning models and a model for determining climate change adaptation measures;
- Assistance for the creation of the Guayas Province climate change adaptation strategy; and

- The piloting of mutually beneficial approaches to the relationships between communities living in and around PAs and the government officials who monitor these areas.

Local livelihoods: The inhabitants in project sites are primarily subsistence-level farmers and fishermen in extreme poverty, and these remote areas faced commercial barriers such as high transportation costs and lack of infrastructure. Despite these challenges, the project adopted a market driven strategy to improving livelihoods and conservation by serving as an honest broker between producers and environmentally responsible markets. Many project activities took the form of pilots with selected crops in specific communities — for example, artisanal ivory nut production in Matapalo and La Crucita, and improved crab processing in 6 de Julio — with the intention of establishing good practices for the communities to build upon and lessons learned for replication elsewhere.

Noteworthy project successes included:

- Application of good agricultural practices with 185 farms in the Ayampe and Galera San Francisco watersheds, with the introduction of better water systems management, reduced agrochemical use, and other practices that resulted in cost savings and also provided co-benefits for climate change adaptation; and
- Twenty-two new commercial linkages that resulted from project support, with more than 16,225 people enjoying increased economic benefits as a result of these linkages, better management practices, and conservation incentives.

Partnerships for conservation: Initial assessments determined that insufficient institutional capacity and poor communication between stakeholders pose limitations to coordination of biodiversity conservation in the project areas. The project formed strategic partnerships with the National Fisheries Institute (INP), the Guayas provincial government, municipal governments, and communities in each of its four project sites.

With these partners, noteworthy project success included:

- Formation of five conservation coalitions with public and private sector stakeholders that continue to serve as a venue for coordinating regional conservation priorities;
- A historic survey of the red crab population, undertaken jointly between the INP and more than 940 local fishermen under the coordination of the Gulf of Guayaquil coalition;

- Inputs for the review of national-level forestry policies; and
- Piloting of a methodology for management planning in 25 PAs that has received international attention.

CHALLENGES AND LESSONS LEARNED

The project had a wide geographic scope and ambitious set of goals, given the structural barriers faced by many project beneficiaries. Increasingly severe climatic variability and the poverty in beneficiary communities were external challenges both to biodiversity and to the project itself, particularly for the design of sustainable value chains with a viable scale and scope. The process of establishing trust with stakeholders was long and experienced setbacks as a result of a general distrust of international actors in some communities, fluctuating USG-GOE relations, and regular turnover of MAE staff especially at the provincial level. The changing of attitudes and demonstration of the economic benefit of altered practices takes time, particularly when it involves agriculture and aquaculture-based activities with determined seasons and multi-year productive cycles. The project's five-year implementation period was short in the context of the long-term changes the project sought to bring about.

The project operated with an adaptive management style that allowed it to learn from failures as well as successes, and to adjust resources and activities accordingly. It worked through pilot projects that could determine potential benefits from conservation-oriented productive activities and then demonstrate the results to other beneficiaries who may have been reluctant — or unable — to invest the time and resources toward changing practices without clear incentives. The project's local partner organizations, MAE and other government counterparts, and the beneficiaries themselves will be the stewards of project's methodologies, processes, and approaches moving forward.

Lessons learned through the Sustainable Forests and Coasts Project are summarized throughout the report, and include:

- Governments seeking to effectively regulate resource use should approach communities living in and around PAs as allies for conservation, not as adversaries.
- A focus on regulating resource and land use rights, instead of regulating land ownership rights, will engage communities and provide the framework for more effective, community-based conservation strategies.
- Although land in project sites was frequently under communal ownership, “community” enterprises were rare. Support to communities for regulatory frameworks was paired with support to family units for productive activities that supplemented household income.

- Good agricultural practices and better land use planning at the watershed, community, and farm level yield important and necessary co-benefits for climate change adaptation.
- Driving site selection by conservation criteria resulted in sites whose economic growth potential was extremely limited. The project needed to orient productive projects toward the modest expansion of subsistence livelihoods, with the constraints of producers' capacity taken into consideration.
- The project's short duration limited its potential to provide the extensive assistance communities needed to build the skills for market participation and secure the sustainability of market linkages.
- The establishment and/or strengthening of local and regional cooperatives and producers' associations will give small producers leverage to eliminate middlemen and collectively achieve economies of scale.
- Close collaboration with local counterparts, including local subcontractors, helped the project introduce itself and gain beneficiary trust. Additionally, local grassroots organizations, with appropriate guidance, can advance project agendas and promote sustainability through a continual field presence in a way that national or Quito-based organizations may not be able to.
- Increasing the number of hectares of biological significance under improved management does not necessarily imply or yield greater conservation impact. Measuring the changes in management quality is as important as measuring increases in the number of hectares, given the wide range of threats that critical habitats face.

SECTION III

INTRODUCTION

The USAID Sustainable Forests and Coasts Project (“the project”) was USAID Ecuador’s first project to simultaneously create long-term improvements in biodiversity conservation and the lives of the poor. A \$15.7 million activity implemented from June 15, 2009, to June 14, 2014, the project was designed in line with USAID’s Biodiversity Code and was structured with a three-year base period and two one-year option years. Through its activities, the project engaged GOE officials and the public on the economic and environmental benefits of conservation and thereby built momentum for long-term biodiversity conservation efforts in Ecuador.

A. CONTEXT

Key coastal ecosystems in Ecuador include rainforest, dry forests, mangroves, and near-shore coastal/marine areas. Each of these ecosystems harbors world-renowned biodiversity yet face imminent danger of destruction due to encroaching urbanization and the economic pressures posed by large-scale agribusiness and the region’s poor, subsistence-level producers alike. Despite international recognition of the value of Ecuador’s biodiversity, rainforests and dry forests in particular along the coast have largely been converted to agriculture, including cacao, banana, African palm, and pasturelands. In addition, approximately 27 percent of the mangroves that once dominated long stretches of the Ecuadorian coast have been converted to shrimp ponds or deforested.

In the decade leading up to USAID’s collaboration with the GOE to design the project, Ecuador’s MAE launched initiatives that include a mangrove concessions program that gave fishing rights to crabbing associations in return for their collaboration to prevent deforestation,

and the *Socio Bosque* Program, which provides economic incentives over a 20-year period for conserving natural forests. In 2009 the GOE also designated funding for a large presidential initiative to improve infrastructure in PAs, providing an opportunity for the project to complement these efforts by supporting PA management approaches. The project worked closely with in-country partners to harness the momentum for environmental management in Ecuador and use it to propel forward approaches that will benefit residents and the natural environment alike.

B. MANAGEMENT STRUCTURE

The project was led by a chief of party with significant USAID and regional experience in natural resource management, conservation, and forestry, and a team of respected Ecuadorian professionals that included a former MAE subsecretary and a former vice-minister. The project also partnered with local subcontractors Altrópico, Conservación y Desarrollo (C&D), Bioeducar, ECOLEX, Ecobiotec, as well as international NGO Rainforest Alliance — which has a prominent Ecuadorian presence — and grantees Instituto Nazca and Ecocacao. These partners leveraged their existing field presence in project sites to provide intensive support to communities. Additionally, through a subcontract to the local International Research Center on El Niño (CIIFEN), the project advanced a participatory climate change adaptation methodology with local governments. Lastly, the core team and a cadre of Latin American consultants drew from their extensive comparative expertise to provide on-demand support for national agencies on inputs for the restructuring of Ecuador’s environmental policies and management procedures.

The project promoted local ownership of interventions from its launch, beginning with the selection of project sites and continuing with annual work planning. To select project sites, the project consulted with MAE authorities, USAID, NGOs, and government and non-governmental local stakeholders. In a joint process, these actors assessed the location of critical habitats, important bird areas, PAs, private reserves, watersheds, communities, and remaining forest coverage. Considering these factors as well as threats and opportunities along the coast, the project concentrated its efforts in the four priority sites detailed in Exhibit 2:

EXHIBIT 2:

Project Sites and Their Conservation Values

Site	Key Conservation Values
Great Chachi Reserve and its buffer zone (Chocó province)	Part of the Chocó bioregion that extends from Panama to northern Perú and which is world-renowned for its extraordinary biodiversity and concentration of endemic species. The area is inhabited primarily by the Chachi, who manage the reserve and are represented by the Federation of Chachi Centers of Ecuador (FECCHE), as well as by an Afro-Ecuadorian population. The Chachi territory is part of the buffer zone of the Cotacachi Cayapas Ecological Reserve. The private reserve and communities in its buffer zone cover more than 42.600 ha (hectare).
Galera San Francisco Marine Reserve and its watershed (Esmeraldas province)	A 54,621 ha marine reserve that provides habitat for mating humpback whales and nesting sea turtles, some of which are endangered species. The adjacent watersheds drain approximately 34,000 ha and affect marine conservation considerably as a result of pollution, deforestation, and expansion of productive activities.
Chongón Colonche Connectivity Corridor including Machalilla National Park, the Ayampe River watershed, and Chongón Colonche Protected Forest (Santa Elena, Manabí and Guayas Provinces)	<p>The corridor stretches over 350,000 ha over three contiguous Provinces. Machalilla National Park consists of 56,184 land ha (of which 40,883 lie in the Ayampe). The land area of the watershed itself covers 61,257 ha. Additionally, the park encompasses 14,430 marine ha and an additional 9,735 ha marine buffer zone is covered by the park's monitoring and surveillance system. The park contains both critical dry tropical forests and a range of endangered species, such as the Esmeraldas Woodstar hummingbird. It is a bird nesting site for species similar to those in the Galapagos Islands. It is also one of the most visited PAs on the coast of Ecuador.</p> <p>The Chongón Colonche Protected Forest extends over 3,218 ha; a main challenge the Forest faces is lack of land use regularization.</p> <p>The Ayampe watershed features large concentrations of the coastal population (e.g., Puerto Lopez), whose inhabitants generate the primary threats to Machalilla National Park, including pollution, deforestation, and illegal timber extraction.</p>
Guayas Province	Contains the Churute Mangrove Ecological Reserve, which consists of 17,000 ha of dry forests and tropical rainforests; the 9,748 ha El Salado Mangrove Wildlife Production Reserve that serves as a refuge for a variety of bird species and for bird nesting; and mangrove concession areas totaling more than 38,000 ha.

C. OBJECTIVES

With its three primary objectives, project strategies consisted of:

Conserving Biodiversity in Critical Habitats: The project aimed to preserve Ecuador's remaining natural forests by increasing citizen participation in the GOE's mangrove concession and *Socio Bosque* programs, bolstering management of conservation corridors on regional, community, and individual landholding scales, and introducing mechanisms to mitigate the negative impact of traditional economic activities within PAs.

Improving Livelihoods in and Around Critical Habitats: The project worked to increase citizen participation in GOE economic conservation incentives and promoted money-saving environmentally friendly agricultural practices, such as switching from chemical fertilizers to organic ones. The project also adopted a buyer-led strategy to improving livelihoods and conservation that fostered business linkages between producers and environmentally responsible buyers.

Developing Long-term Partnerships to Ensure Biodiversity Conservation: The project established conservation coalitions jointly with government officials, communities, and civil society organizations. The coalitions serve as a forum for stakeholders with diverse but interrelated interests in the long-term well-being of Ecuador's natural resources, and as a platform for forming public-private partnerships. Additionally, the project worked closely with the MAE to provide input for legislation and design management tools that will provide a framework for the long-term management of Ecuador's forests and protected areas.

D. THREATS-BASED APPROACH

Throughout its five years the Project designed all activities to reduce threats to biodiversity in accordance with USAID's Biodiversity Code. The code mandates the following:

- The program must have an explicit biodiversity objective; it is not enough to have biodiversity conservation result as a positive externality from another program.
- Activities must be identified based on an analysis of threats to biodiversity.
- The program must monitor associated indicators for biodiversity conservation.
- Site-based programs must have the intent to positively impact biodiversity in biologically significant areas.

To this end, the project first conducted an initial threats analysis. In addition to the threat analysis, the project conducted a series of rapid feasibility assessments in the first three months to identify limitations and opportunities for biodiversity conservation and improving livelihoods along the coast within the context of the Biodiversity Code. Based on the threats, limitations and opportunities identified, the project worked with resource users that posed threats to biodiversity yet presented opportunities for improved management of their resource base.

The project's implementation framework focused on reducing the four major threats: (1) Loss and/or alteration of critical habitats, (2) Climate change, (3) Lack of economic opportunities, and (4) Insufficient institutional capacity for biodiversity conservation. Within the three project objectives, the project designed corresponding strategies and activities to reduce the negative impact of these threats, summarized in Exhibit 3.

The project embraced an integrated approach to achieving project goals — its three contractual objectives worked together to counteract threats and safeguard the long-term sustainability of the area’s natural resources while providing economic growth opportunities for the region’s inhabitants. Although the project accumulated lessons from the application of strategies in specific sites, ultimately it is the project’s belief that — with the appropriate understanding of site-based contexts, limitations, and potential — these strategies can be replicated elsewhere in USAID’s environmental portfolio.

EXHIBIT 3:
Project Implementation Approach

Objectives	Threats	Strategies	Activities
BIODIVERSITY CONSERVATION IN CRITICAL HABITATS IMPROVED	1. Loss and/or alteration of critical habitats (Changes in land use)	1.1. Improve management of critical terrestrial and coastal marine habitats	1.1.1 Improve management of and information regarding forest products and coastal marine resources
			1.1.2 Promote conservation of forests and critical habitats, including through MAE conservation programs
			1.1.3 Improve integrated planning for natural resource management (NRM)
			1.1.4 Introduce tools for PA management
IMPROVED LOCAL LIVELIHOODS	2. Climate Change	2.1. Develop and implement climate change adaptation and response measures	2.1.1 Develop adaptation measures
			2.1.2 Provide training in climate and risk management
	3. Lack of economic opportunities	3.1. Promote productive activities and economic incentives linked to conserving critical habitats.	3.1.1 Promote good agricultural practices
			3.1.2 Identify and promote biocommerce
PARTNERSHIPS FORMED FOR ONGOING SUPPORT FOR BIODIVERSITY CONSERVATION	4. Insufficient institutional capacity for biodiversity conservation	4.1 Support to National Level Policy-Making	4.1.1 Provide forestry law input
			4.1.2 Provide protected forest management inputs
			4.1.3 Deliver PA Management tools
		4.2. Strengthen local capacity for natural resource management	4.2.1 Strengthen local administrative and technical capacity
			4.2.2 Strengthen conservation coalitions
4.2.3 Improve inter-institutional communication and coordination			

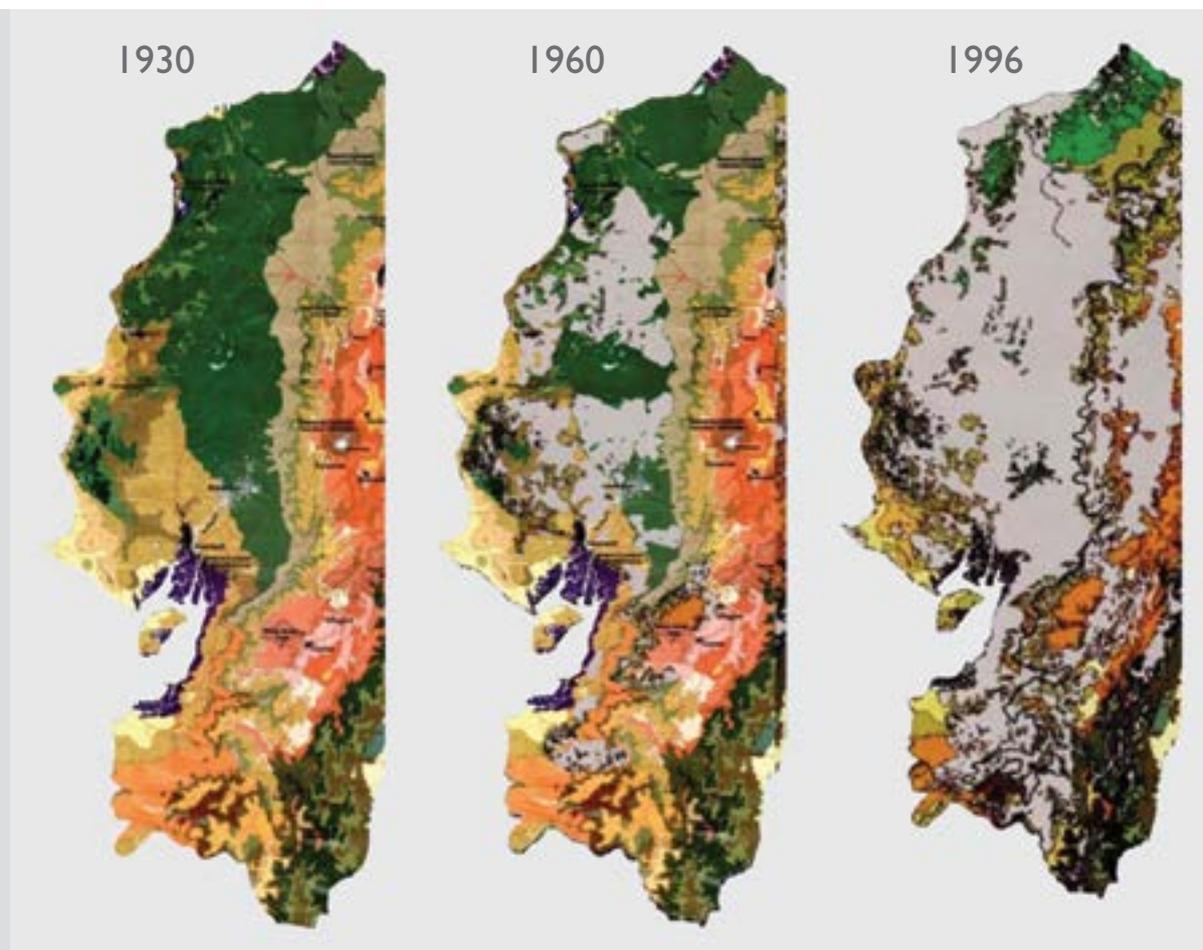
**PART I:
CONSERVING
BIODIVERSITY:
IMPROVED
MANAGEMENT
OF CRITICAL
TERRESTRIAL AND
COASTAL MARINE
HABITATS**

SECTION IV

STRENGTHENING PARTICIPATION IN ACTIVITIES TO PROTECT REMAINING FORESTS

Over the twentieth century, Ecuador's coast experienced a drastic decline in vegetation coverage (Exhibit 4). The extent and speed of deforestation makes the preservation of remaining forested areas critical for biodiversity conservation. From the project's first months, it supported the GOE in protecting what little forests remained along the coast by initiating work with two MAE programs: *Socio Bosque* and mangrove concessions. The project's support for these MAE programs allowed it to gain the backing of the GOE and to complement the efforts of ongoing strategies instead of diverting energies to competing initiatives. Technical assistance to participants in these programs through project subcontractors, project staff, and multi-stakeholder conservation coalitions evolved into one of the principal avenues for the project to promote conservation while encouraging vulnerable residents to associate economic benefits with improved resource management. The project complemented support to beneficiaries of these programs with support to other landholders on land use planning and good agricultural practices, with the goal of strengthening conservation corridors across project sites.

EXHIBIT 4:
Vegetation Coverage in 1930, 1960, and 1996



Source: Sierra, Rodrigo., et al. 1999. *Propuesta Preliminar de un Sistema de Clasificación de Vegetación para el Ecuador Continental*. INEFAN/GEF-BIRF Project and Ecociencia: Quito.

A. HELPED COMMUNITIES ACCESS ECONOMIC INCENTIVES TO ESTABLISH AND PROTECT ECOLOGICAL CORRIDORS

Given that remaining forest cover exists in patches, the project selected areas to provide technical assistance with the goal of strengthening conservation in three critical ecological corridors (see maps of conservation corridors in Exhibit 5). Corridors allow ecosystems to remain intact, permit movement of species, and link populations of plants and animals throughout a larger landscape, all of which prevent further loss of biodiversity.¹ The project helped families and communities designate conservation areas within their farms and/or their communal boundaries, keeping the corridors in mind. The first, fundamental step in many areas was

1. For a discussion of conservation corridors, see Worboys, Graeme L., Francis, Wendy L., Lockwood, Michael, eds. 2010. *Connectivity Conservation Management: A Global Guide*. Earthscan: London.

supporting communities to enter the MAE's *Socio Bosque* cash-for-conservation program. In the Galera San Francisco watershed, some farmers that the project worked with through grantee Ecocacao received similar technical assistance for them to preserve ecological corridors outside of *Socio Bosque*, including voluntary designation of conservation areas and improved agricultural practices on their farms.

In 2008 the MAE had launched *Socio Bosque*, a forest conservation program that provides cash payments for a period of 20 years to individuals and communities that designate natural forest areas within their lands for conservation. While the program had a strong regulatory backing, it was short-staffed, and communities had few resources and lacked the knowledge to meet MAE's participation requirements. The MAE initially requested project support to promote its program and to facilitate the communities' decision-making process to join, which had proven to be a greater challenge than the MAE had anticipated.

Helping community members make a joint decision to enter the program was the first challenge. Members varied in their aspirations for forest use or their benefits from timber sales, and the general misconception that *Socio Bosque* was a ploy for a government land expropriation circulated through communities. *Socio Bosque* payments work on an inverted sliding scale that ranges from \$60/hectare for individuals who committed fewer than 20 hectares, to \$.70/hectare for communities committing 10,000 hectares or more.² For small areas, the incentive promised was less than the revenues gained from occasional timber sales in the short-term, although frequently-unregulated timber extraction and resultant deforestation restricts the long-term income stream potential of forested land.³ *Socio Bosque* encourages people to consider the long-term benefits of maintaining their forested lands. Through Altrópico and ECOLEX, who had relationships with local communities, the project gradually increased local interest and trust in *Socio Bosque* in the Ayampe and Galera San Francisco watersheds and for eight communities in the Great Chachi Reserve.

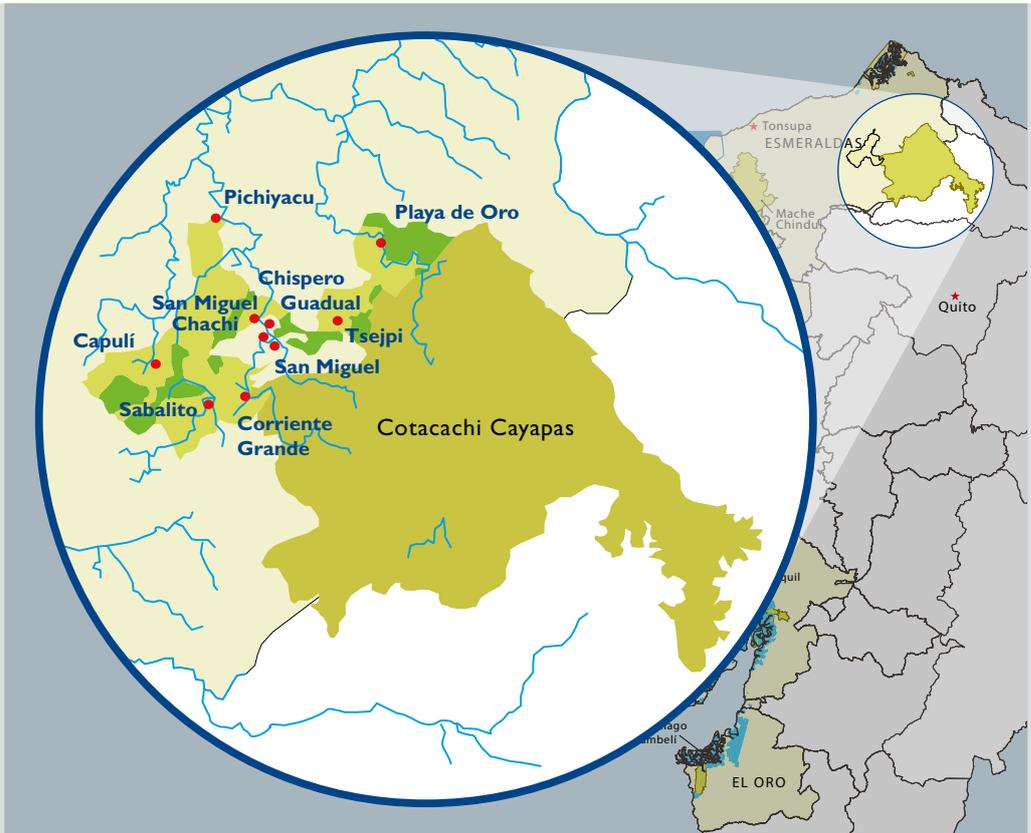
2. Climate and Development Knowledge Network. 2012. "Private conservation agreements support climate action: Ecuador's *Socio Bosque* Program." DFID: London, UK.

3. Although the MAE regulates timber extraction, the high costs of applying for a permit dissuaded almost 70% of unlicensed timber producers from submitting a management plan, according to a project survey. See USAID Sustainable Forests and Coasts, 2011. "Sondeo sobre la percepción de la rentabilidad del aprovechamiento de madera por parte de pequeños productores en Ecuador." Available through the USAID Development Experience Clearinghouse.

EXHIBIT 5:
Conservation Corridors

1

Conservation Corridor in the Great Chachi Reserve and the buffer zone of the Cotacachi-Cayapas Reserve



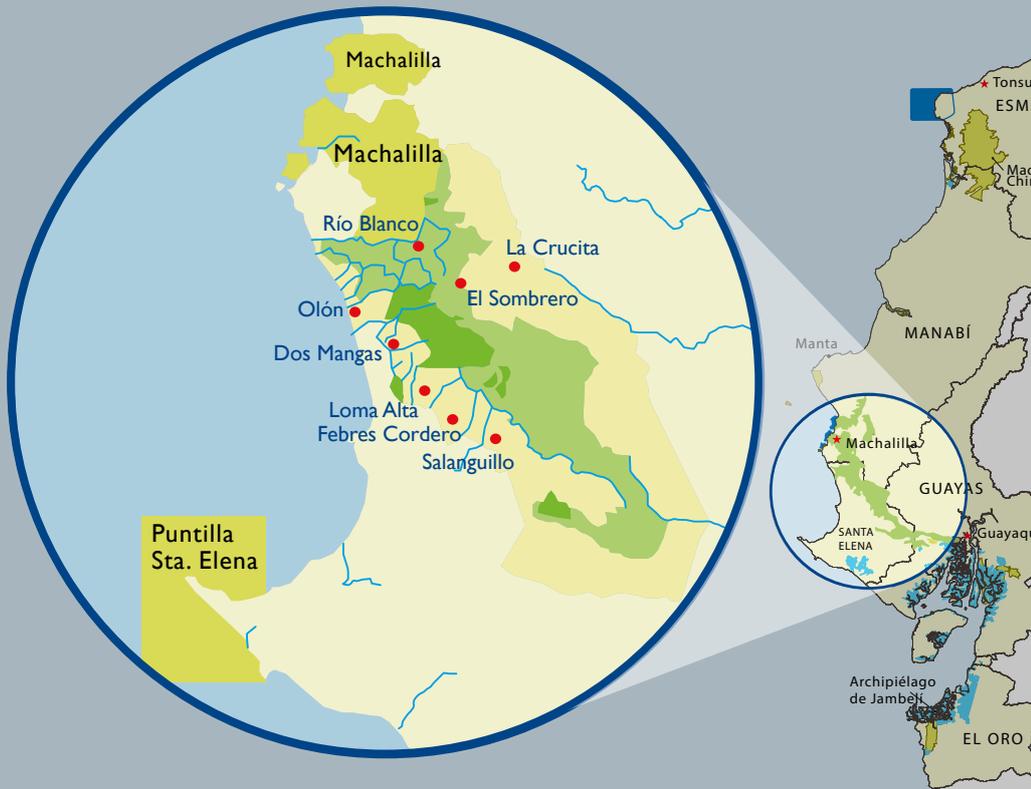
2

Conservation Corridor in the upper Galera San Francisco Marine Reserve watershed



3

Chongón Colonche Connectivity Corridor (Machalilla National Park, the Ayampe River watershed, and Chongón Colonche Protected Forest)



Helping applicants through the multi-step application process posed additional challenges. In some cases, aspiring participants needed to obtain a land title, which remains a complex legal process in Ecuador. ECOLEX applied its land tenure experience to assist with titling more than 6,000 hectares, which also had the benefit of increasing property values. The project provided guidance on the development of requisite investment plans in which communities or individuals indicate how they will use the cash incentives to support their development goals. *Socio Bosque* funds can also be used for conservation efforts such as forest rangers, community health and education projects, as well as productive projects like community-based ecotourism.

The project continued support to improve the production and quality of pilot productive activities such as ivory nut, cap straw, and bamboo after applicants had entered the program (see Section VII.B), in order to add value to *Socio Bosque* through additional activity revenue. For example, in the Great Chachi Reserve, Altrópico provided assistance on incorporation and maintenance of productive activities with *Socio Bosque* fund for farm fishing (Guadual, Pichiyacu, and Playa de Oro), cacao harvesting (Sabalito, Calle Mansa and Chispero), and ecotourism (San Miguel and Playa de Oro).

“With the Ministry of Environment and *Socio Bosque*, the community is achieving great success... we live by protecting the forest.”

— GIOVANNY CATUTO,
SOCIO BOSQUE
PARTICIPANT AND FORMER
PRESIDENT OF THE LOMA
ALTA COMMUNITY

Once *Socio Bosque* approves the application, which includes legal paperwork, maps, and the investment plan, it signs a 20-year conservation agreement with communities or individuals in which it commits to deposit funding for community development goals every six months. The project concentrated efforts on community landholdings, but noted based on *Socio Bosque* experience that after communities joined the program, they often struggled to manage and invest the cash payments. In response, the project provided further coaching to establish internal participatory procedures for budgeting and spending funding that increased community participation, especially of women. For example, the project piloted developing internal regulations in several Chachi communities, which provides a model for internal accounting and accountability to assure proper use of *Socio Bosque* funding. It also collaborated with the MAE, local communities, and other donors to train community forest rangers, design patrol routes, and establish coordination channels with local authorities and thereby help communities fulfill their control and surveillance commitments.

All *Socio Bosque* applicants along the coast have received external support to meet MAE requirements, and the project played a major role in doing so from 2009 to 2014. By taking a snapshot of participation levels in 2014, the *Socio Bosque* Program indicated that in the Great Chachi Reserve and its buffer zone, 78 percent of land registered under the *Socio Bosque* Program was a result of project support. This was the case for 97 percent of registered land in the Chongón Colonche Connectivity Corridor and 100 percent of registered land in watersheds adjacent to the Galera San Francisco Marine Reserve. In all, project support allowed 51,978 hectares of natural forest to become registered for protection under the *Socio Bosque* program, for which \$11.6 million in cash-for-conservation payments have been committed for a 20-year period, benefiting more than 15,000 people. This has helped *Socio Bosque* lay a solid foundation for program implementation along the coast for years to come. Of these committed funds, \$1.9 million were paid out during the project's period of performance. Most importantly, by collaborating with *Socio Bosque* to streamline and simplify the paperwork needed for beneficiaries to enter the program, the project also made it easier for communities to participate in the future.



As part of their commitment to the *Socio Bosque* program, Chachi community members in San Miguel design communal control and surveillance measures. With technical assistance and equipment provided by the project, 15,260 hectares of the Great Chachi Reserve are now under a monitoring and oversight system that allows Chachi forest patrols to monitor their forests and report infractions to local authorities.

B. SUPPORTED CRAB ASSOCIATIONS TO PROTECT MANGROVES AND THEIR LIVELIHOODS

In Ecuador mangroves belong to the government and are protected by the Constitution. They prevent shoreline erosion, control water quality and contribute to efficient carbon sequestration, offsetting greenhouse gas emissions. They also support livelihoods of local communities that depend on mangroves for fishing, crabbing, and clamming. More than 4,000 crabbers and their families in the Gulf of Guayaquil depend on red crabs, which inhabit the mangroves along Ecuador's coast and are the basis for a \$100 million dollar industry. Over the past 40 years, threats from deforestation and overfishing have jeopardized Ecuador's mangroves and reduced their area by nearly 30 percent. Additionally, Ecuador's shrimp farming industry historically depended on clearing mangroves for shrimp pools, causing conflict with crabbers. The Gulf of Guayaquil is currently home to 70.1 percent (more than 105,000 hectares) of the country's mangroves.

In 1999 the MAE established a program for sustainable use and custodianship of the mangroves (*Acuerdos de Uso Sustentable y Custodia de Manglares*) in which the MAE granted exclusive custodianship and fishing rights to crabbing associations for 10-year periods. Combined with a decrease in shrimp production in the late 1990s, the introduction of the concession program marked a period of reversal in the deforestation trend. The viability of crabbers' participation in the program, however, was weakened by a very slow formulation of the legal and technical basis upon which to sustain the agreements and in lengthy consultation within the public and private sectors over who may be eligible. Both sources of uncertainty resulted in the granting of very few concessions. After 2007 new MAE leaders renewed their commitment to the program, and began seeking out partners for technical assistance to concessionaires — among them, the Sustainable Forests and Coasts Project.

In the project's first six months, it signed memoranda of understanding with three fisherman's groups around the Churute Mangrove Ecological Reserve to help the concessionaires renew their expiring concessions and also to submit proposals to the MAE for surveillance funding. An early project assessment determined that patrols run by concessionaires were poorly organized, needed equipment, and lacked protocols for alerting local authorities to problems. Project assistance rapidly expanded for comprehensive support of a monitoring and enforcement system. A communications network that now extends over more than 764,000 hectares in the Gulf of Guayaquil area uses marine radio frequencies to allow concessionaires to notify authorities of infractions or offenders in real time. In addition, the system provides a format for reporting findings, procedures for interventions, responsibilities for patrols, and an annual operations and equipment maintenance budget. Together with the MAE, and with additional contributions from NGO WildAid, the project provided necessary equipment such

as radios, motors, and antennas to implement the system. The project also provided nine dedicated boats and seven motors for conducting monitoring activities. Lastly the project partnered with the Ecuadorian Professional Training Service (SECAP) to provide training on outboard motor maintenance to ensure the motors' longevity. As concessionaires are the primary implementers of the monitoring system, the strengthening of the system's tools and protocols have transformed the role crabbers play in protecting mangroves into one of active stewardship.

Parallel to building up a monitoring system, the project began providing assistance to crabbing organizations who wished to apply for or renew their concessions. Many groups have limited access to education and basic services, and lacked the know-how to develop management plans that are required in order to apply for a concession. The MAE, aware of crabbers' limitations, requires that as part of their application the crabbers' associations sign a technical assistance agreement with an NGO or university who provides technical assistance for concession management for a two-year minimum period. In reality, crabbers typically live in remote communities, some only accessible by boat, and these advisors could only make limited contributions due to prohibitive transportation costs. The project supplemented the support offered by the MAE-mandated advisors to help communities achieve the establishment or renewal of 31,559 hectares of concessions throughout the Gulf of Guayaquil, more than half the national total of 55,515 hectares of mangroves under concessions.⁴ In the last two months of the implementation period the project provided assistance to six additional associations (three in El Oro Province and three in Guayas Province) to prepare applications for new concessions totaling 3,571 hectares, of which four (totaling 2,111 hectares) were submitted to the MAE within the implementation period.

The main aspects of the concession application process consisted of working with crab associations to develop management plans, design internal association regulations for respecting concession requirements, and map the concession area to determine crabbing sites and no-take zones. The project with subcontractor Bioeducar provided assistance throughout the Gulf of Guayaquil to increase the management capacity of 16 of the 18 concessionaires in Guayas as well as for one concessionaire in El Oro; in addition to working directly with concessionaires the project also provided management resources for the local advisors assigned to help concessionaires. Capacity building included increasing organizational capacity to report deforestation, overseeing compliance to closed crabbing seasons, and implementing sustainable fishery prac-

4. Bravo, Manuel. 2013. "Alianza Público Privada para la Gestión de los Manglares de Ecuador: Los Acuerdos para el Uso Sustentable y Custodia." USAID Sustainable Forests and Coasts. Available through the USAID Development Experience Clearinghouse. As of 2013, between Guayas and El Oro provinces the government had granted 42,033.2 hectares of concessions in the Gulf of Guayaquil, more than three-fourths of the total national area under concession.

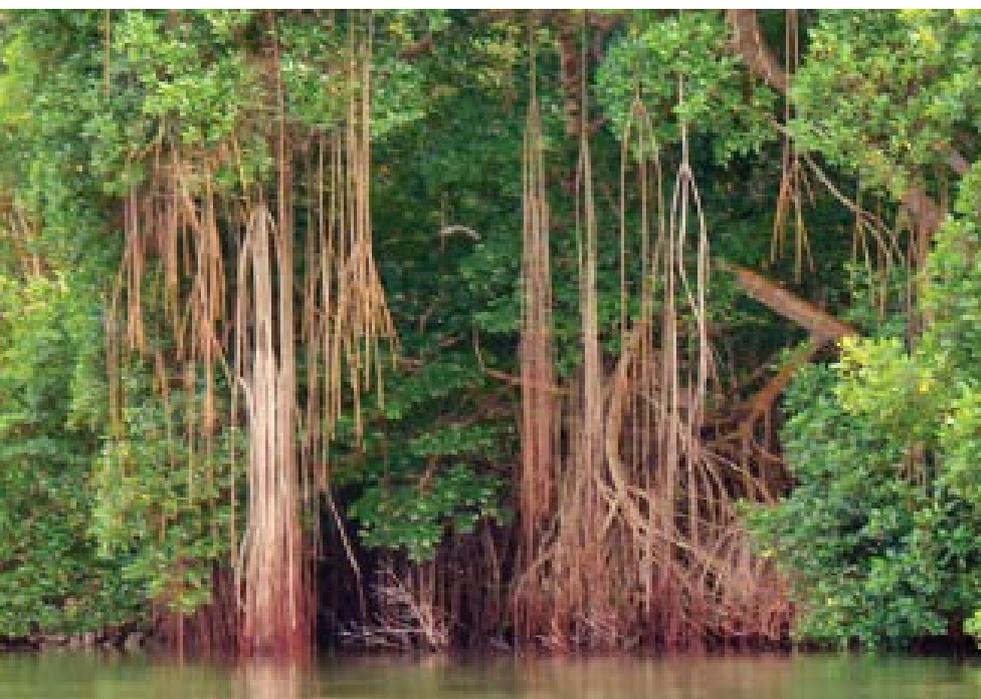
"Now we aren't afraid to speak up. We know that the law protects us so we can defend our mangroves. I promise we will continue to care for the mangroves."

— ANTONIO PINTO,
ASOCIACIÓN DE
COMERCIANTES DE
CANGREJOS MINORISTAS
LOS CEIBOS

tices. Training in organizational management and basic accounting practices improved the concessionaires' institutional capacities to run meetings, make decisions, and collaborate with fishery, environmental, and accounting authorities.

To contribute to the sustainability of the mangrove concession program, the project worked with the MAE to simplify its complex reporting requirements, making it more feasible for crabbers — many with only a basic education — to comply. The project also provided suggestions for clarifying and simplifying the role of local advisors that are under consideration by the MAE, given that the limited supply and availability of technical advisors creates a bottleneck for associations wishing to complete the application process. Today, although the project notes ongoing difficulties with reporting among concessionaires in general, its support has empowered a substantial number of crabbers to collaborate and communicate with authorities and has positioned them to support mangrove conservation and protect their future livelihoods (see box for a crabber's observations).

The project also provided advisory services to the MAE for the design of a cash-for-conservation program similar to *Socio Bosque*, envisioned as *Socio Manglar*. Currently, the concessions themselves do not convey financial benefits directly to the crabbers. *Socio Manglar*, approved by the GOE in December 2013, will operate on a similar system to *Socio Bosque* and provide crabbers with additional economic incentives for mangrove protection. The financial support will help crabbers to cover costs associated with equipment maintenance and monitoring, in addition to providing opportunities for investment in community services. The project created a roadmap for implementation of the program, and inputs for its design. Following the Ministerial Agreement that formally created the program, the project also reviewed the draft operational manual for the program, at the MAE's request. As of the end of the project the MAE was continuing to define program procedures, including determination of who will be eligible to participate.



The project helped 19 crab associations access more than 31,000 hectares of mangroves concessions, more than 58 percent of the concessions in the Gulf of Guayaquil. The concessionaires receive exclusive fishing rights for 10 years in exchange for performing monitoring and surveillance duties, thereby assuming an active role in the stewardship of the ecosystem upon which they depend. Mangroves shelter red crab, prevent shoreline erosion, safeguard water quality, and sequester carbon.

To build a longer-term support network for concessionaires, the project spurred the creation of three conservation coalitions which have ongoing conservation of the mangroves at the heart of their agendas, as described with more detail in Section X.A. The Mondragón Island Coalition and the Coalition of the *Asociación de Pescadores Artesanales Bioacuaticas y Afines de Isla Escalante* (APAREBAFIE) support the maintenance of surveillance and enforcement systems in their concession zones.

The third and largest coalition, the Gulf of Guayaquil coalition, coalesced around a participatory Red Crab Program to monitor crab stocks. The project and the National Fisheries Institute (INP) signed an agreement with seven crabbing associations in 2011. The project and the INP trained more than 940 crabbers to collect data on the size, gender, and quantity of crabs captured, and also provided the INP with data-analysis equipment. In 2013, the Red Crab Program became one of the INP's permanent activities, which has tripled in size with 26 crab organizations reporting data voluntarily. The INP leads regular meetings with crabbers to discuss research results. The program gave the INP a cost-effective data-gathering team. In exchange the crabbers gained a valuable understanding of findings as a basis for their internal regulations like enforcing closed seasons, setting minimum catch sizes, and allowing female crabs to reproduce.

SECTION V

IMPROVING INTEGRATED PLANNING FOR NATURAL RESOURCE MANAGEMENT

A long history of development projects organized by sector (forestry, agriculture, or livestock) or by crop (coffee, cacao, etc.) has contributed to a fragmented view of the farm's productive value. An approach that prioritizes short-term productivity gains unintentionally contributes to degradation and misuse of farms' natural resource base.⁵ In response, the project introduced a holistic approach to land management and environmental planning at the watershed, community, and farm level that relates productive activities and conservation needs.

A. DEVELOPED AND IMPLEMENTED WATERSHED- LEVEL LAND USE PLANS

Long-term environmental planning should guide conservation initiatives. Watershed-level planning helps address the root causes of biodiversity loss and draws connections between socio-economic needs and environmental services.⁶ The watershed is an area in which all surface water flows into a single set of streams; as a result, what happens in the upper watershed affects conditions downstream. In the watersheds where the project worked, local decision-makers rarely worked together across jurisdictional boundaries to identify areas in need of protection or to prioritize environmental threats. Fragmented management leaves forests, water supplies, and endangered species vulnerable to deforestation, pollution, and extinction.

5. See, for example, Kleinschmit, Jim. 2009. "Agriculture and Climate: The Critical Connection." Institute for Agriculture and Trade Policy. Available at <http://www.globalpolicy.org/world-hunger/environmental-degradation-and-climate-change.html> and Smijj, Helen F., Sullivan, Caroline A. 2014. "Ecosystem services within agricultural landscapes—Farmers' perceptions." In *Ecological Economics*, Volume 98, February 2014, Pages 72–80.

6. FAO. 2007. "Why Invest in Watershed Management?" FAO: Rome. Available at <ftp://ftp.fao.org/docrep/fao/010/a1295e/a1295e00.pdf>

In the Galera San Francisco Reserve watershed, the Great Chachi Reserve, and the Ayampe watershed, the project worked with local communities and authorities to develop Environmental Management Plans (*Planes de Ordenamiento Ambiental*, or POAMs) at the watershed level. The project had mixed success.

In Esmeraldas, the project's goal was to design a POAM for the watershed of the Galera San Francisco Marine Reserve, but encountered resistance to collaboration between the two participating municipal governments of Atacames and Muisne and also faced rumor mongering by NGOs opposed to USG-funded projects. Other NGOs and local community groups in the Galera San Francisco watershed area did come together to identify major threats, priority conservation areas, and key actions needed, and the project distributed the document among stakeholders. Without the support of municipal governments, enforcement of the POAM will be limited. Subcontractor Rainforest Alliance took the lead on the POAM for the Great Chachi Reserve, which was on a smaller scale than the other two and focused on land uses by the indigenous Chachi who are communal landholders in the reserve.

In contrast to the limited success in Esmeraldas, the Paján, Jipijapa, Santa Elena, and Puerto López municipalities of the Ayampe watershed joined together to identify major threats, priority conservation areas, and key actions needed to reduce the threats to biodiversity across the watershed's more than 61,000 hectares. The team developed an action plan to address the environmental threats that included not only activities and a timeline for implementation, but also named a person or organization responsible for each activity and established a process for keeping the plan up to date. Although the POAMs were voluntary and do not imply additional municipal funding, Jipijapa benefited from the municipality's environmental department representative serving as a consistent champion of the POAM within the local municipal office (see box for her observations); Jipijapa went a step further and passed a municipal ordinance establishing conservation priorities under the autonomous government structure of the municipality. The POAMs also provided Ayampe municipalities with inputs for the government-mandated land-use plans (*Planes de Ordenamiento Territorial*, or POTs).

"The development of the Environmental Land Use Plan has been a wonderful experience because it has allowed us to come together and collaborate with local actors. Within our own communities we came together, organized collectively and with everyone's participation we were able to identify the most relevant needs of each sector."

— LOURDES CHELE:
REPRESENTATIVE, ECOLOGY
AND ENVIRONMENT
DEPARTMENT,
MUNICIPALITY OF JIPIJAPA

The project observed that, paradoxically, the areas with highest threats to conservation frequently did not have an NGO presence due to the complexity of the conservation threats and used the POAMs as a tool to identify sites where the project could fill in institutional gaps and provide technical assistance. With the credibility vested in it by their work with municipal governments, the project could then enter sites such as the communities of Dos Mangas in the Chongón Colonche Protected Forest and La Crucita in the Ayampe watershed, where agrochemical use posed a major threat to upstream water sources. Project interventions in these sites to reduce agrochemical use and promote improved resource management is described in more detail throughout Part II.



A farmer in the La Crucita community in the Ayampe watershed monitors the growth of bamboo cane. The project provided assistance to farmers to design farm-level management plans and to improve management of revenue sources such as bamboo cane, ivory nut, and cap straw, with the goal of reducing damage to the resource base and increasing the market value of the harvested products.

B. DEVELOPED AND IMPLEMENTED COMMUNITY-LEVEL LAND USE PLANNING

In Ecuador, communally-owned territories must obtain MAE approval for an Integrated Resource Management Plan (*Plan de Manejo Integral*, or PMI) in order to harvest any natural resources. The PMI serves various purposes, chief among them ensuring proper natural resource management and for monitoring and control of resource extraction. Even though required by law, PMIs were not widely used as a regulatory instrument because of the cost to prepare them, and the need for authorities to monitor their implementation. The project introduced a lower cost model for developing and using the PMIs that involves the communal local council (*Cabildo*) in overseeing implementation at the family farm level. The project nested the PMIs within the watershed-level POAMs.

The project worked with the MAE and the Dos Mangas community in the Ayampe to pilot this new PMI model. First, farmers collaborated with the *Cabildo* to complete a communal plan, which included a clear zoning of land uses across the community. The *Cabildo* directly registered the communal plan with the MAE, and then assumed responsibility for approving individual farm management plans within its jurisdiction, based on the communal plan. For example, farmers who desire to use timber resources need no longer incur the costs of applying to the regional MAE offices for a permit. Instead, they seek permission from the *Cabildo*, who counts the permit against the pre-authorized number of permits granted by the MAE in the communal plan.⁷ Consolidating PMIs under *Cabildo* supervision assisted the MAE, which simply does not have the resources and manpower to review, approve, and supervise dozens of individual farm-level PMIs. The new model also reinforced local governance by formally delegating authority to approve and monitor PMI implementation. Additionally, the *Cabildo* can supervise the allocation of *Socio Bosque* funds designated for communal forest rangers to monitor use of timber and non-timber forest products for personal and commercial purposes according to the *Socio Bosque* investment plans.

7. The total cost of preparing and the MAE approving the Dos Mangas community PMI was \$1,074.80. Had each farmer prepared a PMI, the per farmer cost would have been approximately \$333.71, for a total cost of \$15,016.80 for the 45 farmers in the community.

C. DEVELOPED AND IMPLEMENTED FARM-LEVEL PLANNING

The project introduced the use of integrated farm management plans to help the farmers throughout the project's implementation area create zones on their land for productive purposes and set aside areas for conservation. By the end of the project 95 farms in the Ayampe/Chongón Colonche area and 96 in the Galera San Francisco watershed implemented integrated farm management plans over 5,236 hectares. The goal of the farm level plans, as discussed in more depth in Section VII.A, is to maximize productivity and support conservation through good agricultural practices. Similar to the communal PMIs, the farm-level plans provide an integral plan for natural resource management that takes into consideration both productive and conservation goals in the medium- and long-term, and is nested within PMIs and the larger-scale watershed management goals.

SECTION VI

INTRODUCING MECHANISMS FOR IMPROVED PROTECTED AREA MANAGEMENT

Environmentalists consider PAs the best method of preventing extinction of many threatened or endangered species.⁸ However, the designation of an area as protected belies the very real pressures these lands continue to face. People reside within approximately 80 percent of PAs in Ecuador, most in communities established long prior to the creation of the PA. In most cases the survival of neighboring communities, often poor, also depends on PA's natural resources, such as timber, non-timber products, and fish. In addition to deforestation and overfishing, common threats include pollution (such as pesticides from neighboring farms), poorly planned tourism, and insufficient resources or capacity to assure adequate PA management. The project's PAs work concentrated in four major coastal PAs: the Galera San Francisco Marine Reserve, Machalilla National Park (PNM), Churute Mangrove Ecological Reserve, and the El Salado Mangrove Wildlife Production Reserve (RPFMS). The project partnered with the MAE to launch pilot activities that sought to transform the human residents and visitors from conservation obstacles into conservation's key allies.

A. INTRODUCED LAND USE ZONING FOR COMMUNITIES RESIDING INSIDE PAs

Throughout Latin America standard approaches to addressing the presence of communities within PAs are costly or complex, and have included changing PA limits, buying land, relocating settlements, and regularizing property titles within a PA. As a result, authorities

8. See, for example, Rodrigues, Ana S. L. et. al. "Effectiveness of the global protected area network in representing species diversity." In *Nature*, Vol 428, April 8, 2004. Pages 640 – 643.

have largely ignored these communities and the threats they posed.⁹ The project introduced land use zoning as a novel, more feasible option based on regulating land *use* instead of land *ownership*. Building on close coordination between the PNM park director, the MAE's National Biodiversity Directorate, *Socio Bosque*, and Manabí Province's directorate, the project initiated work with the Agua Blanca community in the PNM as a pilot. The project and community members determined which areas members used for housing, for subsistence farming, or for livestock, and based on these determinations they designated a complementary area for conservation. Together, they created a zoning plan that represented the proposed land uses.

With the submission of a zoning plan, *Socio Bosque* has the authority to enter into a conservation agreement with communities in PAs and provide incentive payments. The larger the conservation area is, the higher the incentive. Local NGOs in the area of Agua Blanca opposed to government initiatives, however, raised claims that the *Socio Bosque* proposition was a smokescreen for a land appropriation, exacerbating divisions in the community between those that wanted to proceed with the agreement, and those who did not. As of the project's completion, Agua Blanca was still deliberating internally on whether to agree to commit to *Socio Bosque*, and this emphasizes the ongoing need for *Socio Bosque* to educate the population on its goals and intentions. However, the zoning exercise in of itself provides value to the community by allowing members to structure land uses – including agriculture, livestock raising, and tourism – based on the needs of the population in balance with the regenerative needs of forested areas.

B. ENCOURAGED PARTICIPATORY PLANNING AND MANAGEMENT TOOLS FOR FISHERIES REGULATION

Unregulated artisanal fishing within PAs is another threat to fragile ecosystems that had not typically been addressed by authorities. The project worked with fishermen and crabbers in three PAs to build awareness of sustainable fishing practices and zoning, with mixed results.

Churute Reserve: Seventeen crabbers associations extract crab from within the Protected Area (which, as a PA, is not an eligible area for a mangrove concession). The project's coordinator for the Gulf of Guaya-

9. Observation based on the experiences of the technical team and ECOLEX. Historically, PA legislation was generally based on a terra nullius concept in which lands not legally titled by the state were public property and available for PA designation. Refutation of this principle, and acknowledgement of the permanent presence of communities in PAs and the proactive role they can play in PA management has been on the rise for the last decade, although focused on indigenous communities as well as the importance of land title as the basis for tenure rights. See Oviedo, Gonzalo. 2002. "Lessons learned in the establishment and management of protected areas by indigenous and local communities, South America." International Union for Conservation of Nature. As noted by Daniel Brockington and James Igoe in 2006, the body of literature on conservation displacement more specifically is quite small. See "Eviction for Conservation: A Global Overview." *Conservation & Society* 4:3. Pages 424 – 470.

aquil carefully worked with the groups and reserve staff over a three-year period to zone the reserve for crab extraction — not an easy task given the uneven distribution of crabs across the area. The negotiations resulted in a proposed licensing system in which each group had a defined name, number of members, and permissible crabbing zone. The crabbers' proposal for new regulations and guidelines to maintain fishing permits is currently with the MAE for consideration.

PNM: The project worked with fishermen to create a proposal for fishing regulations. After two years of negotiations, the project obtained consensus among communities and with the MAE. The fishermen have committed to enforcement of the regulations once the MAE introduces them officially.

Galera San Francisco: The project struggled to maintain support for regulatory reform within the reserve, largely because of regular turnover within reserve leadership. The frequent changes disrupted the negotiation process and impeded the building of trust with the fishermen. As a result, the project provided training to fishermen in best fishing practices, but could not continue negotiations for regulatory reform.

C. REGULATED EXTRACTION OF NON-TIMBER FOREST PRODUCTS FOR COMMERCIAL USE

The scarcity of income-earning opportunities near PAs causes communities to place pressure on the income-generating potential of natural resources in these fragile ecosystems. Despite legal prohibitions against resource extraction within PAs, communities continue to do so, placing strain on the PA management to monitor, the resource base to thrive, and the communities' potential to secure their livelihood in a legal manner. The project piloted a solution to alleviate this pressure.

The Matapalo community of the PNM had historically harvested ivory nut (*tagua*), but ran the risk of having their harvests or vehicles confiscated by park rangers. The project worked with the MAE and the community to inventory the ivory nuts' quantity and location. The project also trained community members and PNM forest rangers on management methods, including where, when, how, and at what size ivory nut and the leaves of the tree could be harvested — including the principal that only mature ivory nut clusters that have fallen from the trees should be collected. Based on the inventory and establishment of reasonable management practices, the MAE signed a cooperation agreement with the Matapalo community association that for the first time allows legal extraction of ivory nut for commercial purposes within the PNM. The economic incentive for Matapalo is formalization of a traditional source of income, and consequently the lower risk associated with harvesting. The methodology showcased the careful balance of assessing both community and conservation needs in determining reasonable and adequate management practices. In the past, government agencies viewed communities as interlopers; whereas with

the replication of the Matapalo model communities and the GOE can collaborate to both support livelihoods and manage natural resources adequately.

In interviews with the 156 families residing inside and out of the PNM who received project technical assistance for extraction and commercialization of ivory nut, 90 percent of them applied the project-promoted better management practices that will improve the sustainability of the extraction activity. The income derived from ivory nut extraction is complementary and seasonal to other sources of income. The families, who represent 23 percent of families dedicated to ivory nut harvesting in the Ayampe watershed, engaged in this activity reported that they are obtaining an average increase of \$53 dollars over the previous average annual income of \$1,356.

The project operated under the hypothesis that the willingness of communities to continue supporting good management practices relies on clearly associated economic benefits. The hypothesis was based on project staff's previous experience in the Maya Biosphere Reserve in Guatemala's Petén region under USAID's Community-based Forestry Management in the Petén project, in which forestry management concessions improved the willingness and ability of communities to contribute to forest preservation.¹⁰ Although the period of performance of the project was too short to track the long-term results for conservation of this approach in the Ecuador context, the collaboration shown by the ivory nut harvesters points toward the potential benefits to be gained through replicating this process.

Most importantly, the project helped break the traditional thinking of PAs and communities as adversaries, and demonstrated instead that PAs can convert communities within their borders into partners in the PA's protection while allowing the communities to maintain their traditional livelihoods.

D. REDUCED NEGATIVE IMPACTS FROM TOURISM

Unregulated tourism, especially in fragile ecosystems, also poses threats to Ecuador's PAs. The project worked with two popular tourism sites within the PNM, Isla de la Plata and Los Frailes beach, which are two of the most visited sites along the Ecuadorian coast. In 2012, these two areas received more than 150,000 visitors, three times the 2009 figure of 47,296 visitors. The steep increase in visitors taxed park resources, increased pollution and erosion, and placed stressors on the sites' species. Without a more concerted effort toward park maintenance, tour operators and the public risked degrading the very sites that were representative of Ecuador's natural bounty.

10. Guatemala BIOFOR Project. 2006. "Forest Concessions: A Successful Model. BIOFOR Final Project Report." Available through the USAID Development Experience Clearinghouse.



The project increased management capacity in 25 protected areas across the country as well as providing support to sites such as Los Frailes beach, to allow protected areas managers to identify conservation threats and allocate resources accordingly. A “Leave No Trace” campaign in Los Frailes halved the amount of trash left on holiday weekends.

Isla de la Plata: The island serves as a bird refuge for species also found in the Galapagos Islands. The island only had one trail, and as the number of visitors grew, people began cutting through nesting grounds of birds—including boobies and the waved albatross—interrupting reproduction and frightening the birds away. Additionally, tour operators did not regulate the number of visitors, overcrowding the island. With the support of PNM leadership and the MAE’s Vice-Minister for Natural Patrimony, the project initiated a series of meetings with fishermen and tour operators. Through a slow process of negotiation and leveraging the operators’ need for valid licenses, the project and MAE representatives gradually convinced tour operators to establish visitor quotas, register visitors with the PNM, stagger arrivals to the island, and follow new docking regulations for boats as a requisite for licensing their operations. The project designed new park trails, which along with the regulation of visits reduced the exposure of nesting sites to tourists.

Los Frailes: Los Frailes’ popularity with beachgoers and as a picnicking site had overwhelmed park staff’s ability to keep the beach clean. With the support of PNM officials, the project trained park rangers on “Leave no Trace” principles. The project also designed an agreement that the park began asking visitors to sign upon arrival, in which they committed to carry out of the park any trash they brought in. The agreements gave park rangers leverage, albeit partially symbolic, to request visitors to adhere to the “Leave No Trace” policy; the act of signing the agreement also raised visitors’ awareness of the park’s conservation goals. The most noticeable success in Los Frailes was the slow change in attitudes that the agreements brought about simply from the basic act of requesting that people pack out their trash. The “Leave No Trace” program cut in half the 1,700 pounds of trash left by tourists each four-day holiday weekend.

In addition to the site-specific tourism interventions, the project designed a radio communication system and provided or improved equipment where needed to strengthen oversight and control of PNM regulations. Thanks to these improvements, the system covers a surface of 70,000 hectares across the park and adjacent watershed.

E. STRENGTHENED EFFECTIVENESS OF PA ADMINISTRATION

PAs make an important contribution to biodiversity conservation, yet PA staff are tasked with protecting vast areas using limited resources. The demands of the job and frequent political changes among GOE officials who hire PA directors have resulted in high turnover of PA directors. A lack of continuity in management approaches weakens PA administration. When the project began, the four PAs the project worked with had trouble programming even limited amounts of funding and coordinating donor support for conservation.

Initially the project sought to understand the day-to-day challenges of the parks, and in the process evolved a coaching strategy with park directors and forest rangers. Many of the project's highly respected specialists — including the former vice-minister of the environment — worked out of the project's three satellite offices in Tonsupa, Guayaquil, and PNM. Through their proximity to the parks they provided valuable behind-the-scenes mentorship and guidance to park staff, while building up the authority of the park directors to set priorities. Previously, NGOs tended to dictate projects to the park that were driven by external funding sources, and did not necessarily reflect park needs. The coaching gave young park leaders more authority and confidence to request that NGOs and other donors provide services based on the park's actual priorities.

Additionally, the project provided on-the-job training and guidance for strategic planning; oversight and communications, providing radio equipment to support conservation goals; policy development; and institutional capacity (see Exhibit 6 for representative activities). Although not a national protected area, the Great Chachi Reserve faces similar management challenges and consequently the project undertook a similar coaching approach in assisting community leadership to prepare and manage *Socio Bosque* applications (See Section IV.A).

EXHIBIT 6:
Protected Area Coaching

REPRESENTATIVE TYPES OF PROTECTED AREA COACHING				
	Galera San Francisco Marine Reserve	Machalilla National Park	Churute Ecological Mangrove Reserve	El Salado Mangrove Wildlife Production Reserve
Improved planning	Developed tourism component of management plan and prepared Annual Operational Plans	Provided key inputs for updating management plan and prepared Annual Operational Plans	Prepared Annual Operational Plans	Prepared Annual Operational Plans
Improved oversight and radio communication	Trained park rangers, provided radio equipment, and designed oversight systems	Trained park rangers, provided radio equipment, and designed oversight systems	Trained park rangers, provided radio equipment, designed radio communication systems, and supported designing patrol activities during closed season for crabbing	Supported designing patrol activities during closed season for crabbing
Improved policies		Proposed new fishery and tourism policies	Proposed new fishery policies	
Improved institutional capacity	Supported training and promotion events with local communities	Adapted “Leave No Trace” Program for Los Frailes; Helped form Chongón Colonche Coalition	Helped form a community forest fire brigade	

Based on the success of the coaching approach and knowledge gained through it, the MAE requested that the project develop a methodology for creating annual operational plans for PAs nationwide (discussed in Section IX.C). In addition to the MAE, a series of actors support or affect PA conservation in each site. To increase coordination, define joint goals or synergies, and avoid duplication, the project helped develop conservation coalitions among stakeholders. In most cases, coalition meetings have given MAE more leadership authority for setting priorities, addressing threats, and coordinating efforts (see Section X.A).

CONSERVING BIODIVERSITY: LESSONS LEARNED

- Complex and bureaucratic procedures to obtain and maintain good standing with *Socio Bosque* and the mangrove concessions program unintentionally exclude small, poorly educated farmers or mangrove concessionaires. Project technical assistance is not sustainable, but simplified and streamlined participant procedures will be.
- Approach communities living in and around protected areas as allies for conservation, not as adversaries.
- A focus on regulating resource and land use rights, instead of regulating land ownership rights, will engage communities.
- PA leadership must build their capacity and confidence to decide resource allocation based on PA needs, not on the agendas of donors and NGOs.

**PART II:
IMPROVING
LIVELIHOODS:
LINKING
CONSERVATION
TO ECONOMIC
BENEFITS**

SECTION VII

PROMOTING SUSTAINABLE PRODUCTIVE ACTIVITIES AND ECONOMIC INCENTIVES

The project's primary goal was biodiversity conservation, and the project's site selection process was driven by criteria for regions' high biodiversity value rather than their economic growth potential. Remote access, high transport costs, poor infrastructure, weak public services, and lack of access to credit severely limit economic opportunities in project sites.¹¹ As a result, very early on the project found that its selection of four highly threatened, high-conservation value areas created opportunities for reaching project's targets for hectares under improved management but placed a heavy constraint on the project in terms of its second objective: improving livelihoods. The number and size of sites lessened the project's ability to concentrate economic growth efforts in any given area. But more significantly, the project needed to scale down both its own and target community expectations for the growth potential of the principal income-generating opportunities in each site, given the socio-economic profiles of the sites and the need for interventions to align with the overarching goal of biodiversity conservation.

The project approached its second objective through a systematic method of identifying opportunities for ecologically-sustainable economic growth, helping the sites' farmers, crabbers, and other producers attain economic benefits, and associating the benefits with improved conservation practices. Through a slow and steady process of sharing new practices with communities along the coast, the project accumulated

11. For example, in the Ayampe watershed in 2009 gross income per family was average of \$113 USD monthly (less than \$1/person/day). 8 out of 10 people received government subsidies that represented 32% of their incomes (Central Bureau of Statistics). See also Izko, Xavier. 2011. "Culturas de Manejo y Recursos Forestales." USAID Sustainable Forests and Coasts. Available through the USAID Development Experience Clearinghouse.

evidence that when people, even the poorest of the poor, benefit economically from managing natural resources, they value them and protect them. For example, the mangrove concession program has helped crabbers strengthen the association between conservation of the mangroves and the long-term health of the crab population upon which crabbers' livelihoods are based. Using this philosophy, the project promoted conservation by packaging it with economic incentives tailored to the scale and growth potential of the producers, both through incentive programs discussed in Section IV and also through assistance for good agricultural practices, promotion of bio-commerce, and assistance with establishing commercial linkages. However, the scale and nature of the project's livelihoods activities must be understood as a function of, and ultimately limited by, the project's conservation goals.

A. DISSEMINATED COST-SAVING GOOD AGRICULTURAL PRACTICES

With the assistance of Rainforest Alliance, Ecobiotec, Altrópico, and C&D, the project early on conducted a series of rapid assessments to determine feasibility of promoting various value chains, viewed in conjunction with conservation opportunities in project sites. Historically along the coast, people live in family farms and engage in subsistence agriculture, raising of livestock, timber extraction, and harvesting of non-timber forest products. Lack of income-generating opportunities often leads to unsustainable use of natural resources, degradation, and biodiversity loss. The economic gains of these small operations were short-lived as the soils became depleted of nutrients and the forests degraded. In response, small producers pushed to extend the agricultural frontier even further, at the expense of remaining forest.¹²

The project concluded from the initial assessments that it needed to find ways of introducing these subsistence farmers to new cash crops and production methods, without encouraging increased forest degradation. Many higher value crops, such as cacao and watermelon, required the use of agrochemicals such as pesticides and fertilizer. The runoff from these chemicals polluted the watershed. Additionally, the project was reluctant to introduce strategies that would lead to further clearing of land and thereby jeopardize the project's goals under its primary objective — conserving biodiversity.

Reduction in agrochemical use: The project selected 95 farms in the Ayampe watershed as pilots to tackle the first question: how to reduce agrochemical use, without reducing production. By the nature of agricultural cycles, the project took several years to see initial results. Site selection and initial assessments occupied the first six months of the project. The project spent 2010 working to gain the confidence of farmers reluctant to change their familiar practices, and by 2011 farmers began to see it was feasible to switch to less-toxic fertilizers such

12. The World Bank. 1996. *Ecuador Poverty Report: A World Bank Country Study*. Page 186.

as compost and the organic liquid compound biol. Farmers the project worked with have embraced the benefit and significantly reduced chemical use, from 64 to 100 percent for a range of 12 different products used in the region. Some farmers even launched small enterprises of their own by selling homemade biol to their neighbors for use.

Other good agricultural practices: Many farmers had monocultures, with one or two harvests per year based on the rainy season. They were therefore vulnerable to increasing climate variability, because unpredictable cycles of rain affected crops and washed away soils. In periods of drought, farmers could not produce. In addition to better water management, farmers needed a more complete appreciation of the watershed. For example, livestock raised in the upper part of the Ayampe watershed contaminated water sources and affected downstream conditions. In response to productive practices that harmed the ecosystems in which the farmers worked, the project tackled the second question: how to improve productivity without damaging the environment further.

With the help of C&D and Ecocacao the project encouraged a set of 17 good agricultural practices in the Ayampe and Galera San Francisco watersheds that aimed to increase productivity potential while improving climate resilience (see box on following page). Above all, the project tracked and demonstrated the economic merit of these practices to farmers as a means of encouraging adoption of the practices that provide long-term benefits to the environment.

The project monitored the application of good practices with 95 model farms in the Ayampe and 96 in the Galera San Francisco watersheds. Initially, in the Ayampe, C&D taught farmers through their traditional field school system, in which farmers gathered for group classes. The project recognized a need to give farmers individualized support based on their farm needs, and moved C&D toward individual technical assistance in the second year. For example, to increase the types of crops farmers could grow and the seasons in which they could be grown, the project introduced better irrigation and water storage systems. In the Ayampe, as a complement to project technical assistance on installation and maintenance of the systems, C&D and Ecuadorian NGO Codesarrollo gave small loans for farmers to buy irrigation pumps. In the Galera San Francisco watershed, Ecocacao's existing relationships with farmers became a means for the project to gain trust in an area characteristic for its reluctance to work with outsiders — even Ecuadorian organizations who did not have a permanent presence in the region.

17 GOOD AGRICULTURAL PRACTICES

1. Protection of water sources, through local nurseries, waste collection, and dike construction
2. Protection of riverbeds, through reforestation of riverbanks
3. Reforestation through seedlings or trees from local nurseries
4. Trees or hedgerows to delineate lands, attract wildlife, serve as a food source, and sequester carbon
5. Construction of irrigation trenches to optimize water use and increase soil moisture
6. Production and application of homemade insecticides from local materials
7. Mixed cropping to promote soil quality
8. Better water management through streamlined irrigation and storage
9. Use of mulch to enrich the soil
10. Production and application of biol (organic fertilizer) with local materials, instead of commercial fertilizer
11. Production and application of compost to improve soil productivity
12. Production and application of humus (organic topsoil)
13. Construction and use of terraces to reduce erosion
14. Crop management, such as cacao pruning
15. Sowing against the slope to reduce soil erosion
16. Capture efficient microorganisms to increase microbial flora and counteract pests
17. Crop diversification and/or rotation

(Source: Conservación y Desarrollo)

Based on the sample of these 185 farms, 60 percent of the farms incorporated up to 5 of the practices, 26 percent between 6 and 10 practices, and 14 percent more than 10 practices of the 17 better practices. In addition to the work across all 185 pilot farms, the project closely tracked the crop type, yields, and perceived economic benefits for 19 farms in the Ayampe. Among these demonstration farmers, they noted an average monthly increase of \$32.67 from the application of good practices — 42 percent over their previous incomes, without increasing the farms' negative impact on the environment.¹³ In addition, the demonstration farms registered an average savings of \$41.53 from reduced chemical use. In the Ayampe, the 95 model farms, which cover 117 hectares in total, had achieved a collective increase in benefits – between input savings from reduced chemical use and increased sales – of \$7,462 between 2011 and 2013. The implementation of the good practices translated the guidelines provided by integrated farm, community and watershed management plans into concrete, farm-scale actions.

13. Source: Project's M&E system, Income Perception Surveys, and case studies. Average annual reported income increases from 19 demonstration farms was \$391.98 per farm excluding agrochemical savings; from perception surveys of all 185 farms, the reported perceived average increase was \$334. In 2011 the farms achieved \$7,960 in total benefits reported across all farms; in 2013 this figure had jumped to \$15,422.



Cacao farmers from the Ecocacao cooperative get seedlings from a local tree nursery supported by the project to reforest farms near the Galera San Francisco Marine Reserve. Ninety farms in the reserve's watershed implemented project-promoted good agricultural practices, with the goal of improving watershed health, reducing agrochemical use, building climate resiliency, and pursuing organic certification for their products.

B. PROMOTED BIOCOMMERCE IN AREAS CRITICAL TO BIODIVERSITY CONSERVATION AND ESTABLISHED COMMERCIAL LINKAGES

The project concentrated its livelihoods work on biocommerce, defined by the Convention on Biological Diversity as the production, processing, and commercialization of goods and services derived from nature and managed with criteria for environmental, social, and economic sustainability.¹⁴ Biocommerce has the potential to increase the incomes of the small producers with which the project worked, but successful biocommerce requires careful research, planning and management to fulfill its conservation aims. The project explored potential commercial opportunities for timber, agricultural products, crab, cacao, kapok, honey, ivory nut, cap straw, and bamboo cane using a six step approach, and also collaborated with communities on ecotourism offerings. Of these, agricultural products, crab, cacao, and ivory nut offered the most growth potential as could be measured in the short duration of the project. As observed by USAID evaluators in 2011, the strengthening of existing productive activities instead of introducing new ones, also offered the best opportunity for medium and long term sustainability.¹⁵ Exhibit 7 presents the six steps of the approach the project used to determine the limitations, opportunities, and capacity of the resource base and to design guidelines for resource use. For selected resources, the project transferred techniques and skills to local producers to build their production capacity and establish commercial linkages while safeguarding the resource base.

14. Definition from Lozada Perdomo, Paola Andrea and Gómez Díaz, José Antonio, "Organization of Community-Based Biocommerce Enterprises: Lessons from the Implementation of MA&D Methodology in Colombia" in *Small and Medium Enterprise Development for Poverty*, 2007. CATIE: Costa Rica.

15. U.S. Agency for International Development. 2011. "Economic Sustainability within Biodiversity Conservation Programs in Ecuador (1990 – 2010)." Page 27.

EXHIBIT 7:
Project Approach to Identify Biocommerce Potential

1	Conduct socio-economic surveys with community members to assess current land usages, and conduct natural resource assessments.
2	Develop management guidelines to protect resource stocks: As bio-commerce depends on natural resources, adequate management practices assure sustainability of the entire value chain.
3	Create regulations: Introducing appropriate checks and balances assures proper oversight so that management guidelines are followed. Guidelines can be developed at the association, community, provincial, regional, or national level.
4	Strengthen local organizational capacities for NRM: Training assures that organizations can support biocommerce, implement and oversee management guidelines, and support new commercial opportunities.
5	Incorporate adding post-harvest value: Technical assistance for introducing post-harvest practices and in some cases provision of minor equipment contribute substantially to increasing incomes for farmers.
6	Creating linkages to preferential markets: Serving as honest broker, bring together producers and buyers and provide enough support to build trust and develop confidence so that both sides of the deal fulfill their roles.

The process of identifying sustainable biocommerce activities can be lengthy, due to the time needed to conduct studies on resource stock and to organize resource users. Given the project’s initial three-year implementation period, completing the appropriate assessments and building capacity in a short time frame posed a challenge. The project’s 3 + 1+ 1 contract structure, in which the final two years of the project were awarded one at a time, impeded the project’s ability to design a five-year cycle of support from the outset. The project was reluctant to initiate commercialization processes that risked interruption if the project’s option periods were not awarded, and as observed by USAID evaluators on two occasions, community decision-making preferences typically require longer time horizons than those afforded by the project implementation period.¹⁶ Given the extended time needed to build trust, incorporate better management practices, and build relationships with buyers who valued the resulting products for their ties to improved conservation, the project could not explore some livelihoods opportunities to their full potential in the project’s implementation period. Nevertheless, the project prioritized biocommerce — even on a small scale — because it was the most direct way to help beneficiaries associate economic benefits with care of resources.

16. Ibid. Page 22. “The short-term implementation periods found in the current [USAID/ Ecuador] portfolio do not seem compatible with the communities’ demand for longer planning periods where productive activities are the result of a participative selection where communities are given the chance to choose among different choices.” See also “Evaluation of USAID/Ecuador’s Sustainable Forests and Coasts Project.” 2013. Page 8. Available through the USAID Development Experience Clearinghouse.

Along the Ecuadorian coast natural resources form the source for not only the incomes of primary producers but also the incomes of families that transport, process, and sell the finished products — the entire value chain. The project worked with the resource-using communities — some of whom also benefited from *Socio Bosque* incentives — and with the regulatory authorities to develop and implement management guidelines, improve the quality of products, and identify sustainable harvesting mechanisms. The project contributed technical assistance to field-test or introduce production and post-harvest practices, and in some cases provision of minor equipment.

Given the remote location of sites, the project also needed to design strategies to help farmers and other producers reach markets, both in terms of establishing commercial agreements and physically conveying goods. The potential for commercial linkages is also framed by the sporadic nature of some of the activities the project valued from a conservation perspective: harvesting and processing of ivory nut, bamboo cane, and cap straw, in particular, are activities that supplement family income, and supply fluctuates in response to market demand, climate conditions, and family labor needs for other farm activities.

Timber: Initially identified as a potential activity, extraction of timber ultimately proved unfeasible. The forests remaining in project sites tend to be divided like patchwork among small farms that average 15 hectares. Subsistence farmers generally depend on cashing in on illegally extracting wood when a family need emerges. Even community lands are generally subdivided among families. The project explored supporting forestry management practices, but found that profitable and sustainable timber harvesting would require a minimum of 100 hectares and the parcels in project sites were too small to yield worthwhile returns.¹⁷

Agriculture: The introduction of good agricultural practices — which offers farmers the potential for more varied crop types and better yields — was the first step for the project to assist farmers in establishing commercial linkages. Many of the farms in project areas are small, meaning that the scale and reliability of production needed for successful export or certification would be a stress. The project's goal for many of the farmers was to increase production enough, and vary their crops enough, so that they had a surplus to market. The project then linked farmers to ecological markets supported by other local organizations with whom they could assure regular sales for their organic products. Principal among these was the Manglaralto market in the Ayampe. The next step was helping farmers reach the market, difficult given the

17. Izko, Xavier. 2011. "Culturas de Manejo y Recursos Forestales" and Palacios, Walter and Quiroz, Henry. 2011. "Sondeo sobre la Percepción de la Rentabilidad del Aprovechamiento de Madera por parte de Pequeños Productores en Ecuador." USAID Sustainable Forests and Coasts, Available through the USAID Development Experience Clearinghouse.

lack of transportation infrastructure. In the short term, C&D provided transportation, but the project recognized this was not a sustainable solution. The project opened discussion with the Ministry of Agriculture, Livestock, Aquaculture and Fisheries (MAGAP) to organize accessible agro-ecological fairs on a monthly basis in nearby towns, which is starting slowly to gain traction. The association of farmers into cooperatives such as the Association of Autonomous Agricultural Workers of Manglaralto (ATAM), formed in 2013, provides a vehicle for coordination with entities like MAGAP and will allow farmers to work towards the production volumes required by some buyers.¹⁸

Red crab: The red crab value chain has at its base the work of 4,120 crabbers throughout the Gulf of Guayaquil who move 66 million crabs a year. The INP used data collected by crabbers under the Red Crab Program described in Section IV.B to formulate or update guidelines to regulate the sustainable take of red crabs, ensuring replenishment and quality of the red crab population. In addition to sponsoring the program and providing technical assistance to concessionaires throughout the Gulf of Guayaquil, the project worked intensively with the 6 de Julio Crabbers Association on best practices along the value chain — from crab extraction and processing through commercial sale of the live crabs and pulp. The project selected 6 de Julio for pilot activities based on the community’s familiarity with both live crab sales and crab pulp sales, and also developed commercial linkages for the crabbers’ association of Balao.

In the communities that make a living off of the red crab, men fish the crab and women process those that cannot be sold in the fresh market for crab pulp. These enterprises provide income for many of the female members of the communities, who depend on the red crab fishery for their livelihood. The crab pulp enterprises source their raw product from the crabber and are willing pay higher than market price for larger, better quality crabs offered by project-supported crabbers; elimination of middlemen meant that enterprises could receive fresher products from crabbers. When making initial contact with hotels and restaurants in Guayaquil, the project explained its objectives and the steps taken by producers to ensure sustainability and quality of the product. The project invested in improvements to the processing facilities in 6 de Julio, including freezers and digital scales. Better facilities ensure that the product is delivered to the Guayaquil market in good condition and allows the women to demand a price premium from buyers. With project assistance to eliminate middlemen and improve processing conditions, crabbers in 6 de Julio more than doubled their sales price for live crabs (from \$0.50 to \$1.15 per crab) and women’s groups that extract crab meat also more than doubled their sales prices (from \$4 to over \$9 per pound) and are selling decorative crab shells for the first time.

18. C&D stated to USAID evaluators in 2013 that at least 60 more small-scale farmers in the Ayampe would be required to produce the volume necessary to sell organic produce at a higher price to national markets. See USAID, “Evaluation of USAID/Ecuador’s Sustainable Forests and Coasts Project,” 2013. Page 41.



The project conducted training on hygiene, crab pulp processing techniques, and food conservation to the women of the 6 de Julio Crabbers Association to improve the quality and value added of processed crab, and helped them identify new buyers. The processors of 6 de Julio have nearly doubled the price they receive for crab pulp in high-end Guayaquil markets, from \$4 per pound to \$9 per pound.

In the project's last quarter, subcontractor Bioeducar conducted trainings on hygiene, crab pulp processing techniques, and food conservation to the women of Mondragón Island to improve the quality and value added of the processed crab for market. The project also organized an information exchange between the crab processors of 6 de Julio and Mondragón Island to share the commercialization strategies used in 6 de Julio.

Cacao: The international potential for cacao export is high, but a 2009 assessment by Rainforest Alliance determined that Ecuadorian cacao producers needed to improve their management and commercial skills, improve bean quality, and develop promotional materials and promote environmentally friendly certification.¹⁹ Through grantee Ecocacao, the project worked with farmers in the Esmeraldas region on reducing agrochemical use and other good agricultural practices and on improving processing and post-production strategies. In 2012 torrential rains damaged crops and led to crop disease. Farmers lost their cacao crops, but also had surplus fruits such as bananas and oranges for self-consumption that were rotting in the fields. The project made contact with five local hotels who would buy the surplus produce from farmers that used project-promoted organic techniques, and Ecocacao used the cooperative truck to collect the produce and bring it to the hotels.

Although originally envisioned as a stop-gap measure, provision of produce to the hotels was a success for the season. The hotels, as a result, upped the quantity and the frequency of the orders, but the farmers were not prepared to provide such a regular supply at a larger scale. Although the linkages were temporary, they provided the project and farmers an opportunity to maintain revenues during a difficult crop year, and continue application of good agricultural practices. The cacao crop recovered in 2013 and Ecocacao signed a buyer's agreement with the U.S.-based firm Nova Munda under which the firm has continued

19. USAID Sustainable Forests and Coasts. 2009. "Report on Overseas Market Opportunities for Ecuadorian Cocoa." Available through the USAID Development Experience Clearinghouse.

to buy organic cacao from Ecocacao cooperative members. Ecocacao also signed a second linkage with the Association of Organic Cacao Producers of Muisne Canton (APROCA). Between October 2011 and March 2013, project-support producers sold 51,335 pounds totalling \$21,862 through these two linkages. The second linkage dissolved once Ecocacao and APROCA both began selling unprocessed organic cacao through the umbrella Esmeraldas Union of Cacao Producers' Organizations (UOPROCAE) in 2013.

The project did not track sales in 2014 because the MAGAP has initiated a national project, "*Gran Minga de Poda de Cacao*" to promote the pruning and rehabilitation of older cacao plants. This free pruning program temporarily reduced production in the 2013-2014 season. As of the end of the project, Ecocacao was negotiating with MAGAP to be a service provider for the pruning program in the south of Esmeraldas.

In mid 2013 Ecocacao cooperative members noted that the market prices in general do not fully support the costs of supporting a producer's organization or scaling up organic production. The \$5,200 annual organic certification cost for the cooperative has been covered in part by contributions from members, and in part from the price differential for organic cacao, which can reach \$300 per ton more than for non-organic cacao. Ecocacao and other cacao producers organizations conducting sales through UOPROCAE was one step towards achieving economies of scale. Before the project ended it also procured post-harvest equipment, storage equipment, and processing equipment for the Ecocacao cooperation to help them diversify operations by preparing chocolate bars and chocolate paste for local markets.

Kapok and honey: Climate change vulnerability posed a troublesome obstacle for some of the project's early work with commercial linkages. Based on a rapid assessment, the project identified the potential in the Ayampe community of Jipijapa to work with kapok wool (*lana de ceibo*), a natural fiber used for mattresses, pillows, stuffed animal toys, and kayaking jackets. Ecuadorian mattress manufacturer Chaide y Chaide offered to buy all of the production from the Jipijapa producers, and a company in Guayaquil that manufactured sanitary pads also demonstrated interest. However, kapok stopped producing in the Jipijapa region, owing to decreased rainfalls. The Ayampe watershed area is also home to approximately 60 honey producers, and the project established a potential link with the fair trade non-profit ProPueblo Foundation. However, the change in timing of the wet and dry seasons, and the intensity of the periods of heavy rains and droughts, had started to create problems with flowering and pollination and led to a decline in the bee population in the area.²¹

20. USAID. "Evaluation of USAID/Ecuador's Sustainable Forests and Coasts Project." 2013. Page 40.

21. Conversations between technical staff and honey producers of the area.

Ivory nut: In the last two years of implementation the project expanded support for ivory nut harvesting and processing. Ecuador is the world's largest exporter of ivory nut products, such as buttons and handicrafts.

The project identified farmers recognized by their own communities as having the most knowledge of the species and of ancestral practices. The farmers worked with project technicians to formulate sustainable practices that also ensure better products, as incorrectly harvested and processed ivory nut can result in the presence of rot or beetles in the finished products. In addition to leading training sessions, identifying the best practices for harvesting both the nuts and the leaves of the tagua plant, and preparing a booklet that captures best practices, the project offered artisanal workshops in the carving of ivory nut into end products such as buttons. The project facilitated sales agreements between harvesters and seven buyers for weekly and/or monthly deliveries of fresh and dried tagua that resulted in sales. The project helped harvesters transition into producing dried and carved ivory nut, which increases prices over fresh ivory nut. These sales – driven by the improved product that project-supported harvesters could provide – resulted in an average increase of \$53 over previous annual incomes from ivory nut, according to surveys of harvesters. Maintenance and future growth of these linkages is dependent on continued market demand and harvesters' willingness and ability to meet buyers' quotas. Since ivory nut is a secondary income source for many families, harvesters would benefit from local financing mechanisms to cover labor or capital costs and ensure they have incentives to dedicate time to harvesting.

Cap straw: Cap straw (*paja toquilla*), which is the base of the “panama hat” value chain, among other uses, underwent a similar joint assessment in workshops in the Ayampe communities of Dos Mangas and Salanguillo. The workshops resulted in the systematization of ancestral management techniques and use of the patches where the toquilla palm is grown, and in the formulation of best practices for maintaining the stock, harvest, and post-harvest handling of harvested cap straw. The project published a handbook on ancestral practices and provided the *Cabildos* of both towns with a roadmap for future management strategies. The project's technical assistance allowed harvesters to increase the length of the straw gathered from 60 centimeters to 80 centimeters. The higher quality product helped the project facilitate a commercial linkage with a buyer who distributes the straw to artisans in Azuay province. The project began working with cap straw in its last year and as a result this linkage is relatively nascent, but Dos Mangas has dedicated *Socio Bosque* funds for maintenance of the palms. With continued community support for best practices that can sustain supply as market demand grows, the Ayampe region's high number of toquilla palms can serve as the base for industry growth.

Bamboo cane: The project worked with producers in the Dos Mangas and La Crucita communities where bamboo cane (*caña guadua*) grows in patches, to introduce management practices that improve the overall management of bamboo cane patch and improve the quality and quantity of the product. The project helped Dos Mangas incorporate the harvesting of bamboo cane into the community's PMI, opening the way for legal management, sale, and transport of the cane as a non-timber forest product. Previously, harvesters risked having their goods confiscated. Before the project concluded, it created a roadmap for further development of the industry for use by the Cabildo of Dos Mangas and helped the community establish a commercial link with a local buyer. Similarly to cap straw, the principal elements of project support were establishing management practices that lay the groundwork for future, sustainable commercial opportunities, and helping communities with permits to transport and commercialize the cane. Communities require additional support for marketing and business management to maintain linkages moving forward. The potential opening of a factory for bamboo projects in the Chongón Colonche community of Olón, funded by the Korean International Cooperation Agency, is one opportunity for growth.

Ecotourism: The project provided support and materials for improving tourism services in the Great Chachi Reserve, PNM, and Chongón Colonche Protected Forest, including communities of Loma Alta and Dos Mangas. Support included training to community tourist guides and provision of trail maintenance materials. For example, in 2013 the project helped Dos Mangas identify a partner in Bike Spondylus, a cycling company based out of adventure travel hub Montañita. Under the commercial agreement, the community receives \$2 for each Bike Spondylus tourist who visits the community's trails and waterfall, and \$0.50 for each tourist who visits model agro-tourism farms. In exchange, Dos Mangas — which receives \$35,445.80 in *Socio Bosque* incentives annually — has committed to investing part of the incentive payment in maintenance of its ecotourism facilities — \$2,644 in 2013 and \$1,300 planned for 2014. The agreement generated \$2,153 in income for the community in 2013, which was divided among community guides, service providers, and the communal bank account for reinvestment. The tourism high season for 2014 occurred after the project's end, so comparable data for 2014 was not available.

In 2014, the Dos Mangas community hosted an in-country observational study tour to share their experiences and impacts with other communities in the Chongón Colonche Protected Forest. Leaders from the Dos Mangas community shared results related to good agricultural practices for bamboo cane, ivory nut, and cap straw as well as their experiences and successes resulting from their integrated management plan, which streamlines legal mechanisms for managing non-timber forest products. The Loma Alta, Sinchal, Dos Mangas, Las Núñez, and La Entrada communities participated.

EXHIBIT 8:
Increased Income by Sector as a Result of Project Assistance

Sector	Beneficiaries Tracked	Average Additional Income (USD)	Duration of Season for Income Annually
Agriculture (including cacao)	1,830	\$334	1 year
Fishing – Red Crab	120	\$5,196	10 months
Forest Products – Ivory Nut	780	\$53	2 months
Tourism	30	\$269	5 months
<i>Socio Bosque</i> conservation incentives	13,465	\$83	1 year
Total	16,225	\$180.60	Annual

Exhibit 8 demonstrates the average increases per sector as a result of project assistance for annual and seasonal biocommerce activities, as well as for *Socio Bosque* incentives. Initial project exploration of timber, kapok, and honey did not result in sales. The project did not conduct surveys to determine baseline incomes for cap straw and bamboo cane because management activities for these products were introduced into communities that received *Socio Bosque* incentives with project support, and as a result beneficiaries already were counted against project indicators for increased economic benefits. The sporadic and seasonal nature of some activities and varying production cycles (for instance, ivory nut production peaks every four years) complicates the establishment of reliable economic baselines, and longer-term monitoring and evaluation (M&E) would be required to gather conclusive evidence for the positive relationship between sustainable resource use and improved incomes.

A 2011 evaluation of the economic sustainability of USAID/Ecuador’s biodiversity conservation programs notes that just one out of ten businesses in Ecuador survives after three years, which highlights the extent of the need for long-term business management and financial planning guidance, beyond that which the project could provide due to its scope, size, and duration.²² Sixteen commercial links that the project attempted were not sustained, in most cases because producers did not meet buyers’ needed production levels. The same 2011 report also observed, however, that shorter-duration projects can still have a positive influence on small producers’ awareness of the link between conservation and livelihoods.²³ The project played the role of honest broker for 22 business deals that brought together buyers and producers and that were resulting in sales as of the end of the project. For these linkages, the project helped build trust and develop confidence that both ends of the deal would fulfill their roles.

22. U.S. Agency for International Development. 2011. “Economic Sustainability within Biodiversity Conservation Programs in Ecuador (1990 – 2010).” Page 22.

23. Ibid. Page 14.

IMPROVING LIVELIHOODS: LESSONS LEARNED

- Providing an economic incentive for conservation increases the sustainability of biodiversity initiatives, because it increases the value and care that local resource users assign to use of the resource base.
- Although land in project sites was frequently under communal ownership, “community” enterprises were rare. Support to communities for regulatory frameworks should be paired with support to family units for productive activities that supplemented household income.
- In project sites, high biodiversity correlated with high poverty. The infrastructure limitations of sites, the time needed to demonstrate pilot results to potential stakeholders, and the need to balance conservation with economic growth required the project to adjust its livelihoods approach and scale back market expectations.
- Driving site selection by conservation criteria resulted in sites whose economic growth potential was extremely limited. The project needed to orient productive projects toward the modest expansion of subsistence livelihoods, with the constraints of producers’ capacity taken into consideration.
- The project’s short duration limited its potential to provide the extensive assistance communities need to build the skills for market participation. A different, longer-term contract mechanism would provide the continuity needed for strengthening commercial linkages in socio-economically marginalized areas.
- Selecting productive activities for project assistance should be based on community preference and market demand in addition to conservation considerations, and also should be complemented with analysis of financing options (such as community banks) to give communities access to financial resources.
- The establishment or strengthening of cooperatives and producers’ associations will give small producers leverage to eliminate middlemen and collectively achieve economies of scale.

**PART III:
INCORPORATING
CLIMATE CHANGE
ADAPTATION
INTO
CONSERVATION
AND
LIVELIHOODS
OBJECTIVES**

SECTION VIII

DEVELOPING CLIMATE CHANGE ADAPTATION STRATEGIES

Increased awareness and application of climate change adaptation measures became a fundamental strategy across project objectives. Changing climatic conditions in Ecuador threaten critical habitats and negatively affect groundwater availability, food security, and sustainable livelihoods. Although the GOE has built an institutional framework to address climate change, coastal governments lack capacity to identify, adapt to, and plan for climate risks and their effect on natural resources. Meanwhile, populations face shifting rainfall patterns that impact agricultural productivity and require families to change their livelihoods practices. The project's approach consisted of assisting local authorities with climate change planning, building climate literacy, and promoting agricultural practices that increased farmers' resilience to climate variation while also providing co-benefits for biodiversity conservation.

A. STRENGTHENED ADAPTATION EFFORTS MADE BY LOCAL GOVERNMENTS AND PAS

Through local partner CIIFEN, the project piloted a climate change vulnerability analysis model for the El Salado Mangrove Wildlife Production Reserve (RPFMS) and surrounding communities bordering the city of Guayaquil — 5,000 hectares in total. First the project analyzed climate and oceanographic data, especially variability associated with strong El Niño events in the early 1980s and late 1990s. Next, the project analyzed main trends and past conditions, such as periods of rain and droughts and variations in water salinity and temperature. Using these inputs, CIIFEN created a hydrodynamic model of future trends and scenarios for the Gulf of Guayaquil and combined it with field observation and geographic, social, and economical data in order to estimate vulnerability levels for the reserve and surrounding communities.

The project conducted participatory workshops with local academics, civil society, and public and private sector stakeholders to review the models and reach consensus on adaptation measures. Although the vulnerability analysis process was unfamiliar to many participants, CIIFEN and the project benefited from the support of local institutions to carry it out. Following the vulnerability analysis for RPFMS the project led a participatory process with local communities to define more than 20 adaptation measures to recuperate the RPFMS and highly polluted Salado Estuary. The measures encompass infrastructure, governance, and capacity-building action items.²⁴

Next, the project expanded support to the Manabí province and worked with local authorities and communities to develop adaptation measures for Machalilla National Park (PNM) using a vulnerability study conducted by the National Meteorology and Hydrology Institute.. The two areas differed greatly, as the focus of the RPFMS study had strong and complex social and institutional components, and the PNM presented a narrower ecosystem and community-oriented set of concerns. Principal tools for designing the adaptation measures in both sites were CRiSTAL (Community-based Risk Screening Tool – Adaptation & Livelihoods), the FAO's ecosystem approach, and an analysis of the population and government's adaptive capacity.²⁵ Armed with both experiences, CIIFEN presented a comparative analysis of the process used in RPFMS and PNM. In PNM the process for developing adaptation measures began with identifying the most critical areas in the park that might increase existing pressure on ecosystems, populations, access to basic services, and economic activity. It then conducted a socio-economic stakeholder analysis and used a participatory process via workshops, interviews, and surveys to analyze social perceptions of climate change.

Based on the vulnerability analyses, the Provincial Government of Guayas requested project support to develop a climate change adaptation strategy for the entire province, an area covering 1.6 million hectares. The project held consultations with more than 100 experts and stakeholders from Guayas' parish and municipal authorities, the productive sector, NGOs, universities, and donors. The resulting strategy is one of the first of its kind at the provincial level in Ecuador. Momentum for the methodology used by CIIFEN has grown: Since its work with the project, CIIFEN has held three additional forums in other provinces. The challenge going forward will be implementing the strategy and monitoring its impact, as it implies further work to strengthen municipal-level governments in adaptation measures and in risk management.

24. For a complete list of recommendations for both the RPFMS and PNM, see USAID Sustainable Forests and Coasts. 2012. "Estudio Comparativo Parque Nacional Machalilla – Reserva de Producción Faunística Manglares El Salado." Available through the USAID Development Experience Clearinghouse.

25. CRiSTAL was developed in the multi-donor Livelihoods and Climate Change initiative and combines environmental impact assessment with DFID's Sustainable Livelihoods Approach. For more on FAO's ecosystem approach, see: <http://www.fao.org/biodiversity/cross-sectoral-issues/ecosystem-approach/en/> For more on the Sustainable Livelihoods Approach, see: http://www.glopp.ch/B7/en/multimedia/B7_1_pdf2.pdf

B. TRAINED RESIDENTS ON CLIMATE CHANGE AWARENESS

The project tailored outreach activities to local governments, journalists, and youth to increase awareness of climate change effects and empower communities to take action. To strengthen local capacity for implementing adaptation measures, CIIFEN developed a six-module training program for local government representatives from municipal governments in the Manabí province. The training modules cover general concepts and tendencies in Ecuador, the vulnerability assessment model used in RPFMS, how to develop adaptation measures, how to communicate about climate change, and risk management. The project also trained protected area managers from RPFMS and PNM, journalists, and youth on climate change vulnerability and on how to involve high-level authorities and decision-makers in reducing climate risks. To assure training materials remain available, CIIFEN established a virtual (web-based) classroom to house training and reference materials, which are available at www.ciifen.org under Tools and Resources. CIIFEN continues to provide training to journalists and other members of the public. Their website has experienced a three-fold jump in visitors in the past two years, ensuring project-supported methodologies continue to receive a wide audience.

CIIFEN also hosted three forums in Guayaquil for youth groups and university students interested in environmental issues. Participants signed letters of intent stating their commitment to the conservation of the RPFMS through the launch of an initiative “Hands Joined for El Salado” (*Manos Juntas por El Salado*) with pledged support from CIIFEN and local organization Ogar Ambiental, and through the establishment of the Guayaquil Youth Network Against Climate Change (*Red de Jóvenes Guayaquileños Frente al Cambio Climático*).

Lastly, to serve as a broader tool for the entire coast, the project developed a manual on best practices for coastal adaptation measures using input from USAID’s manual “Adapting to Coastal Climate Change: A Guidebook for Development Planner” (2009). The manual, entitled “Manual of Best Practices for Climate Change Adaptation for the Coastal Region,” was distributed participants of the adaptation measures workshops.

C. PROMOTED AGRICULTURAL PRACTICES THAT IMPROVE FOOD SECURITY

Farmers from the Esmeraldas and Manabí provinces had experienced droughts, floods, and changes in precipitation — affecting their ability to sustain their farming practices and feed their families. For this reason, the farmers the project worked with considered food security to be their greatest concern related to climate vulnerability. The project responded in Esmeraldas by supporting water storage and watering systems so that farmers could have access to water and therefore continue growing crops during dry spells. Similarly, in the Ayampe, the project

Improved water storage helps farmers achieve year-round crop production and guard against severe fluctuations in rainfall brought on by climate change. It and other agricultural practices the project introduced to farmers in the Ayampe watershed allow them to diversify their crops, which conserves soil health and increases income possibilities. With project assistance, farmers sold their surplus crops through local ecological markets.



helped farmers transition from single crop to multi-crop farming and introduced watering systems that allowed harvesting crops year-round for the first time. These farmers, through C&D, then committed to reducing chemical use, designating areas for forest conservation, and supporting reforestation — all of which helped reduce greenhouse gas emissions.

D. PROVIDED ADDITIONAL BENEFITS FOR CLIMATE CHANGE MITIGATION

Although the project concentrated on adaptation measures, project activities dedicated to conservation yield benefits for mitigation as well. Tropical forests and mangroves play an important role in the capture and storage of carbon. In particular, mangroves have among the highest stock of carbon among all forest types, with below-ground soils that will release “significant volumes” of greenhouse gases if disturbed by land use change or climate change.²⁶ As presented in Section IV, the project helped expand participation in GOE programs (*Socio Bosque* and mangrove concessions) that incentivize forest and mangrove conservation. The project-supported improved agricultural practices discussed in Section VII.A, also reduce greenhouse gas emissions. In particular, replacement of commercial fertilizers with biol, composting, and humus reduces nitrous oxide emissions.²⁷

CLIMATE CHANGE ADAPTATION: LESSONS LEARNED

- Transparency, extensive inclusion of experts, and recognition of the project's limitations (time and funding) when pushing an adaptation agenda forward gained the project the respect of counterparts and opened doors to collaboration.
- A fundamental shift in awareness is needed to prepare local authorities to manage climate-induced risks *before* they occur — not after it is too late.
- Good agricultural practices and better land use planning at the watershed, community, and farm level yield important — and necessary — co-benefits for climate change adaptation.

26. J Boone Kauffman and Daniel C. Donato. 2012. “Protocols for the measurement, monitoring, and reporting of structure, biomass and carbon stocks in mangrove forests.” CIFOR Working Paper 86. Bogor Barat, Indonesia. Page 2-3.

27. See United States Environmental Protection Agency. “Overview of Greenhouses Gases.” Available at <http://epa.gov/climatechange/ghgemissions/gases/n2o.html>. Accessed June 15, 2014. See also, Shcherbak, Iurii, et. al. 2014 “Global metaanalysis of the nonlinear response of soil nitrous oxide (N₂) emissions to fertilizer nitrogen.” Proceedings of the National Academy of Sciences of the United States of America.

**PART IV:
BUILDING
PARTNERSHIPS
FOR
BIODIVERSITY
CONSERVATION**

SECTION IX

SUPPORTING NATIONAL-LEVEL POLICIES

The project's collaborative relationship with the MAE created a strong foundation for project advisory support for regulatory and policy reform. This work was predicated on continued political will, which the project managed to maintain despite a turnover in MAE leadership following the 2013 general elections and strained relations between the U.S. government and GOE. These policy inputs complemented — and were informed by — the project's site-based support for MAE programs such as *Socio Bosque*, as well as the creation of multi-stakeholder coalitions (see Section X.A) that allowed the MAE to get feedback from local communities.

A. PROVIDED TECHNICAL INPUT FOR A REVISED FORESTRY LAW

The GOE enacted the existing forestry law in 1981, but it was never fully implemented, and has not been updated since. Furthermore the Constitution of 2008 recognized that nature has constitutionally protected rights, which triggered the need for a legal redefinition of the role of the state and of the public in sustainably managing Ecuador's natural resources.

Following the ratification of the 2008 Constitution, the GOE enacted new laws for land use planning, citizen participation, and food security, yet these laws needed to be harmonized with forestry legislation, policies, and regulations. At the request of the MAE's Sub-Secretary of Natural Patrimony in 2010, the project provided experts to review, evaluate, and provide inputs for a new Forestry Law. This resulted in a proposal for a new institutional framework that aligned with the Constitution and that included innovative sustainable forest manage-

ment concepts including differentiation between natural and plantation forests, new parameters for incentives packages and mechanisms for public and private sector stakeholder participation, and rubrics for the scope of different government bodies related to forestry management. These proposals aimed at reducing deforestation, protecting and assuring sustainable management of native forests, and promoting tree plantations for conservation and productive purposes.

As a result of Ecuadorian general elections in February 2013, legislative activity in the General Assembly was suspended from late 2012 to mid-2013. Additionally, instead of passing a law specific to forestry the GOE decided to include forestry legislation into a more extensive Organic Code for the Environment to avoid contradictions between laws. Although the project provided additional assistance to adapt the forestry inputs and provided guidance for biodiversity and climate change chapters of the proposed Code, by the end of the project the GOE had not finalized the new proposed Code.

B. ASSESSED PROTECTED FOREST MANAGEMENT LEGISLATION

As the forestry legislation stalled in the General Assembly, MAE identified an alternate route for project support related to forestry. The MAE's Directorate for National Forestry manages Protected Forests (PFs), however the current legal framework lacks sufficient guidance to determine management and uses of PFs. Additionally, records on PFs and their current status were dispersed among regional governments or non-existent. The project conducted an unprecedented nationwide assessment to determine the number and status of PFs in Ecuador. The project verified the registration of 237 PFs (previously, the MAE had 170 on record in a central database), and determined that of the 2.2 million hectares registered as PFs, approximately 1.1 million were in good condition or better. However, some PFs had degraded to the point that the PF designation did not reflect the poor or non-existent condition of the forests observed through field reports.

Based on the assessment, the project created a roadmap for PF management, including recommendations to elevate certain areas to the status of Protected Area, which will afford them more protections. Similarly, the project recommended further investigation into other PFs where, due to intensive land use or lack of forest cover, the designation of PF may no longer be merited. Reclassification of PFs will enable the MAE to better concentrate resources on those areas with significant remaining forest cover.

PF use is regulated by a chapter of the Unified Secondary Environmental Legislation (*Texto Unificado de Legislación Ambiental Secundaria*, or TULAS), which falls under the active 1981 forestry law. Following the assessment, the project conducted interviews and workshops with MAE regional staff, local governments, communities, and forest

proprietors to determine proposed changes to the TULAS. Principal among these are a clearer definition of permitted uses for PFs, which have ranged in practice from protected status to open commercial exploitation. Stronger guidance on permissible land use will also assist the MAE to prepare management plans for each PF. In its last months, the project transferred these recommendations to the MAE for consideration; subsequent revision of the TULAS will be a MAE responsibility.

C. DESIGNED TOOLS AND TRAINING FOR MAE PROTECTED AREA STAFF

Approximately 20 percent of Ecuador is covered by 48 PAs throughout the country.²⁸ In April 2011, President Rafael Correa declared PAs to be in a state of national emergency; this declaration highlighted the need to develop the institutional capacity of the National Biodiversity Directorate (DNB) to improve management of Ecuador's National System of Protected Areas (SNAP). In October 2011 at the request of MAE's Natural Patrimony Sub-Secretariat, the project developed a comprehensive roadmap of proposed steps to help MAE strengthen management of the SNAP. Beginning in early 2012, the project developed a manual for PA directors that project specialists then field-tested through the development of the annual management operating plans (PGOAs) and budgets in three PAs: PNM, Antisana Ecological Reserve, and Yasuní National Park. As a follow-up to the drafting of the manual, the Sub-Secretariat requested USAID assistance to implement the full roadmap for improving PA management and address the following weaknesses:

- Departmental directorates of the MAE manage the PAs via their thematic units such as environmental quality, solid waste disposal, and beach management, which hindered PA directors' ability to provide an integrated response to each PA's unique ecosystem and administrative needs.
- Financial resource allocations per PA, as determined in regional MAE directorate's budgets, did not correspond to management needs and/or individual PA's management plans.
- Most PAs had management plans that were outdated and did not share a common structure. In most cases, they did not connect biological and ecological considerations with each PA's stated programmatic objectives.

The completed Operational Manual for Protected Areas Management defines steps for the design, implementation and evaluation of annual

28. USAID Sustainable Forests and Coasts and the Ministry of Environment of Ecuador. 2013. "Manual para la Gestión Operativa de las Áreas Protegidas de Ecuador." 2013. Available through the USAID Development Experience Clearinghouse.

and long-term plans. With project support and training, by January 2014 25 PAs had developed a total of 29 annual operating plans and budgets based on prioritization of conservation values, institutional capacity assessment, long-term strategic plans, and improved human resource management. In the words of a PA specialist from Imbabura Province: “This is a simple tool and different from what we’ve done in the past because it links results with the budget...With this tool we know we need to demonstrate results in order to obtain the funds we need.” The Manual received recognition in a conference on Protected Areas in Uruguay in 2013 and additional Ecuadorian PAs have requested to use it.²⁹

Elections in February 2013 had resulted in a change in MAE leadership mid-way through the development of the project’s PA management plan of action. The project dedicated itself to working with staff in PAs themselves to develop PGOAs and building necessary buy-in for proposing larger structural changes to the DNB’s Protected Areas Unit based on PA staff’s enthusiasm for the PGOA methodology. Once the project had completed assistance to the 25 designated PAs, it used the PGOA methodology to help the Protected Area Unit itself determine its mission, responsibilities, and staffing/resource allocation. The revised PGOA will help the unit meet its mandate and better support the strategic planning process in the PAs they manage. Finally, the project worked with the National Environment Fund on an organizational assessment and training on the new PGOA methodology. The Fund is an independent fiduciary entity that provides funding to PAs, and the training was an opportunity for them to better understand the PA’s new budgeting method and support resource allocation on the basis of the PGOAs.

29. VI National Congress on Protected Areas, Ministry of Housing, Territorial Regulation, and Environment. Montevideo, Uruguay: September 24-27, 2013.



The project piloted a new annual operating plan methodology in Machalilla National Park (pictured) and two other of Ecuador’s protected areas, and then rolled it out nationally. The methodology allows PA directors and administrative staff to better identify conservation threats and allocate human resources and funding to respond to these threats.

SECTION X

STRENGTHENING LOCAL CAPACITY FOR NRM

The project approached local capacity building as a fundamental means to achieve project results, not just as an end goal. In addition to the direct technical assistance provided to beneficiaries and support to the MAE's mangrove concession and *Socio Bosque* programs, the project developed conservation coalitions and built up the qualifications of its local subcontractor partners. Above all, the project was careful not to create capacity that cannot be sustained without permanent infusions of external financial and technical assistance. Instead, the project used a building block approach³⁰ in order to help develop capacity that is sustainable and within the means and resources of its partners. The project sought to maximize the capacity of its partners and clients by focusing on their strengths and their potential to play critical roles in biodiversity conservation and in institutional coordination/collaboration. USAID's mid-term evaluation of the project completed in July 2013 found that "the project has ... made great strides in building networks and coalitions, the majority of which will be well placed to continue nurturing project activity or other related activity such as other community-level projects."

A. GENERATED CONSERVATION COALITIONS

The project promoted the formation of regional coalitions to allow organizations and institutions with similar interests or interconnected mandates to come together to discuss common concerns and to take action regarding biodiversity conservation. The project envisioned coalitions as flexible platforms that evolve according to their participants'

30. International Fund for Agricultural Development. 2000. "Community-driven development decision tools for rural development programmes."

needs. To facilitate coalition members' awareness of ongoing activities, the project and coalition leaders published periodic Coalition News Bulletins, primarily after coalition meetings. The project tracked the progress of each coalition through a semi-annual institutional index, which included qualitative analysis of membership and purpose, composition, operations, impact, and sustainability (technical contributions, training implemented by the coalition, and perception of sustainability). By project's end, it worked with five coalitions, as two coalitions merged after their establishment. The coalitions are grouped by the ecosystems they share: mangrove ecosystem coalitions, dry and wet forest ecosystem coalitions, and protected area coalitions.

I. Mangrove conservation coalitions

The project promoted and supported three mangrove-related coalitions that complement the MAE's mangrove concession program and ongoing INP research initiatives.

Gulf of Guayaquil Coalition: Of all the project-supported coalitions, the Gulf of Guayaquil coalition became the most advanced and best-consolidated. As this and other mangrove-related coalitions evolve, the Gulf coalition has potential to include most, if not all, communities and organizations dependent on the mangrove ecosystem for their livelihoods. This coalition began in January 2011 with a formal agreement between the INP, seven crabbers associations, and the project to carry out an ambitious study of red crab stock in the Gulf of Guayaquil (See Section IV.B for more details). The coalition has since evolved into a multipurpose coalition and potent force in the region, capable of influencing the regulatory and policy environment for the crabbing industry. In addition to the original members, the coalition now includes the Sub-Secretariat of Coastal and Marine Management, the Gulf of Guayaquil Port Authority, Churute Reserve authorities, and project subcontractor NGO Bioeducar. The seven original crabber association members have grown to 28 associations and cooperatives.

As a result of their participation in the coalition, the associations and cooperatives are building capacity to more effectively and sustainably manage the concessions. Associations are adopting more informed rules on when, how much and how often fishing is allowed, which should contribute to sustainable fishing practices and preservation of habitats. On-going data collection on the red crab population study was and remains fundamental to the sustainability of the coalition. To date the coalition has held 113 workshops to provide crabbers with feedback and discuss the results of the study and its implications.

Additionally, the coalition has become a platform for the effective implementation of surveillance and enforcement rules to access and use mangrove resources. Illegal exploitation of mangrove resources is a serious threat that cannot be dealt with only at the level of the association, but must be addressed in the Gulf as a whole. The Gulf of Guayaquil



In the Gulf of Guayaquil 4,120 crabbers extract so many crabs (66 million are captured each year) that it poses a potential challenge to the long-term health of crab stock. The project initiated a historic red crab stock analysis with the National Fisheries Institute that provided data for improved regulations. More than 940 crabbers contributed data to the analysis, giving them an active role in the monitoring and long-term health of the crabs that are their livelihood.

Coalition coordinates the actions of various institutions charged with marine resources, including the MAE, the Gulf's Port Authority, the Police, and the Navy.

Mondragón Island Coalition: The coalition is a single purpose coalition with the goal of establishing and enforcing a surveillance and enforcement system to protect the mangrove concessions pertaining to the *Cooperativas de Producción Pesquera Artesanal* of Mondragón, El Conchal, and Puerto la Cruz, the *Asociación de Comerciantes Minoristas de Cangrejo Buena Vista* and the *Asociaciones* of Puerto Tamarindo and 21 de Mayo, Puerto Roma. Bioeducar participates as the official technical advisor to the associations holding the concessions.

Since its establishment, the coalition has increasingly served to develop the capacity of each of the member associations to comply with the technical concession requirements and to train all members in better mangrove management and fishing practices. The six associations of the island of Mondragón are also participating in the INP study of the crab stock under the Gulf of Guayaquil Coalition.

Asociación de Pescadores Artesanales Bioacuaticas y Afines de Isla Escalante Coalition (APAREBAFIE): APAREBAFIE is the newest mangrove-based coalition, dating from May 2012, and it includes the *Asociación de Pescadores Artesanales de Especies Bioacuáticas y Afines Isla Escalante*; *Asociación de Cangrejeros y Pescadores de Mariscos y Afines Puerto Salinas*; *Cooperativa de Producción y Comercialización de la Pesca y Acuacultura las Mercedes*; and *Asociación Puerto Arturo*. The coalition was initially formed to obtain a concession, after which time the coalition evolved into a mechanism to coordinate and implement a system of surveillance and enforcement of the mangroves over 4,807 hectares during the closed seasons. The coalition serves to ensure the sustainable use of the mangroves in the Escalante, Maquiñani, Arturo and San Francisco Islands; establish a forum for joint decision-making; and monitor and ensure the effective application of the mangrove concession plan by all four members of the coalition. The coalition works closely with the

Fishing Sub-Secretariat's office in Puna and the Coastal Marine Sub-Secretariat in Guayaquil. The coalition's noticeable impact in stopping illegal and unauthorized use of the mangroves has been noted through an increase in the number of police reports for violations on the one hand, and an increase in the number of agreements with shrimpers for clearer delineations of territory, on the other.

2. Forest ecosystems coalitions

The second group of coalitions the project promoted focused on conservation and sustainable use of terrestrial dry and wet forest ecosystems, to complement project activities in the Ayampe Watershed, Chongón-Colonche, Esmeraldas and Chachi regions.

Coalition for the Use and Conservation of the Chongón-Colonche Biological Corridor: The coalition is led by the MAE Regional Office and it includes, in its core group, Community Associations of the Loma Alta, Barcelona, Sube y Baja, San Jose, Olon, Las Nunez, and Curia communities in the Chongón-Colonche Protected Forest as well as communities in the Ayampe Watershed, the Environment office of the Santa Ana Provincial Government, the *Socio Bosque* Program, NGO The Nature Conservancy, and project implementing partners CII-FEN and ECOLEX. While the coalition is now focused in the area of the Chongón-Colonche Biological Corridor in Santa Elena Province (83,000 hectares), it has the potential of expanding into the two adjacent provinces of Manabí and Guayas.

The primary purposes of the coalition are to inform and coordinate stakeholder activities, hold authorities accountable, and to support and advance the sustainable development of communities within and around the Chongón-Colonche Protected Forest and Ayampe Watershed. The region is notorious for the reluctance of actors to coordinate, and the main accomplishment of the coalition has been to formally bring together actors with common or complementary goals that have traditionally worked in isolation and often as adversaries. The MAE Regional Office has supported the coalition as a forum to communicate to communities and projects, as well as to gather information that permits them to play their role more effectively. The coalition is moving toward concerted action between members as members learn the specifics of each other's programs. The continuing participation of the communities, which is voluntary and at their own cost, is the best indication of the potential sustainability of the coalition.

Coalition of the Conservation of Biodiversity in the Great Chachi Reserve: In 2011, FECCHE, the MAE regional office, and project implementing partner Altrópico formalized the coalition for the conservation of biodiversity in the Great Chachi Reserve through a memorandum of understanding. The coalition now includes the *Socio Bosque* program and projects supported by the GiZ that promote biodiversity conservation. The coalition has worked to establish and operate PAs in member

communities and it provides support in the development of the Communal Investment Plans required by *Socio Bosque*. It also has worked with MAE and Cotacachi-Cayapas Ecological Reserve to delineate the reserve border and regularize land tenure by FECCHE member communities. The coalition unified formerly disparate conservation activities by NGOs and other donors and allowed them to complement efforts and avoid duplication. It also created a vehicle for coalition members to define monitoring responsibilities for the forested areas under *Socio Bosque*.

3. Protected Area coalitions

The Ministry of Environment regional and PA authorities, with project support, assumed the leadership of the two PA coalitions with varied degrees of success. Frequent staff turnover in the MAE institutions have adversely affected the momentum, effectiveness and activity of these coalitions. The purpose of the Protected Area coalitions is to emphasize PA well-being within stakeholder agendas, which often conflict with each other and with the integrity of the protected area itself.

Coalition for the Conservation of Biodiversity in the Galera San Francisco: The coalition was formed by 20 public and private sector organizations, donor projects, and community-based organizations in 2010 under the leadership of the MAE and with the project acting as secretariat. The coalition is an important arena for all interested and relevant organizations to meet occasionally, learn of on-going activities, and allow members to plan joint action.

The coalition has served as a platform for the MAE regional offices to exert their authority in the region. The reserve's PA authorities have used it to establish a more active and visible presence in the reserve itself, setting up PA Offices and establishing a surveillance and enforcement system. The coalition has also played a role in the validation of the revised Reserve Management Plan led by MAE, in the development of mandated POTs for the Galera, Quingue y El Cabo San Francisco parishes and with input for the Muisne Municipality POT. Coalition member and project grantee Ecocacao has evolved into a technical assistance provider for cacao growers throughout the region.

Coalition for the Integrated Management of the Ayampe Watershed: The Coalition for the Integrated Management of the Ayampe Watershed had at its center the Machalilla National Park, and was the first coalition supported by the project. During the time it was active (late 2010 through 2012), the coalition leveraged approximately \$2.8 million from five public sector and two NGO organizations working in the region, including the *Socio Bosque* Program, the Manabí prefecture, two local hotels (Hosteria Andaluz and Hosteria Equus Erro), Fundación ProPueblo, Fundación Aves y Conservación, and Bototagua.

The coalition identified shared concerns that included land tenure issues, citizen security, destruction of turtle breeding beaches, water mismanagement, and insufficient capacity by the MAE to monitor and control environmental problems. In response, the coalition formed a security council that developed and implemented a plan to increase policy presence and improve citizen security, and partnered with the project to create an environmental education program and waste disposal plan and to develop a regional POAM (as discussed in Section V.A).

However, the coalition's stability fluctuated with its members' participation, which varied depending on the items on each meeting's agenda. Its members were absorbed into the larger Coalition for the Use and Conservation of the Chongón-Colonche Biological Corridor in 2012.

B. BUILT CAPACITY OF IMPLEMENTING PARTNERS

Built into project design was the goal of developing and strengthening subcontractors' and grantees' technical and administrative capacity by expanding their services. At the same time, the project benefited from the direct contributions that partners' results-based performance and knowledge of local communities made to project targets and goals. The project maintained quarterly meetings throughout the life of the subcontracts to monitor progress, discuss implementation challenges, and transfer skills and technology. Among the examples of subcontractor capacity growth:

- Altrópico progressed in its administrative systems and transitioned from being a grantee under the USAID/Ecuador CAIMAN program, to a subcontractor under this project. The project's emphasis on results-based subcontracts and joint work planning strengthened Altrópico's ability to design and implement defined projects and increases their qualifications for future clients and donors.
- C&D, considered a pioneer in the use of field schools to provide agricultural extension services, has incorporated environmental consideration into their methodology to ensure that the production technology practices it delivers are environmentally friendly. C&D's work with the project also strengthened the organization's internal information systems and data collection methodologies. C&D and the Ecuadorian organization *Démos la Mano Comercializando como Hermanos* now jointly hold a \$19 million grant from the Ministry of Agriculture, Livestock, Aquaculture, and Fisheries to implement a national cacao pruning program for 19 million trees and 20,000 beneficiaries. C&D is also working with the National Institute for Agricultural Research through a one million euro grant for the strengthening of the cacao value chain in the Ecuadorian province of the Santo Domingo de los Tsachilas.

- ECOLEX brought considerable legal expertise related to land tenure, but it also expanded its services as a result of environmental management initiatives it was exposed to under the project. These include: 1) The participatory formulation of environmental land use plans as inputs to the POTs that regional and local governments must have in order to access funds to finance their annual operating plans; 2) Assistance to communities in the development and implementation of *Socio Bosque* investment plans; 3) Simplification of the paperwork needed for potential *Socio Bosque* participants to regularize their tenure, and apply for *Socio Bosque*. ECOLEX is currently continuing to work with the *Socio Bosque* program in the Chongón-Colonche region.
- Grantee Ecocacao draws upon its grassroots membership and reputation to open the door for project work in Esmeraldas — a door that even Quito-based local organizations could not easily open — and will remain present in the region after the project ends. Ecocacao not only has obtained organic certification, but has blossomed into a technical assistance provider for cacao farmers and other smallholder farmers who participate in the cooperative. They have launched a website, <http://ecocacao.ec/> detailing their services.

BUILDING PARTNERSHIPS: LESSONS LEARNED

- Design stakeholder coalitions as membership-based forums around a common agenda — organizational structures created and funded to serve short-term, external project-generated interests will not maintain the same stakeholder engagement as membership-based ones.
- Frequent staff turnover in GOE counterpart institutions interrupts momentum, but through regular meetings, clear messaging, and bottom-up support, a project can maintain counterpart support for project activities even when individual positions change hands.
- Grassroots organizations, with appropriate guidance, can advance project agendas more sustainably than larger local organizations without a continuous presence in a particular geographical region may be able to.

SECTION XI

CONCLUSIONS AND LESSONS LEARNED

The Sustainable Forests and Coasts Project had a unique opportunity to address both forest and coastal environmental management while taking into consideration the economic needs of Ecuadorians living in and around vulnerable areas. The project collaborated with public and private entities at all levels of governance, from small communities and producers' organizations to national policy-making bodies. As discussed throughout the report, some project-led initiatives were stymied by market limitations, counterpart turnover, suspicion of international organizations, and even severe weather phenomena that affected crop cycles. However, a larger share of the project's initiatives, collaborations, and pilot activities gained traction and have moved Ecuador closer toward the vision shared by the project and the GOE: that biodiversity can coexist with human populations, and that each can protect and benefit from the other.

The project created a body of tested approaches that local partners can take to a larger scale. The project's greatest achievement then, was its effect as a catalyzing agent. It accelerated participation in ongoing conservation initiatives, magnified discussion on the value of economic incentives for biodiversity conservation, and increased the engagement, confidence, and capacity of Ecuadorian stakeholders to move a conservation agenda forward.

Lessons learned and recommendations from this five-year activity include:

CONTRACTUAL/ADMINISTRATIVE

A 3+1+1 year contract term risks interrupting project implementation: The project's contract structure consisted of a three-year base period followed by two one-year option periods, contingent upon good performance and the availability of funds. This structure limited the project's ability to design longer-term interventions, build relationships, and devise a life-of-project transition plan that provided clear milestones for beneficiaries across the 5-year implementation period. The goals of a project's final year of implementation vary from that of a mid-project year, and consequently the two extensions to the period of performance also diverted resources from technical work to administration because subcontracts, budgets, and work plans needed to be readjusted accordingly.

Increasing hectares under management does not necessarily yield greater conservation impact: The project's monitoring and evaluation methodology provided a mechanism for measuring the effectiveness of management quality, not only the number of hectares under improvement management (See Annex A for further discussion). Given the wide range of threats that critical habitats face, concentrating and improving management efforts in designated areas can increase conservation values more than a push to expand management over more hectares can. Implementers can tend toward the latter approach when project indicators only measure the number of hectares under improvement management and not the quality of management.

Longer-term M&E is needed to determine the causal relationship between increased incomes and improved biodiversity conservation: As discussed in Annex A, the project did not possess baseline data sufficient to determine impacts based on experimental or quasi-experimental design. In part, this was due to the sporadic and seasonal nature of some activities, such as ivory nut harvesting. Nor was the period of performance long enough to conclusively demonstrate the effects of conservation-oriented economic activities on biodiversity conservation actions by residents in and around fragile habitats over the long-term.

OBJECTIVE I: CONSERVING BIODIVERSITY

Ensuring people benefit economically from managing natural resources incentivizes them to value and protect the resources: Although the relationship between biodiversity conservation and economic incentives has long been discussed, the project provided concrete examples for replication.³¹ When communities value a forest's value to ecotourism or when crabbers value mangroves as the habitat for their source of income, they will cooperate to protect them, and even invest their own time and money in assuring the resources are protected in the long-term.

31. See, for example, McNeely, John. 1988. *Economics and Biological Diversity: Developing and Using Economic Incentives to Conserve Biological Resources*. IUCN: Gland, Switzerland.

Conservation-oriented projects should operate within a broader development strategy: The project identified implementation areas where biodiversity faced critical threats, chief among them land conversion and economic extraction-type activities initiated by unregulated producers or low-income populations struggling to maintain subsistence living. The structural barriers in implementation sites included absence of basic service delivery, poor transportation infrastructure, and limited access to markets. Communities require a more intensive concentration of resources for social service assistance, infrastructure improvements, and poverty reduction than could be provided by the project.

Linking marginalized communities with authorities creates empowerment: Project initiatives — among them, support for mangrove concessions, *Socio Bosque* participation, conservation coalitions, the red crab stock analysis, and observation of red crab closed seasons — brought marginalized communities into communication with authorities ranging from environmental to fishery authorities and the national policy. The increased respect and responsibility granted to communities resulted in empowering communities to file complaints of deforestation, alert officials to fishery violations, and serve as active stewards of natural resources.

OBJECTIVE 2: IMPROVING LIVELIHOODS

Biodiversity conservation and economic growth objectives must be carefully balanced: The primary causes of the degradation of forests and lands along coastal Ecuador are the result of decades of ill-informed and inappropriate use of the natural resource base. The project's mid-term evaluators expressed concern as to the sustainability of economic linkages from a market scale perspective, and some stakeholders voiced their wish for larger-scale commercial machinery and production. The project operated under the principle that any type of economic development project be based first and foremost on biodiversity conservation goals and not on short-term commercial initiatives that ultimately end up destroying areas critical to maintaining biodiversity. Speeding up commercial processes faster than the local infrastructure could support them would have undermined the project's commitment to biodiversity conservation. Depending on the resource and geographic location, accelerated commercialization and scaling up runs the risk of unsettling the balance between conservation of resources and economic growth. The project adapted the initial project design and oriented economic interventions toward securing producer capacity at a smaller scale that is more sustainable from a conservation perspective.

Changing productive practices takes time, trust, and knowledge of the resource basis: The project worked with stakeholders to carefully assess natural resource stocks, develop management practices, train beneficiaries on such practices, and design mechanisms to ensure the sustainability of resources along the entire value chain. These steps are prerequisites for working to establish market linkages that support en-

vironmental management. To build trust, the project developed pilot projects to demonstrate benefits. Additionally, by working through local subcontractors who had pre-existing relationships with beneficiary communities, the project was able to collaborate with stakeholders on a systematic approach to changing practices, without the pressure for “quick wins” often required by external consultants to gain the buy-in of communities.

Longer-term contract mechanisms would be more conducive for economic growth activities: Most project beneficiaries had little access to formal markets before the project. Business planning, financial management, and marketing skills were just some of the capacity gaps for these communities but remain necessary for sustainable growth of productive activities. Additionally, project evaluators have observed across USAID/Ecuador’s biodiversity conservation portfolio that communities sometimes feel rushed into concentrating economic growth on certain productive activities without time for community decision-making processes. The project’s short duration limited its potential to provide the extensive assistance communities need to build the skills for market participation and secure the sustainability of market linkages. A shorter project timeframe also precluded some potential commercial opportunities such as bamboo cane and cap straw from being explored further.

Ongoing communications of benefits is needed to encourage producers to adhere to better management practices: Ownership and enforcement of management practices by local organizations, governments, and the communities themselves is vital to avoid communities reverting to old practices, such as z. Equally important are concerted communications efforts, coupled with observation with local organizations such as Eco-cacao and C&D, to assure producers that the additional time and effort required for organic or conservation-friendly practices yields benefits for ecosystem services and potentially for market values. Institutionalized programs such as *Socio Bosque* and the mangrove concessions play an important role in reinforcing this link, but commitment to communication efforts by local stakeholders is an important, yet fragile, element of the sustainability of project initiatives.

OBJECTIVE 3: DEVELOPING PARTNERSHIPS

Continual investment in counterpart relationships is vital for success: The project fostered strong relationships with government counterparts and other stakeholders, starting with joint work planning sessions. These close working relationships at the national and regional levels enabled the project to coordinate its targets with Government of Ecuador goals, contribute to MAE initiatives such as *Socio Bosque* and the mangrove concessions program, and build GOE ownership of activities. Although staff turnover within the government was a recurrent challenge — in the provincial and local governments some PAs direc-

tors changed after only a few months — the project invested in counterpart resources and benefited from strong GOE support as a result (see box for commentary from a *Socio Bosque* counterpart).

Regulatory revisions must precede field-based interventions, and are subject to political will: Until the late 2000s, the mangrove concession program did not have clear regulatory grounds on which to operate, which slowed its initial implementation. Similarly, in order for the project to carry out community-level support for harvesting of timber forest products within a clear regulatory framework, significant revision to national policies and regulations needed to occur. Ecuador’s forestry law dates from 1981 and does not align with the 2008 Constitution, nor did it address sustainable forestry management. However, the passage of a revised forestry law was delayed in Ecuador’s General Assembly. Consequently, the project adjusted field activities to focus on income-generating activities other than sustainable timber harvesting, and provided additional national level support for management strategies for PAs and a roadmap for revising legislation related to the category of protected forests.

“We have a partnership with USAID. It has resulted in helping those interested in participating in the Socio Program. It isn’t conservation for conservation’s sake, but conservation linked to development. This is a key element of the program, the economic incentives have to help people improve their quality of life, and even make profit so that in the long term they don’t have to turn to the forest for resources in order to live.”

— MAX LASCANO, SOCIO BOSQUE PROGRAM DIRECTOR

ANNEX I:

PERFORMANCE INDICATORS

This annex presents the project's performance against the targets established in the project's Performance Management Plan (PMP), and a brief discussion of selected indicators that present potential challenges for similarly scoped projects. During implementation the project modified performance indicators and targets together with USAID to better measure performance and the achievement of the objectives.

A. PROJECT INDICATOR TABLE

Exhibit 9 summarizes the project's performance in accordance with its targets. During the implementation period, the project revised targets upward several times, and also collaborated with USAID to refine and standardize indicator measurement methodologies. The final targets were established and approved in the project's June 2013 revised PMP. The table shows cumulative results per year and life of the project results under each of the three objectives. All final performance indicator targets were met or exceeded by March 2014.

EXHIBIT 9:
Project Performance Indicator Table

PERFORMANCE INDICATOR	Fiscal year	Target (cumulative)	Summary	
			Target (June 2014)	Achieved (June 2014)
Summary of results per intermediate Result (PIR)				
PIR 1: Improved biodiversity conservation in critical habitats				
Indicator 1.1 Number of hectares of terrestrial areas of biological significance and/or natural resources under improved management as a result of USG assistance	2010	162.136	427,227	427,227
	2011	227.067		
	2012	239.290		
	2013	427.227		
	2014	427.227		
	Total 2014	427.227		
Indicator 1.2 Number of hectares of coastal marine areas of biological significance and/or natural resources under improved management as a result of USG assistance	2010	109.255	297,648	317,105
	2011	135.508		
	2012	135.508		
	2013	291.560		
	2014	297.648		
	Total 2014	297.648		
Indicator 1.3 Number of people receiving USG supported training in natural resources management and/or biodiversity conservation	2010	400	3,250	4,838
	2011	900		
	2012	3000		
	2013	3200		
	2014	3250		
	Total 2014	3250		
Training in person/hours				80,163
Indicator 1.4 Number of initiatives co-financed	2010	6	30	31
	2011	14		
	2012	20		
	2013	25		
	2014	30		
	Total 2014	30		
PIR 2: Local livelihoods improved				
Indicator 2.1 Number of new commercial linkages derived from sustainable natural resource management and conservation as a result of USG assistance	2010	3 org	22	22
	2011	8 org		
	2012	16 linkages		
	2013	20 linkages		
	2014	22 linkages		
	Total 2014	22 linkages		
Indicator 2.2 Number of people with increased economic benefits derived from sustainable natural resource management and conservation as a result of USG assistance	2010	500 households	12,500	16,225
	2011	900 households		
	2012	8,500		
	2013	10,000		
	2014	12,500		
	Total 2014	12,500		
PIR 3: Partnerships formed for ongoing support for biodiversity conservation				
Indicator 3.1 Private and/or public investment leveraged	2010	\$700,000	\$15,000,000	\$17,937,492.56*
	2011	\$1.700,000		
	2012	\$13.800,000		
	2013	\$14.600,000		
	2014	\$15.000,000		

*See Exhibit 10 for disaggregated amounts.

The funds leveraged under Indicator 3.1 are disaggregated further in Exhibit 10. Public funds committed for future payments are a result of *Socio Bosque* agreements in which *Socio Bosque* provides participants with payments over a 20-year period period, and future funds committed through the Global Environmental Facility.

EXHIBIT 10:
Funds Leveraged by Type (Life of Project)

Funding Source	Assigned (Paid during period of performance)	Committed (For future payments)	Total
Public – Governmental (including MAE, MAGAP, Ministry of Tourism, IDB, GiZ, local governments)	\$3,571,111.15	\$1,500,000 (GEF Funds through IDB)	\$5,071,111.15
Public – Governmental (Socio Bosque)	\$1,912,792.80	\$9,770,957.79	\$11,683,750.59
Subtotal, Public	\$5,483,903.95	\$11,270,957.79	\$16,754,861.74
Private - For Profit	\$247,320.82	\$0	\$247,320.82
Private - NGO	\$935,310	\$0	\$935,310
Subtotal, Private	\$1,182,630.82	\$0	\$1,182,630.82
Total	\$6,666,534.77	\$11,270,957.79	\$17,937,492.56

B. DISCUSSION OF SELECTED INDICATORS

1. Number of hectares in areas of biological significance under improved management as a result of USG assistance (Indicators 1.1 and 1.2)

As the project's primary goal was biodiversity conservation, this indicator was a fundamental importance to the project's M&E efforts. The basic formula used by the project was provided by USAID/Ecuador based on a methodology by the Nature Conservancy, and which USAID/Ecuador standardized across projects in 2010. However, with USAID's concurrence the project improved the formula to better gauge the *effectiveness* of the project's interventions (technical assistance) and its effect on biodiversity conservation. The project prioritized tracking changes in the quality of management of biologically significant areas, not only the quantity of hectares under management.

The project established a management index based on formulas for calculating biodiversity, threats, and the effect of project interventions on threats based on a number of factors within each category. The index contained a threshold value above which an area could be counted as under improved management.

Every six months the project convened focus groups of project staff, MAE officials, other local officials, and private sector representatives to score project interventions. The scores served as the basis for the management index values. The USAID Office of the Inspector General recognized the project's involvement of external parties as a positive step toward an objective determination of year-to-year impact.³² As observed by external evaluators in a 2011 study of USAID's biodiversity conservation program, the "current approach [across USAID/Ecuador] prioritizes adding value to mature and on-going projects and activities, rather than starting new ones. This somehow helps address the problem of short project cycles."³³ The project's index methodology provided a participatory, yet consistent, means of capturing quantitative and qualitative shifts in the quality of management.

2. Number of people with increased economic benefits derived from sustainable natural resource management and conservation that are implemented as a result of USG assistance (Indicator 2.2)

The methodology for measuring this indicator was the subject of repeated analysis with USAID over the period of implementation. The project based figures on households' perceptions of incomes that increased as a result of the household applying practices promoted by the project or receiving project technical assistance. The project used a household-level unit given the family orientation of most productive activities. The project calculated perceptions based on 1) perception surveys and 2) case studies to quantify the lower, upper, and average amounts of the increase. The Office of the Inspector General's 2011 audit of the USAID/Ecuador Environmental portfolio observed that this indicator was measured with different methodologies across projects. Furthermore, the Sustainable Forests and Coasts Project's indicator was not clearly tied to sustainable natural resource management, nor did possess a minimum threshold value for which incomes could be considered as having increased. As a result of the audit, the project changed the target unit of measure from households to individuals beginning with the 2012 fiscal year. The project notes, however, that households remain the basic productive unit for most of the communities in which it worked. Additionally, the economies in question were on a subsistence level for which seemingly small increases in income represent substantial percentage increases in the context of the local economy — and also reflect the severe structural barriers to commercial production in the areas in which the project worked.

32. Office of the Inspector General, "Audit of USAID/Ecuador's Environment Program," September 2011, Page 5.

33. U.S. Agency for International Development. 2011. "Economic Sustainability within Biodiversity Conservation Programs in Ecuador (1990 – 2010)." Page 23.

3. Private and/or public investment leveraged (Indicator 3.1)

In 2014 USAID/Ecuador requested that a distinction be made between resources leveraged during the life of project and commitments towards future investment. The project notes that per the approved PMP, targets, and reporting procedures established during implementation, the project rolled up into the annual targets both future funds committed by *Socio Bosque* over the 20-year cycle and other long-term funding commitments, but funds have been disaggregated for presentation in Exhibit 10 above. As observed by external evaluators in a 2011 evaluation of the economic sustainability of USAID/Ecuador's biodiversity conservation programs, "the sustainability level of a project can be measured by the percentage of goods and services that started with the project that are still produced for a specific period after the conclusion of donor's resources, the continuation of local activities stimulated by the project, and the generation of services and successor initiatives as a result of the capacity created by the project."³⁴ From this perspective, the project considers that the 20-year funding stream that *Socio Bosque* participants have access to as a result of project assistance should be considered integral to achievements under this indicator. It is an important reflection on the need for project counterparts to make commitments to conservation beyond those that are quantifiable within the project period of performance. Furthermore, leveraging funds beyond the life of the project is critical to any biodiversity conservation project and the project suggests that the indicator should be reconsidered, emphasizing benefits that will continue to provide incentives for conservation after the project ends.

C. OBSERVATIONS ON THE PROJECT'S PMP

The project's M&E system was oriented toward tracking the output indicators established in the PMP. Through field verifications, focus groups, case studies, and surveys the project did track outcomes and impacts. However, without comprehensive baseline analyses nor an experimental or quasi-experimental design, the project's ability to conclusively measure impacts attributable to the project beyond the established indicators was limited given the resources at hand. As a result, and as referenced elsewhere in this report, the project's many positive impacts — including reduced deforestation and changed attitudes and practices — while significant, must be inferred through discussions with beneficiaries or on longitudinal data collected from other sources. The project recommends that future USAID biodiversity projects incorporate satellite imagery and other rapidly evolving technologies into M&E design to provide additional impact data that contributes to the goals of USAID's 2011 Evaluation Policy.

34. Ibid. Page 8.

ANNEX 2:

**MULTIMEDIA
PLATFORM
(TECHNICAL
DOCUMENTS)
(CD)**



U.S. Agency for International Development

1300 Pennsylvania Avenue, NW

Washington, DC 20523

Tel: (202) 712-0000

Fax: (202) 216-3524

www.usaid.gov