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CONSERVING BIODIVERSITY IN THE AMAZON BASIN

CONTEXT AND OPPORTUNITIES FOR USAID

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ACRONYMS

AI	Amazon Initiative Consortium for Conservation and Sustainable Use of Natural Resources
AIDESEP	Asociación Interétnica de Desarrollo de la Selva Peruana
APA	Amerindian People's Association of Guyana
APECO	Asociación Peruana para la Conservación de la Naturaleza (Peru)
ARPA	Amazon Region Protected Area Program
BiRD	World Bank
BOLFOR	Bolivia Sustainable Forestry Management
BMZ	Ministry of Economic Cooperation and Development (Germany)
CADEFOR	Centro Amazónico de Desarrollo Forestal (Bolivia)
CAF	Corporación Andina de Fomento (Andean Finance Corporation)
CAN	Comunidad Andina de Naciones
CARPE	Central African Regional Program for the Environment
CEDA	Ecuadorian Center for Environmental Law
CGIAR	Consultative Group on International Agricultural Research
CI	Conservation International
CIAT	Centro Internacional de Agricultura Tropical (Colombia)
CIDOB	Confederación de los Pueblos Indígenas de Bolivia
CIFOR	Centro Internacional de Pesquisa Florestal (Brazil)
CITES	Convention on International Trade and Endangered Species
COIAB	Coordenação das Organizações Indígenas da Amazonia Brasileira (COIAB)
COICA	Coordinadora del las Organizaciones Indígenas del la Cuenca Amazónica
COICAP	Coordinadora Agroforestal Indígena y Campesina del Perú
CONAM	Consejo Nacional del Ambiente (Peru)
CONFENAE	Confederación de Nacionalidades de la Amazonía Ecuatoriana
CONIF	Corporación Nacional de Investigación y Fomento Forestal (Colombia)
CONIVE	Consejo Nacional Indio de Venezuela
CTA	Centro de Trabalhadores da Amazônia (Brazil)
DFID	Department for International Development (United Kingdom)
DGB	Dirección General de Biodiversidad, Ministerio de Desarrollo Sostenible (Bolivia)
EAPEI	East Asia and Pacific Environment Initiative
EGAT	Bureau for Economic Growth, Agriculture, and Trade (USAID)
EMBRAPA	Empresa Brasileira de Pesquisa Agropecuária (Brazil)
FAN	Fundacion Amigos para la Naturaleza (Bolivia)
FEINCE	Federación Indígena de la Nacionalidad Cofán del Ecuador
FETAGRI-PA	Federacão de Trabalhadores Agrárias (Brazil)
FFLA	Fundación Futuro Latinoamericano
FOAG	Fédération des Organisations Autochtones de Guyane
FONPLATA	Financial Fund for the Development of the River Plate Basin
FSC	Forest Stewardship Council
FUNAI	Fundacão Nacional do Índio (Brazil)
FUNDESNAP	Fundación para el Desarrollo del Sistema Nacional de Áreas Protegidas (Bolivia)
FVPP	Fundação Viver, Produzir e Preservar (Brazil)
FY	fiscal year
GDA	Global Development Alliance
GEF	Global Environmental Facility

GTNA	Grupo de Assessoria em Agricultura na Amazônia (Brazil)
GTZ	German Agency for Technical Cooperation
IAvH	Instituto Alexander von Humboldt (Colombia)
IBAMA	Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (Brazil)
IDB	Inter-American Development Bank
IEB	Instituto Internacional de Educação do Brasil (Brazil)
IFT	Instituto de Florestas Tropicais (Brazil)
IIAP	Biodamaz and Instituto de Investigaciones de la Amazonía Peruana (Peru)
INPA	Instituto Nacional de Pesquisas da Amazônia (Brazil)
INRENA	Instituto Nacional de Recursos Naturales (Peru)
IPAM	Instituto de Pesquisa Ambiental da Amazônia (Brazil)
ISA	Instituto Socioambiental (Brazil)
ITTO	International Tropical Timber Organization
LAC	Latin America and the Caribbean
MMA	Ministério do Meio Ambiente (Brazil)
MODIS	Moderate Resolution Imaging Spectroradiometer
MPEG	Museu Paraense Emílio Goeldi (Brazil)
NARS	National Agricultural Research Systems
NGO	nongovernmental organization
NRIC	Natural Resources Information Clearinghouse
NRM	Natural Resources Management
OINSE	Organización de Indígenas de Nacionalidad Cofán del Ecuador, Sionas
OIS	Organisatie van Inheemsen in Suriname
OISE	Organización Indígena Secoya del Ecuador
OPIAC	Organización Pueblos Indígenas del Amazonas Colombiano (Colombia)
OTCA	Organización del Tratado de Cooperación Amazónica (Brazil)
PiP	Parks in Peril
POEMA	Programa Pobreza e Meio Ambiente na Amazônia
PROARCA	Regional Environmental Program for Central America
PROCITROPICOS	Programa Cooperativo de Investigación y Transferencia de Tecnología para los Trópicos Suramericanos
PROFONANPE	Fundo para Areas Naturales Protegidas (Peru)
RAISG	Red Amazónica de Informaciones Socio-ambientales Georeferenciadas
SDAA	Special Development Activity Authority
SERNAP	Servicio Nacional de Areas Protegidas, Ministerio de Desarrollo Sostenible (Bolivia)
SINCHI	Instituto Amazónico de Investigaciones Científicas "SINCHI" (Colombia)
SO	strategic objective
SPDA	Sociedad Peruana de Derechos Ambientales (Peru)
TCA	Tratado de Cooperación Amazónica
TNC	The Nature Conservancy
UFPA	Universidade Federal do Pará (Brazil)
UNAMAZ	Associacão de Universidades da Amazônia (Brazil)
USAID	U.S. Agency for International Development
USFS	U.S. Forest Service
WCS	Wildlife Conservation Society
WHRC	Woods Hole Research Center
WWF	World Wildlife Fund

EXECUTIVE SUMMARY

In 2005 the U.S. Agency for International Development (USAID) is launching a new regional program to support conservation of biological diversity in the Amazon Basin. To help guide the design of this new program, USAID requested that the Natural Resources Information Clearinghouse (NRIC) identify opportunities for USAID to contribute to biodiversity conservation in the Basin. From August to December 2004, the NRIC team spent four months visiting five countries in the region (Bolivia, Brazil, Colombia, Ecuador, and Peru), reviewing more than 100 documents and meeting with more than 250 representatives of USAID, governmental agencies, NGOs, community groups, and companies. Key elements of, and insights and recommendations for, a regional program were identified during this process. The Agency will use this assessment to develop and carry out a regional conservation strategy.

The Amazon Basin's biological diversity is staggering. It holds the largest area of contiguous and relatively intact tropical forest in the world. While these biological assets could provide a sound foundation for regional development, they are instead threatened by unsustainable resource uses that are associated with agriculture, ranching, logging, mining, petroleum exploration, and fishing. These threats, in turn, are provoked by forces such as population growth, infrastructure development, expanding commodity markets, insecure land and natural resources tenure, and distorted policy incentives.

CJ Rushin-Bell / USAID

This web of threats and drivers is complex and operates from the local to regional and international levels. Weak enforcement of environmental laws and regulations undermine efforts to protect biological resources. To date, approximately 15 percent of the Basin has been deforested. Continued large-scale deforestation within the Basin may disrupt climate processes resulting in less rainfall, with far-reaching impacts to biodiversity, agriculture, fisheries, and the livelihoods of indigenous people who have lived in the Basin for millennia. Conserving the region's biological diversity requires large-scale actions that address both threats and drivers at local, national, and regional levels.

USAID-sponsored regional environmental programs elsewhere in the world show that successful design and implementation of regional programs requires: (1) a clear regional agenda, (2) political buy-in from the outset, (3) strong local ownership by program participants, (4) strong institutional partnerships at diverse scales from local to regional, and (5) mainstreaming of supported activities and results into sectoral policies and programs. In addition, it was found that such programs require counterpart institutions operating at multiple-country or region-wide levels. Among the most prominent existing regional programs in the Amazon Basin for USAID to collaborate with are the Organización del Tratado de Cooperación Amazónica (OTCA) and the Coordinadora del las Organizaciones Indígenas del la Cuenca Amazónica (COICA), a regional organization representing indigenous peoples.

A. Critical Needs and Current Donor Investments

Five major thematic areas served to organize stakeholder meetings and information collection. Based on analyses of national biodiversity strategies and of major regional threats to and drivers of biodiversity loss, the team focused on the following thematic areas:

- Protected areas and conservation landscapes
- Indigenous peoples and their territories
- Sustainable agriculture
- Sustainable forestry
- Sustainable fisheries and
- Current funding and programmatic gap analysis

Each is summarized below:

Protected areas and conservation landscapes
Protected areas are at the foundation of any strategy to conserve biodiversity. Substantial international investments have been made in protected areas, which today cover approximately eight percent of the Amazon Basin. Increasingly, the challenge is to monitor and protect these areas and their borders and to enforce regulations related to sustainable resource use practices. Indigenous peoples are present in many protected areas in the Basin, which has led to new programs of co-management that accommodate indigenous people's rights with biodiversity conservation. The strengthening of biodiversity funds in Amazonian countries and ongoing initiatives to provide income streams from environmental services could assist in enabling indigenous communities to better manage and protect their lands. While most work in this theme has focused at the national level, new efforts are underway to design and implement large-scale projects that provide continuity for biodiversity across national borders.

Indigenous peoples and their territories
Indigenous territories have expanded enormously in recent decades and today cover more than 20 percent of the Amazon Basin. While there is debate about the value of these territories for biodiversity protection in comparison to parks and reserves, there is no question that indigenous lands contain immense areas of intact forest with significant biodiversity conservation value and serve as effective buffers against environmental degradation, even in areas of rapid frontier expansion. Ensuring the integrity of indigenous lands requires that indigenous groups have clear rights to natural resources, such as forest products, that they effectively manage and profit from these resources and defend them against encroachment. Sustaining indigenous rights to resources, in turn, requires strong governance structures of their organizations, maintenance or restoration of cultural awareness, and development of new skills in the business of natural resources-based enterprise management.

Sustainable agriculture
Agriculture poses the largest single threat to biodiversity in the Amazon. Modern incentives continue to tip the scales in favor of shifting cultivation, extensive grazing, and commercial estate development against more long-lasting alternatives. Chief among these incentives are public investments in infrastructure, uneven access to land, lack of tenure security, subsidized credit, widespread use of fire in frontier areas, and exploding global markets for agricultural products. Numerous projects in the region support development of land-use alternatives such as agroforestry, but they are unlikely to succeed without addressing the above issues.

Sustainable forestry
As is the case with agriculture, conventional forestry in the Amazon is not long-lasting and is driven by multiple inducements that discourage more sustainable alternatives. Numerous efforts are underway to change this situation through improved zoning and monitoring, and by restructuring the regulations and agencies of enforcement. Other initiatives aim to create and meet market demand for sustainably produced forest products through standards-setting and certification programs. However, the implementation of forest certification systems has been very uneven across the region, largely confined to large publicly owned concessions, and only limited progress has been made applying certification to small and community-based forests. While promising progress has been noted in certain locales, the predominant forms of forestry remain short-sighted because of similar customs that shape agricultural practice in the region.

Sustainable fisheries
Although the Amazon contains by far the highest diversity of freshwater fish in the world (2,500-3,000 species), many of the region's major commercial fisheries are in decline due to incentives that drive over-fishing and habitat degradation. The latter is especially critical because of the region's high proportion of fish species that depend on threatened terrestrial habitats such as flooded forests. More than any other thematic area assessed in this report, addressing the threats and incentives to fisheries in the Amazon requires region-wide responses, due to the extensive migrations of Amazonian fish.

Current funding and programmatic gap analysis
Preliminary analysis of investments by USAID and other major donors in biodiversity conservation in the Amazon Basin shows that the following receive relatively little attention from international donors: conservation of biological diversity on Indian lands, sustainable management of aquatic systems and fisheries, and biodiversity conservation in agriculture systems. The team looked at funding from the Pilot Program to Conserve the Brazilian Rain Forest (PPG-7), the Global Environment Facility (GEF), and the Moore Foundation. More than 70 percent of recent disbursements were channeled to three thematic areas: (1) protected areas (46 percent), (2) forestry (17 percent), and (3) indigenous territories (9 percent). A substantially higher share of expenditures was allocated to issues related to protected areas than to indigenous territories, which is notable because the former cover eight percent of the region and the latter more than 20 percent. Hence, a notable gap exists in spending by international donors to support biodiversity conservation on lands managed by indigenous peoples. Another important gap identified was a relatively low share of disbursements to aquatic systems, including fisheries conservation and management, despite the high socioeconomic and environmental importance of these systems and their highly threatened status. Likewise, few explicit linkages to agriculture in biodiversity projects exist even though agriculture represents the predominant land-use threat to biodiversity in the Amazon Basin.

B. Opportunities Assessment

While all the thematic areas examined in this report are closely linked to biodiversity, it is evident the need exists to mainstream into major sectoral policies to achieve maximum impacts. This need is addressed by presenting the opportunities under four cross-cutting issues: (1) governance and civil society; (2) markets, trade, and financial mechanisms; (3) best practices for landscape and natural resource management; and (4) public policies.

The team identified the following nine promising opportunities for a new USAID regional initiative to conserve biodiversity:

Governance and Civil Society
1. Strengthening public sector governance capacity for natural resources management
2. Strengthening the governance capacity of local communities
3. Strengthening regional cooperation and communication

Best Practices for Landscape and Natural Resource Management
4. Supporting conservation landscapes
5. Identifying and disseminating best management practices

Markets, Trade and Financial Mechanisms
6. Building capacity to supply markets with sustainable products and services
7. Harnessing markets to improve application of sustainable standards and certification
8. Developing alternative markets and financing mechanisms

Public Policies
9. Shifting public policies that drive biodiversity loss

Four criteria were used to assess these opportunities and establish potential priorities for a USAID strategy:

1. ***Relevance to threats and drivers of biodiversity loss***. Under this criterion, not only were the direct threats considered, but also the underlying causes of biodiversity loss as a major criterion in defining priorities for this program.

2. ***Cross-cutting opportunities to biodiversity conservation***. This criterion is used to identify those opportunities that add to the biodiversity conservation programs being funded by other major donors in the region.

3. ***Comparative advantages for USAID***. During the past 10-15 years, USAID has gained considerable experience in a wide range of issues related to biodiversity conservation in the Amazon Basin. As a result, the NRIC team recommends that USAID's comparative advantages also be considered as an important criterion.

4. ***Potential for significant and measurable, five-year results***. In defining priorities for a regional program, it is also important to identify potential results that produce measurable changes at significant scales. Using a five-year limit helps prioritize opportunities capable of generating the necessary short-term payoffs that will help sustain long-term interventions. Analysis based on these criteria resulted in the following priorities of the opportunities identified in the report:

1. Harnessing markets to improve production standards
Production standards using rigorous environmental, social, and economic criteria have been developed for forest products and a variety of crops in Latin America, and extensive and growing areas of forest have been certified in the Amazon. While major agribusinesses or mining enterprises in the region have yet to adopt these standards, some large-scale ranchers, soy producers, and mining and petroleum companies have begun to develop improved environmental standards on their own, sometimes in response to international pressure (especially in mining and petroleum), in others to reduce inputs, ensure continued market access, or obtain price premiums in markets. This opportunity is extremely relevant to both threats (destructive forms of land use) and markets. USAID has ample experience in improving forestry production standards through certification and can draw on expertise elsewhere in Latin America in agriculture, mining, and oil production.

Examples of the sorts of activities that USAID could initiate include:

- Develop improved awareness for standards and certification in agribusinesses and mining
- Increase producers' skills to meet long-term production standards
- Strengthen the environmental competitiveness of producer networks
- Link buyers to producers

2. Strengthening regional cooperation and communication

In the Amazon Basin a need and opportunity exists today to strengthen existing international networks that can serve as collaborators and counterpart agencies for a USAID regional program. Key regional organizations identified include the Amazon Treaty Organization for governmental collaborations and COICA for indigenous groups. This opportunity might be pursued from the outset, as the results of these regional collaborations can positively impact and guide the long-term develop of the overall USAID regional program.

Activities identified under this opportunity include:

- Convening key actors
- Building collaborative networks
- Using diverse communication media

3. Strengthening the governance skills of local communities

Strengthening governance skills for indigenous communities is of critical importance for biodiversity conservation in the Amazon Basin. Indigenous communities must govern their land and resources and have rules for how to deal with government, settlers, local, national and international corporations, and other groups impacting biodiversity on their lands. Many indigenous communities have shown significant progress in managing their own affairs during the past decade and increasingly demand greater control.

Addressing this opportunity, along with other activities discussed in this report, can significantly contribute to biodiversity conservation and reduce resource-based conflicts in the region. USAID has significant experience in addressing this opportunity.

The following activities would contribute to increasing the participation of indigenous and other traditional groups in governmental processes, policy dialogues, and policy-making:

- Assessment of indigenous governance models for management of land and natural resources
- Provision of training and skills building for governance
- Empowerment of indigenous women through access to information and education
- Strengthening the monitoring and enforcement of land and property rights

4. Strengthening public sector governance related to natural resources management

The most significant hindrance to sustainable natural resources management for biodiversity conservation in the Amazon Basin is the inability of national and, increasingly, local governments to fulfill their roles in the process. Strengthening governmental capacity to address issues related to indigenous people's land rights, enforcing natural resources management and resource extraction regulations, and improving the monitoring and management of existing protected areas are particularly relevant. Opportunities exist to promote collaborations through which civil society, indigenous peoples, and the private sector can assist with monitoring and reporting requirements.

The following activities are identified for consideration by USAID:

- Promoting participatory methodologies in government
- Promoting best practices for monitoring and enforcement
- Encouraging public-private partnerships

- Enhancing land titling and property and resource rights

5. Shifting policies that drive biodiversity loss
Public policies across the region have far more stringent requirements for managing forests than for clearing them and are often strongly favor ranching and mechanized agriculture interests over management natural forest and aquatic systems. However, impacts on biodiversity are a major factor guiding investments by multilateral banks, and are beginning to influence investment decisions and practices by the private sector in areas such as forestry, agribusiness, petroleum and mining. In its 2002-2012 plan, the newly-strengthened OTCA has emphasized the critical importance of policies that impact biodiversity in the region. These changes at the regional and international levels point to a raising potential opportunity to help shift policies that drive biodiversity loss in the Basin.

Two activities below exemplify how USAID might initially contribute to the policy debate:
- Providing regional analysis of sectoral policies driving biodiversity loss
- Clarifying policies related to property rights

6. Supporting conservation landscapes
The Amazon Basin provides one of the world's last frontiers for establishing relatively intact, large-scale conservation landscapes. Efforts to plan and implement large-scale conservation projects are underway in various parts of the region, with technical and financial support from the major international conservation organizations including USAID. Managing these projects is often complicated especially where they encompass multiple land owners and two or more countries with distinct environmental legislation and lines of authority. For a regional program, such projects provide a niche to contribute and a distinct opportunity to help implement a wide variety of activities — from governance to best practices in management and sustainable production. Notable opportunities exist to promote and support integrated management of large watershed, an area where USAID has significant experience.

The following activities are intended to conserve large-scale landscapes:
- Analyzing the value of landscape corridors
- Implementing integrated watershed management
- Identifying and disseminating best practices in cooperative management

7. Identifying and disseminating best management practices for natural resource management
USAID, among many donors, national organizations, universities, and others, has provided critical support for development of best practices for managing natural resources in the Amazon Basin. Best practices include monitoring and enforcing land and resource rights, reducing impacts from extractive industries, employing methods for reduced impact logging, and supporting agroforestry and marketing lesser known timber species. The natural resources knowledge and management practices of indigenous peoples provide a particularly important opportunity to replicate the use of best practices. Building on existing experience, a strategic opportunity exists for a regional initiative to gather and disseminate information on best management practices and support training that will help ensure the broadest possible application of those practices throughout the region.

Three potential activities that fall under this opportunity are:
- Gathering and disseminating information on sector-specific best management practices
- Developing training for indigenous peoples
- Developing best practice among indigenous communities

8. Building markets for sustainable products
Because of many policy and market distortions, financial incentives for biodiversity conservation in the Amazon Basin are weak. Markets represent a major impediment to improved resource management by small producers, who often operate through multiple middlemen and exploitative debt peonage arrangements. Various opportunities exist to strengthen existing markets for sustainable products and develop new financial mechanisms based on environmental services. USAID has significant relevant experience in the region.

Potential activities include:

- Strengthening cottage industries based on low-impact resource uses
- Fostering partnerships between communities and entrepreneurs
- Strengthening biotrade
- Disseminating market information

9. Developing alternative markets and financing mechanisms for conservation
Although the value of biodiversity and environmental services are often unrecognized or undervalued by markets, there have been recent successes, such as establishing payments for watershed services provided by protected areas in Ecuador and international investments in tropical forests for carbon sequestration. Considerable progress has also been made in the region to establish funds that provide long-term financing for protected areas. Despite a greater mass area, no similar initiative has been directed toward indigenous territories and their populations. These recent success suggest an opportunity to expand development of alternative financing for management of natural resources, and perhaps unique opportunities with indigenous peoples.

Five potentially promising activities under this opportunity are:

- Learning from water valuation through integrated watershed management
- Assessing lessons from and possibilities for ecotourism
- Developing a regional biodiversity strategy and fund
- Developing a fund for grants and loans for indigenous communities
- Analyzing compensation for environmental services from sustainable agriculture

Conclusions

The first three opportunities are the more promising areas for USAID to work in the region, particularly in the start-up years. Increasing use of sustainable production standards (Opportunity 1) can be built on USAID's considerable experience with long-term timber and coffee programs and growing continued tourism initiatives. Strengthening regional organizations' skills (Opportunity 2) to convene meetings, evaluate biodiversity conservation issues, and establish regional conservation objectives and action plans could be extremely important to building a USAID regional program with local ownership through regional representation. Finally, strengthening natural resources governance by indigenous peoples (Opportunity 3) will likely require several years to show significant results, but has enormous potential to protect biodiversity while improving livelihoods.

I. INTRODUCTION

The Amazon Basin covers a much larger territory than people often perceive. In addition to the traditional image of the Amazon River and its tributaries that slice through the rainforest from the Andes to the Atlantic, the head waters of the Amazon extend beyond the rainforests and reach elevations in the Andes of more than 16,400 ft (5,000 m. above sea level) at its westernmost watershed (Goulding, Barthem, and Ferreira 2003). The Andes draining into the Amazon span a 2,800-mile (4,500 km) arc, stretching from Bolivia to Colombia. Although there is much debate about what constitutes the head waters of the Amazon River, many observers agree that the Uyucali in the high lands of Peru is the upper Amazon River. Depending on the source, the Amazon is anywhere between 3,903 miles (6,259 km) and 4,195 miles (6,712 km) long. The second longest river in the world, the Amazon is by far the largest river in the world, accounting for approximately 20 percent of the water flowing from the world's rivers to the oceans.

The seven million km^2 Amazon Basin includes portions of eight countries plus French Guiana (Map 1). The three largest countries encompass more than 90 percent of the region: Brazil (67 percent), Peru (12 percent), and Bolivia (12 percent) (Goulding, Barthem, and Ferreira 2003). Containing the largest area of contiguous and relatively intact tropical forest in the world and extensive watershed systems, the region's biological and cultural diversity is immense. The area is home to a diverse array of indigenous peoples who speak more than 300 indigenous languages and dialects. This biological and cultural diversity has an

Map 1. Amazon Basin

intrinsic value and represents enormous assets for society. Yet instead of providing a foundation for regional sustainable development, these assets are increasingly squandered by rapid and often unplanned frontier expansion and loss of biological diversity and ecological services on a grand scale.

Design of a program to support biodiversity conservation of the Amazon Basin requires definition of the project's geographic scope. A strict watershed definition offers one option. Another definition might exclude the Andean highlands with their distinct ecological and cultural conditions; this distinction is often made by governments, ethnologists, and biologists working in the region. In addition to geological and hydrological factors that have played a significant role in shaping the Amazon Basin, the recently established Amazonian Cooperation Treaty (1978) includes any territory of a Contracting Party (Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Surinam, and Venezuela) which, by virtue of its geographical, ecological, or economic characteristics, is considered closely connected with the Basin (Article II). The regional treaty provides the Amazon Basin countries with a mechanism for undertaking joint actions and efforts to promote the harmonious development of their respective Amazonian territories.

A. Biodiversity and Cultural Diversity in the Amazon Basin

The Amazon Basin is comprised of a myriad of ecosystems and vegetation types including rainforests, seasonal forests, deciduous forests, flooded forests, savannas, and in the highlands diverse alpine communities to snow-capped peaks.

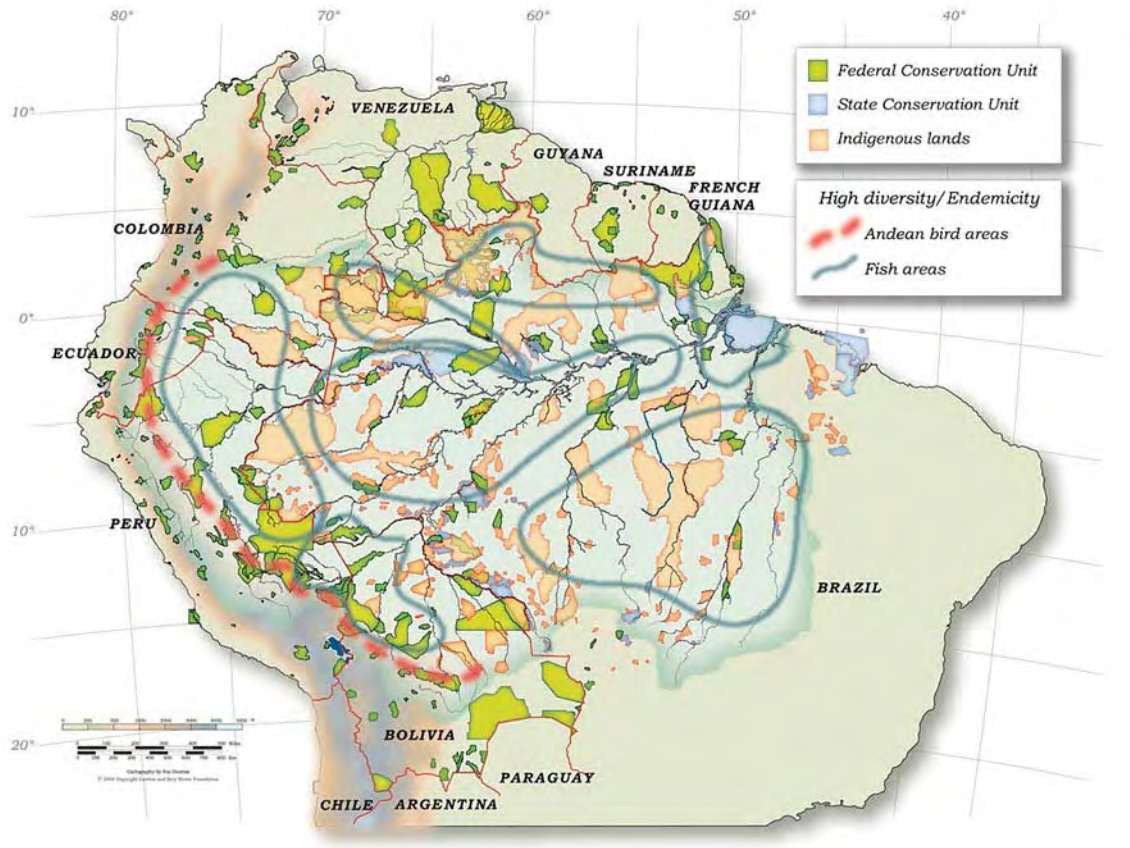
Periodic climatic shifts, combined with geographic isolation by rivers and topography, led to repeated changes of this mosaic over time. Data for the Basin as a whole can be estimated only from national or sub-regional data. The Brazilian Amazon, representing nearly 70 percent of the region, contains more than 2,000 fish (with more than 3,000 for the Basin as a whole), 550 reptiles (of which 62 percent are endemic), more than 950 birds, and 350 mammals (including 57 primates).

The Andean portions of the Amazon Basin are even more impressive; as a whole, the Andes have the highest biodiversity on the planet. Including areas outside of the Basin, the Andes contain 50,000 vascular plants (40 percent endemic) and 1,666 bird species (41 percent endemic), and it ranks at the top of the global total in non-fish vertebrates (3,389, of which 1,567 are endemic) (CEPF 2000).

Although species diversity is exceptionally high throughout the Amazon Basin, many taxa — and in particular birds — achieve maximum diversity in the eastern foothills of the Andes, in the transition zone between highland and lowland habitats. Fish, on the other hand, occur at higher levels of diversity in the estuary and along the major channel of the Amazon River and its southern tributaries, where species from diverse river systems migrate; levels of fish endemism are also high in the headwaters of the Andes and the Brazilian and Guyana shields (Map 2). These strikingly different distribution patterns of the region's two most diverse vertebrate groups show that focusing establishment of protected areas to specific parts of the Basin would fail to encompass the diversity of species.

Approximately 349 ethnic groups have been identified in the Amazon region, with many groups living in remote areas, including some who have not been contacted (Tresierra 1999). These groups are extremely varied, speaking up to 300 languages and dialects, and at varying degrees of acculturation (Moore, forthcoming). In Colombia and Brazil, indigenous populations occur at low densities and represent small remnants of the sizeable and stationary societies that existed prior to European contact, particularly along the major rivers. In addition, extensive areas of mature upland forest in the Amazon contain remains of charcoal and pottery, indicating prior indigenous settlements and forest clearing for swidden agriculture. Under low population densities that probably prevailed across much of the upland areas of the Amazon, swidden agriculture was temporary and may actually have contributed toward increasing biodiversity by creating a more variable landscape matrix.

Map 2: Protected areas and centers of diversity and endemism for birds and fish in the Amazon Basin.



The Amazon's biodiversity provides goods and services of immeasurable value. Hundreds of thousands of rural families throughout the region depend on goods harvested from natural ecosystems, including food, fiber, fuel, and natural medicines. These goods also provide a foundation for urban-based economies within and increasingly beyond the region. Services include maintenance of the region's intricate network of watersheds, which sustain fisheries, maintain soil fertility, provide transport, and generate energy (Alcamo 2003). The Amazon provides 20 percent of the world's freshwater, and its immense scale of water cycling and carbon sequestration is critical in regulating regional and global climate.[1] The region's biological and cultural diversity represents a largely untapped pool of genetic material and knowledge for development of medicines and crops.

In short, the Amazon's ecological and biological diversity are essential for human well-being at local, regional, and global scales. Conserving this biodiversity and its associated services requires maintaining maximum forest cover across extensive portions of the region and protecting a full spectrum of terrestrial and aquatic habitats.

[1] Recent climatic models exploring the hydrological role of forests in the Amazon have shown that, in comparison to other portions of the Basin, the forests in eastern and southern Amazonia are of greatest importance in maintaining the hydrological cycles that sustain the entire biome (preliminary findings from the Woods Hole Research Center and the Instituto de Pesquisa Ambiental da Amazônia (IPAM)).

Robin Martino/USAID

According to some recent estimates, more than 85 percent of the region's forest cover remains intact, providing important habitat for many animal and plant species. Approximately 10-15 percent of the Amazon Basin is currently deforested, representing the largest area deforested in the past 10,000 years (Goulding, Barthem, and Ferreira 2003). Nevertheless, the region's relatively high degree of contiguous forest cover provides optimal conditions for establishing large-scale conservation programs that are needed to maintain major ecosystem functions and to ensure that biodiversity is maintained in the long term.

Conservation in the Amazon region to date has been largely a passive process because of a high degree of isolation, low population densities, and rudimentary resource use technologies that prevail throughout much of the region. This situation has provided opportunities for international agencies to invest in programs that help establish and expand protected areas. For example, the G-7 supported Pilot Program to Conserve the Brazilian Rainforest (PPG-7) has played a key role in demarcating indigenous lands that now cover 22 percent of the Brazilian Amazon. Likewise, the newly established Amazon Regional Protected Area (ARPA) program aims to expand strict protected areas to 10 percent of the region (500,000 km^2). Through its Missions in six Amazonian countries (Bolivia, Brazil, Colombia, Ecuador, Guyana, and Peru), USAID has played a major role in expanding and strengthening protected areas, and in encouraging environmentally sound forms of land use such as natural forest management and agroforestry. Other bilateral donors have pursued similar agendas. In response to the need to conserve regional landscapes at broad scales, protected areas (including, in some cases, territories allocated to indigenous peoples) cover more than one-third of the region, and transboundary protected areas have sprung up between most of the countries in the region. For example, the Tumucumaque Reserve, which was created in 2002, is the world's largest tropical rainforest protected area (3.87 million hectares), spanning the border between Brazil and French Guyana (Conservation International 2002).

Furthermore, despite low population densities across much of the Amazon, people — especially indigenous people — are present in most of the region's protected areas. Effective conservation requires their active buy-in as well as that of surrounding populations. To ensure long-term and large-scale conservation, the well-being of these populations should be enhanced through social and economic development based on sustainable resource uses, and when applicable, traditional ecological knowledge of indigenous peoples.

Nearly all the conservation programs in the region, including those funded by USAID and other bilateral agencies focus on specific countries, with only a few operating at transboundary or regional levels. Increasingly, however, the threats to and opportunities for conservation of both biological and cultural diversity occur at these larger scales as newly constructed roads and other infrastructure link Amazonian nations, and as more integrated policies on trade and economic growth emerge. Increasingly porous borders provide more conduits for incursions by insurgents, drug traffickers, hunters, miners, and loggers. This leads to intensified local conflicts and resource depletion. At the same time, at much larger scales across vast areas of the eastern and southern portions of the Basin in Brazil and in the Andean foothills and lowlands, infrastructural development and economic policies are driving rapid population growth and intensified resource use, accelerating ecosystems fragmentation, intensifying social conflicts, eroding indigenous cultures, and marginalizing rural poor.

B. Purpose of this Assessment

These trends indicate a growing need for Basin-wide approaches to conservation that are more ambitious and in many ways fundamentally different from the traditional donor programs of the past. This report assesses the major current threats to and opportunities for biodiversity conservation at a regional level in the Amazon Basin. The assessment will inform the subsequent development by USAID of a regional biodiversity conservation strategy to be implemented by USAID.

The assessment is a collaborative effort between USAID's Regional Bureau for Latin America and the Caribbean (LAC) and USAID's Office of Natural Resources Management (NRM) housed within the Bureau for Economic Growth, Agriculture, and Trade (EGAT). It was carried out during August-December 2004 by a team of specialists from the NRIC project.

Because of the scale of the region, the team visited five countries where USAID has missions: Bolivia, Brazil, Colombia, Ecuador, and Peru. Every effort was made to consult with a wide range of information sources from within the region and in the United States (Annex 1). Because of the region's enormous variation and complexity, this report provides a concise assessment of opportunities within broadly defined themes. While this approach simplifies inherently complex issues, it has the advantage of permitting the assessment of major trends and opportunities needed to build a regional strategy.

The report is comprised of five sections. Following the Introduction (Section I), Section II examines the major direct and indirect causes of biodiversity loss, including direct threats and key policy drivers. Section III looks at the needs in major focal areas (protected areas, indigenous territories, forestry, fisheries, and agriculture), and the responses by USAID and other major international donor agencies operating in the region. Section IV presents opportunities for a USAID regional program to conserve biodiversity. These opportunities are organized under cross-cutting issues defined by their linkages to the biodiversity strategies of Amazonian countries. Finally, Section V presents the report's conclusions.

In addition, annexes provide information on people and institutions consulted (Annex 1), publications and reports consulted (Annex 2), methods of data gathering and analysis (Annex 3), linkages between focal areas and national biodiversity strategies (Annex 4), data on investments by USAID in the region (Annex 5), and an analysis of regional institutions or programs related to biodiversity in the Amazon Basin (Annex 6).

Numerous individuals provided invaluable information and insights, which the authors have made every effort to incorporate into this report. In addition, a first report draft was widely distributed and commented by staff members of USAID and representatives of 117 institutions within the region and the United States. Every effort was made by the team to address these comments in the final draft report.

The NRIC team was led by Amazon Basin expert, Anthony Anderson, a specialist in natural resource issues and program development with 30 years experience in the Amazon Basin. Dr. Anderson was assisted by Adriana Casas, a biodiversity specialist with expertise in biodiversity, environmental law, and policy issues in Latin America. NRIC staff working on this initiative included Dave Gibson, Sarah Guroff, George Johnston, Kristine Kuhlman, Denise Mortimer, Darlene Summers, Steven Swierenga, and Richard Warner.

II. THREATS TO BIODIVERSITY CONSERVATION

This section describes the major threats to biodiversity in the Amazon Basin followed by a discussion of the indirect political and economic conditions that often drive such threats. Opportunities identified later in this report are selected in part based on their potential to reduce these threats and root drivers.

A. Major Threats to Biodiversity

Loss of biodiversity in the Basin results from a wide range of human activities, including: hunting, ranching, farming, logging, fishing, mining, petroleum exploration, construction and improvement of transport infrastructure, planned and spontaneous colonization, hydroelectric dam construction, and pollution. While these threats are complex and vary significantly between and within Amazonian countries, general trends are described briefly below.

Deforestation. No accurate data on deforestation exists for the Amazon Basin as a whole, although annual losses of 8,920 square miles to 9,420 square miles (more than the size of New Jersey) are frequently cited (Butler 2004). Long-term data are available for Brazil, which has relatively advanced remote sensing technology and where the absolute area of annual deforestation is far greater than any other Amazonian country. These data show a disturbing trend. Since 1997, when approximately 5,034 square miles of forest were removed, there has been an increasing trend of accelerated deforestation in the Brazilian Amazon. Current estimates show that number has almost doubled for the past three years (Butler 2004).

The Amazon forest contains 90-100 billion tons of carbon. Deforestation releases 200-300 million tons of carbon annually, roughly between two to four percent of world emissions (Carvalho et al 2004). A significant increase in deforestation and fires in the Amazon could undo most of the anticipated gains from the implementation of the Kyoto Protocol. Recent global models of climate change predict significant temperature rises in the region during the dry season by the last third of this century causing additional ecosystem stress and fuel loading for fires.

Frontier expansion. In many frontier areas throughout the Amazon Basin, miners, loggers, ranchers, and farmers compete for newly accessible lands that were often traditionally occupied by sparsely populated indigenous groups. Miners and loggers establish access roads and extract high-valued resources such as gold and mahogany. Goldmines often persist at specific sites for longer periods, while initial high grading by loggers is an ephemeral activity taking place across extensive areas. Small farmers coming from other regions or older frontier areas often arrive next. Distant from markets and with few alternative employment opportunities, these producers eke out a living by selling lower-valued timber species to loggers, and by clearing and burning the forest to establish shifting cultivation plots, which in time may be converted to small-scale pastures. Marginal conditions eventually

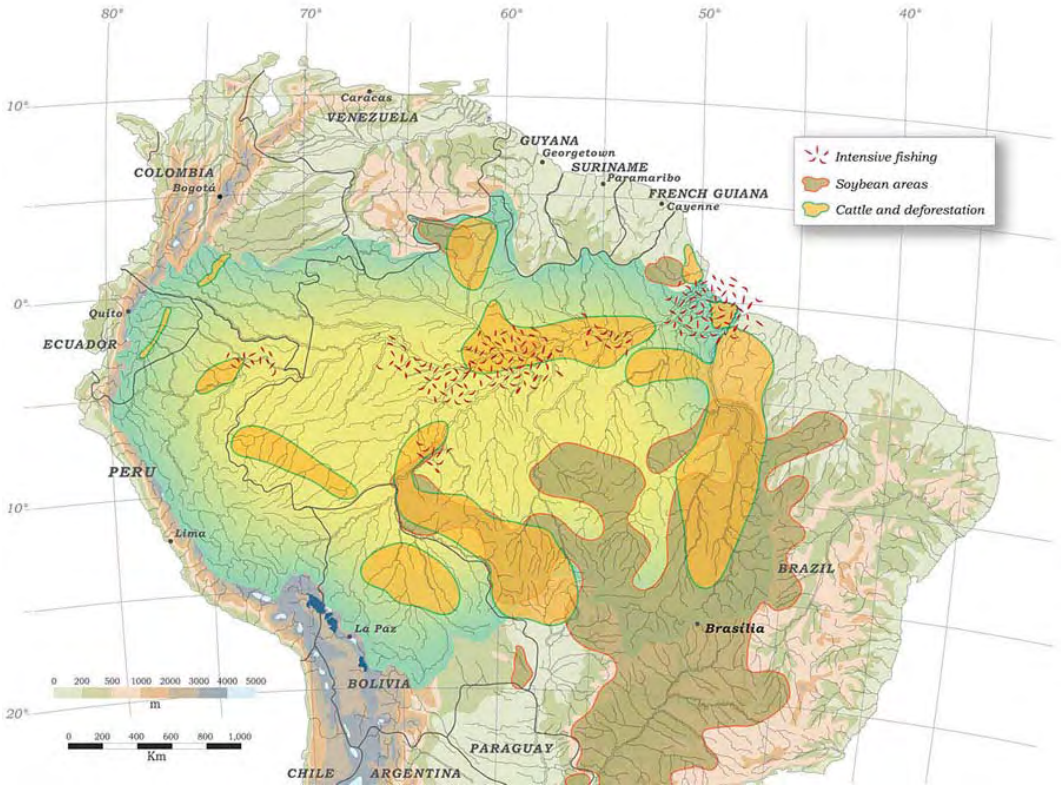
Matt Herrick/Chemonics

compel these producers to sell their lands and move to new frontiers or urban centers. As their properties expand, landowners frequently establish extensive cattle pastures, particularly in Brazil but increasingly in Bolivia and other countries. As access improves and property values rise, however, landowners often adopt more intensive pasture management or mechanized agriculture.

Logging. Recent estimates from the Brazilian Amazon show that the area logged each year approximate the area deforested for agriculture or ranching (Nepstad et al 1999). Logging generates highly variable impacts on forest structure and composition, although it almost always leads to major depletions in wildlife because of bushmeat hunting by loggers. Access roads built by loggers also provide pathways for settlers who clear forest for agriculture or cattle pastures. Logged forests can become increasingly susceptible to wildfires such as those that took place during the 1990s in the Brazilian and Bolivian Amazon.

Agriculture and ranching. Approximately 15 percent of the Amazon forest has been cleared to date, primarily for agriculture and ranching (Map 3). Cattle pastures occupy about three quarters of the deforested area, which is concentrated along the eastern and southern margins of the region with increasing expansion into the core, as well as along the Middle Amazon River. Historically and especially in Brazil, most deforestation at a regional scale has resulted from the actions of a relatively small percentage of landowners who clear large areas for cattle pasture and, more recently, for large-scale soybean, rice, and palm oil plantations. Yet recent estimates suggest that roughly 600,000 small-scale producer families in the Brazilian Amazon may be responsible for possibly one-third of total deforestation (Homma 1998; IBGE 1998). In other Amazonian countries with less skewed land distribution, the

Map 3: Major areas of intensive fishing, cattle pastures, and soybean plantations in the Amazon Basin



proportion may be higher. Nevertheless, key drivers such as infrastructure and growing global markets are likely to increase the threat from large-scale agro-industries in most Amazonian countries.

In comparison to extensive cattle pastures, intensive grazing and mechanized agriculture occupy relatively small but growing areas, especially along the southern and eastern margins of the region where greater accessibility and drier climate favor these land uses. Rapid growth of soybean plantations has generated considerable concern, but the requirements of level terrain, deep soils, and drier climate will probably limit their expansion into the core of the region (Schneider et al 2002). Intensive grazing and mechanized agriculture cause little direct deforestation because they tend to occur in areas already cleared for other land uses — in particular, extensive and degraded cattle pastures.

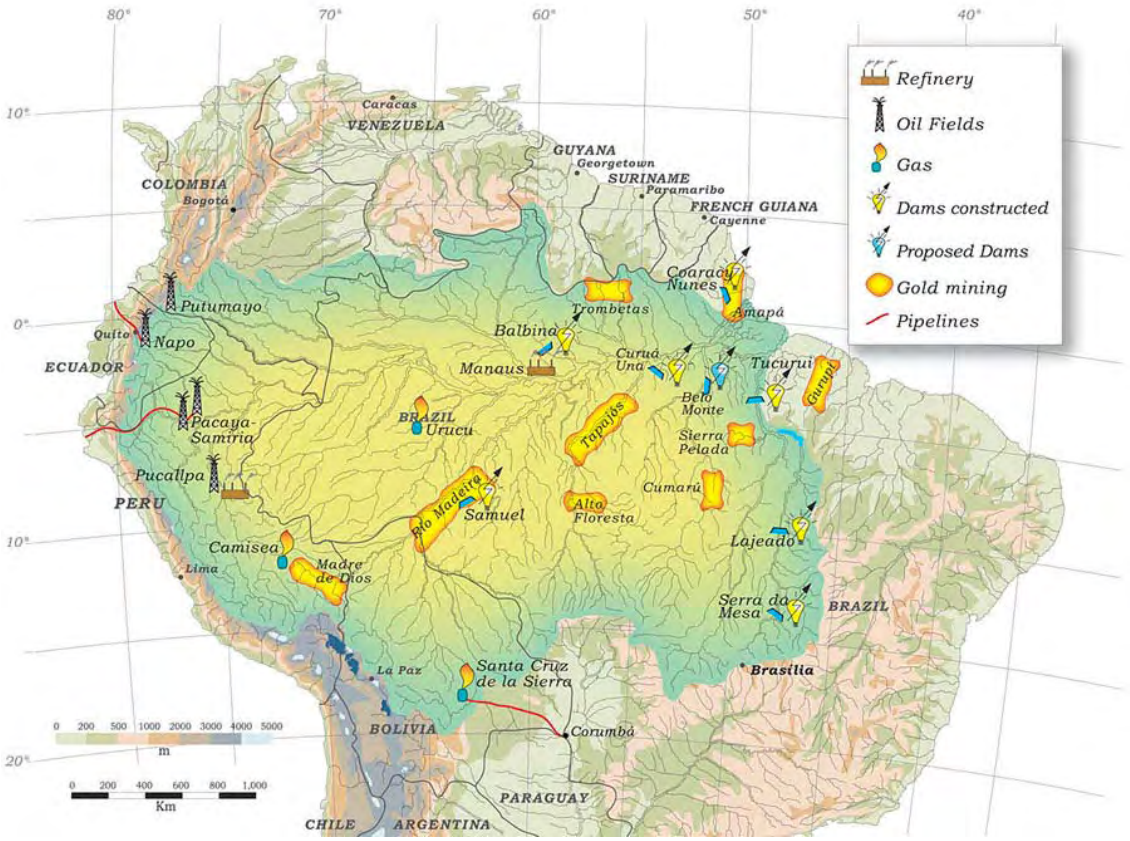
Fire. In recent years, threats to biodiversity in the Amazon have begun to exhibit disturbing synergies caused by increasing interactions between selective logging, burning associated with agriculture and ranching, and El Niño-generated droughts. Whereas fires are rare in mature tropical moist forests, they occur more frequently after these forests are subjected to selective logging, which leaves substantial quantities of slash on the forest floor. Logging-generated canopy gaps hasten the drying of slash, which remains dry over longer periods during El Niño drought years such as occurred during 1997-1998. Under these conditions, wildfires escaping from adjacent farms or ranches penetrate deep into forested areas. During 1998, such wildfires destroyed 1.3 million hectares of forest in the Brazilian state of Roraima. Most forest fires smolder in the understory rather than bursting into flames, and their impacts can only be seen later as trees slowly die and decompose, thereby generating additional fuel for future fires (Nepstad, Moreira, and Alencar 1999; Cochrane 2000). With the rapid proliferation of logging and forest clearing for agriculture and ranching, forest wildfires will become an enduring feature of the Amazon landscape in the future.

Mining. Mining is a major threat to aquatic and terrestrial systems in the Amazon Basin, especially in Brazil, Peru and the Andean highlands of Bolivia (Map 4). Mining threatens aquatic habitats because of pollution, sedimentation, and altering of watercourses. The direct impacts on terrestrial systems may be relatively small as limited areas of forest need to be cleared. But the indirect impacts can be considerable because roads have to be built into previously inaccessible areas, the mineral ores have to be processed, and miners have to eat. The processing of mineral ores often requires large amounts of charcoal, which is obtained by burning forest biomass (Anderson 1990).

Goldmining is the most widespread form of mining in the Amazon region, particularly in Brazil and increasingly in Peru as well (Map 4). Small-scale, “wildcat” goldmining is far more destructive than larger-scale, industrial operations, which can be more easily regulated. For example, during the 1980s an estimated one million wildcat goldminers were operating in the Brazilian Amazon, and incursions into indigenous territories occurred frequently. The potential threat of mercury pollution from past goldmining appears to have been minimal in Amazonian tributaries with heavy sediment loads and neutral pH present in many of the waterways, such as the Madeira River. Yet current wildcat goldmining in the Rio Negro, a blackwater river with high acidity and low sediment load, could set the stage for serious problems involving mercury pollution (Goulding, Smith, and Mahar 1996). Since small-scale cyanide extraction techniques are becoming more available in small miners, the number of cases of serious river poisoning is becoming more frequent.

Petroleum exploration. Petroleum exploration and production are growing threats in the western Amazon Basin (Map 4), contributing to localized deforestation, loss of habitat, and soil and water contamination from seepage or spills. Petroleum exploration also opens access to remote areas for settlement. In the Ecuadorian Amazon, indigenous cultures such as the Cofán and Huaorani are in danger of extinction due to expanding oil exploration and accelerated colonization facilitated by oil roads (Mecham 2001). In the

Map 4: Goldmines and energy-related infrastructure in the Amazon Basin



Peruvian Amazon, the Camisea project is experiencing intense scrutiny from national and international conservation and lending organizations such as the Inter-American Development Bank because of its environmental and social impacts affecting biodiversity sensitive areas.

Overfishing and habitat conversion. Overfishing and habitat conversion, particularly in the Amazon River channel and estuary (Map 3), have led to the decline of all major fisheries in the Amazon region. Beginning in the 1960s, acquisition of industrial-scale fishing fleets and new fishing technologies greatly increased the range and intensity of fishing operations along the Amazon and its tributaries. Although supplies increased, demand for fish accelerated much more rapidly, fueled by rapid urbanization and new export markets. Consequently, today many of the major fisheries are in decline (Goulding, Smith, and Mahar 1996).

In addition to overfishing, habitat conversion has contributed to this decline because many Amazonian fish species, such as the tambaqui fish, feed primarily on fruits and seeds produced in flooded forests (Goulding and Carvalho 1982). Wholesale destruction of floodplain forests in a 2,000 km stretch along the middle portions of the Amazon River, primarily due to expansion of pasturelands for cattle and buffalo (Map 3), could pose a much greater threat to this and other forest-dependent species than overfishing.

Hydroelectric dams. Extensive research at the largest dam (Tucuruí) revealed variable and complex impacts on local fisheries. Risks of extinction are particularly high in or around rapids, which often contain high endemism and are heavily impacted by dams. A huge dam has been proposed at Belo Monte

on the Xingu River in Brazil, and another 30 are in the planning stage (Goulding, Smith, and Mahar 1996). If constructed as planned, these will likely negatively impact regional fisheries.

Invasive species. Introduction of exotic species to the Amazon Basin directly causes biodiversity loss because of competition and displacement of native species. This displacement could lead to declines in economically important native species and traditional fisheries, and the extinction of species. In some cases, the introduction of invasive species has been promoted by state policies.

B. Key Drivers of Biodiversity Loss

The threats to biodiversity in the Amazon Basin described above are driven by a complex array of factors that vary between countries and over time. Systematic analysis of the drivers operating in each country is beyond the scope of this report. Instead, examples of key drivers are briefly discussed under the following themes: governance, markets, and public policies.

Governance

Weak governance is a chronic problem throughout the Amazon and characteristic of frontier regions worldwide. Caused by institutional weaknesses at all levels, it leads to uncontrolled appropriation of public goods for private gains. Lack of frontier governance in the Amazon has permitted unregulated logging, deforestation, and burning, and has enabled settlers to encroach into public protected areas and indigenous territories (Nepstad et al 2002). In Colombia, for example, large-scale illegal export of endangered wildlife from parks and reserves is rampant. Illicit crops have expanded in fragile and biologically rich mid-elevations of the Andes in Bolivia, Colombia, Ecuador and Peru, where large areas of forestlands have been cleared for coca plantations, and drug trafficking has led to chronic rural conflict in many areas.

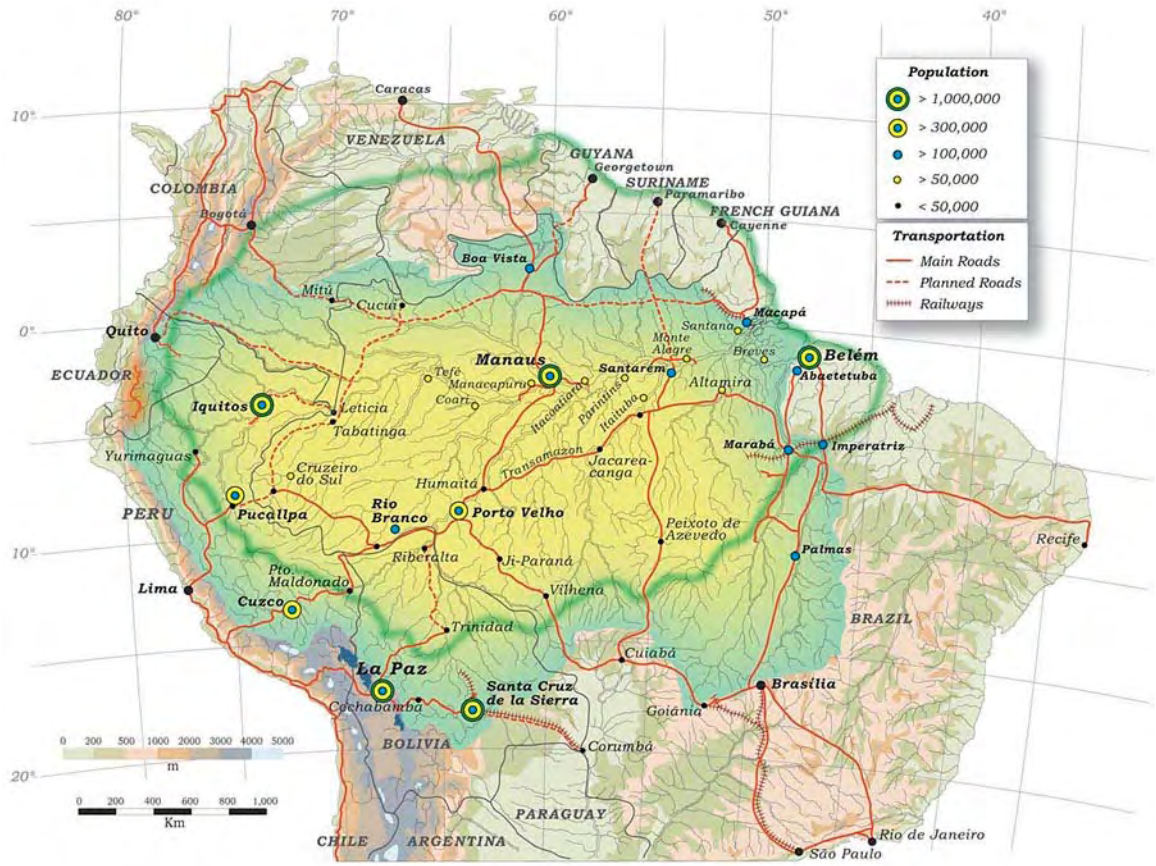
In some Amazonian countries, structural adjustments have contributed to reduced support for governmental agencies charged with research, extension, and environmental regulation. This has been particularly problematic for Bolivia, undermining the country's capacity to either direct or regulate the rural sector. Here and in other countries undergoing structural reform, strategies to increase the cost-effectiveness of environmental enforcement can help offset this problem.

Decentralization is occurring in all Amazonian countries, which poses considerable challenges because local governmental agencies are generally more fragile than national ones (Nepstad et al 2002). By the same token, indigenous peoples have assumed control across immense areas yet rarely have the capacity to effectively control those areas. There are a few promising examples of local governance, such as Mato Grosso's innovative approach to curbing deforestation and fires (see Box 4: Mato Grosso's Licensing System) and recent efforts by indigenous peoples and other local stakeholders to improve watershed management of the Xingu River headwaters. However, such examples are rare in the region; in general, local governments tend to be highly clientistic and lack transparency. Capacity building for local governments, combined with improved monitoring by civil society, could ensure conditions for strengthening frontier governance and thereby improve enforcement against resource depletion and fewer resource-based conflicts.

Markets

The growth and distribution of populations in the Amazon Basin have generated enormous impacts on resource consumption in the region. Population in the Ecuadorian Amazon increased from 373,000 in 1990 to 548,000 in 2001, while in the Brazilian Amazon it jumped from about two million in 1960 to more than 20 million in 2001. Approximately 75 to 90 percent of the population in Amazonian countries lives in urban centers, which have proliferated and swelled in size during recent decades (Map 5). Per-capita consumption of beef has increased throughout much of the Amazon region, and approximately 80

Map 5: Road network and major cities and towns in the Amazon Basin



percent of the rapidly increasing wood production from the Brazilian Amazon is consumed domestically. In all Amazonian countries, increased urban demand for fish has led to overfishing and localized declines in commercial fisheries. Population growth, urbanization, and higher per capita consumption increase the aggregate demand for resources, which has driven resource depletion across extensive areas of the Amazon region.

Likewise, globalization of markets has increased the aggregate demand for exports of beef and agricultural products such as soybeans and coffee, among others. Brazil is the world's largest producer of beef and the second largest producer of soybeans. Rapid agricultural expansion of beef and soybean production in the Brazilian Amazon indicates enormous potential for future growth — a phenomenon that is also beginning to take place in Bolivia as Brazilian producers expand operations there. Increased market values for extracted commodities (such as petroleum, gold, and mahogany) have generated greater extractive pressures throughout the Amazon Basin.

Production of agricultural exports with major global markets is highly sensitive to exchange rates. Overvalued exchange rates, such as in Peru, have resulted in declining agricultural production and increased rural unemployment. On the other hand, undervalued exchange rates such as in Brazil have increased the market for exports and spurred enormous growth in the agricultural sector, particularly for beef and soybean production in the state of Mato Grosso.

Public Policies

Transport. Provision of transportation infrastructure is the most critical pull factor for regional economic growth and expansion of the agricultural frontier in the Amazon Basin. Today a network of roads crisscrosses the region (Map 5), providing settlers with access to formerly isolated forestlands and lowering transport costs for key agricultural commodities. For instance, in Brazil the soybean sector is supporting completion of a highway paving project that will save $70 million per year in shipping costs (Nepstad et al 2002). Planned construction or paving of 6,000 km of new roads could lead to additional deforestation of 120,000 - 270,000 km^2 in the next 25 to 35 years (Carvalho et al 2004). Mitigating the environmental impacts of new or improved roads requires careful environmental planning, including expansion and consolidation of public lands that are designated for biodiversity conservation or low impact use.

Resource rights. Insecure and uncertain land tenure for both large- and small-scale producers in the Amazon encourages accelerated exploitation of resources. This situation is caused by unclear legal titles, ineffective systems for settling land disputes, and lack of ability to enforce rights of ownership. In the Brazilian Amazon, publicly protected lands constitute 29 percent of the region, 24 percent is privately owned with secure tenure, and the remaining 47 percent consists of undefined or disputed lands (Lentini, Veríssimo, and Sobral 2003). In contrast, relatively secure land tenure arrangements for communities in Bolivia have encouraged expansion of forest management and certification.

Colonization and new settlement requirements often stipulate that land must be cleared to be considered occupied, and cattle ranching is frequently the land use of choice for clearing extensive areas of forestlands. In Brazil, for example, public land allocation provides incentives for deforestation because the security of land claims historically have been determined by land clearing (Binswager 1991). Subsequent policy reforms, including imposition of heavy fines for deforestation and burning, may eventually help reduce these incentives.

Resource use. Credit policies often favor and subsidize capital-intensive activities over labor-intensive activities, which can create bias against the adoption of conservation practices. Public policies in the Amazon have provided ranching and mechanized agriculture with multiple benefits such as subsidized credit, fiscal incentives and tax breaks, and subsidized government services that include construction of transport infrastructure, rural electrification, and agricultural extension. Fiscal incentives for agriculture and ranching in the Brazilian Amazon were withdrawn in the late 1980s in response to domestic fiscal concerns and international criticism (Lele 2000). Likewise, credit policy changes have recently reduced the availability of subsidized credit and targeted available public credit to small-scale producers.

Most Amazonian countries have far more stringent requirements for managing forests than for clearing them. For example, in Bolivia the assessment team learned that up to six legal permits are required to manage forests, whereas only one is required to clear forest for agriculture. Simplifying the management procedures would remove a major hurdle to sustainable forest management.

This brief analysis reveals the need to address both threats to and drivers of biodiversity loss, which operate at increasing scales and complexity in the Amazon Basin. Addressing both threats and drivers requires integrated responses by actors at multiple levels.

III. SECTOR NEEDS AND DONOR INVESTMENTS

This section reviews current conditions and programs that significantly influence biodiversity conservation in the Amazon Basin and how they address the threats and drivers. The first part looks at the problems and ongoing solutions through the lens of five themes: protected areas, indigenous peoples, agriculture, forestry, and fisheries. The second part analyzes funding patterns of USAID and other international donors in the Amazon Basin. The last part provides insights on other USAID regional programs worldwide. Overall, this section lays the groundwork for describing the opportunities for a new regional program for conservation of biodiversity in the Basin, one that is additive to existing efforts.

A. Critical Needs by Sector

The assessment team focused considerable effort on gathering information relative to five themes that significantly relate to biodiversity conservation in the region. The themes were selected based on review of the national biodiversity strategies of the Amazon Basin countries (Annex 4), as well as initial interviews with experts and stakeholders.

A1. Protected Areas and Conservation Landscapes

Areas that protect biodiversity through restrictions in use (such as national parks, indigenous territories, national forests, extractive reserves, communal reserves, and bio-cultural reserves) have undergone impressive expansion in recent decades. As observed throughout the tropics (Bruner et al. 2001), new data reveal that such areas in the Amazon serve as effective buffers against encroaching deforestation and forest degradation, thereby slowing the rate of biodiversity loss (Souza Jr. et al. 2004). Key issues that could benefit from a regional initiative are discussed briefly below.

Protected area management
During the last 20 years, protected areas have expanded greatly throughout Latin America. Today these areas cover 13.7 percent of the Colombian Amazon (I.A. Humboldt-WWF 2003:21), and Brazil has embarked on the Amazon Regional Protected Area program (ARPA), an ambitious program to expand strict protected areas to more than 10 percent of the Brazilian Amazon, equivalent to 500,000 km^2 (Funbio 2004). Considerable funding in the area of biodiversity conservation, which will be discussed in Part B of this section, is being channeled to this effort.

As resource pressures expand throughout the region, a growing challenge is to consolidate and improve sustainable management of existing protected areas especially when they border or overlap with indigenous territories. Structural adjustments in Amazonian countries (see Section II), particularly Bolivia and Ecuador, has severely compromised their ability to support parks and reserves. As a result, protected areas throughout the region are understaffed and under-equipped, and in most cases have yet to be effectively implemented.

At the same time, an estimated 80 percent of protected areas worldwide — including more restricted use areas such as parks and reserves — are inhabited by indigenous or traditional peoples (Alcorn 2000). These people, who have occupied these areas for decades to millennia and generally employ low-impact resource uses, are rarely if ever consulted prior to protected area establishment. They face diverse restrictions to tenure and resource use rights that vary by protected area denomination and country. The situation becomes more problematic where protected areas overlap with indigenous territories. In the Brazilian Amazon, for example, approximately 25 percent of the land in protected areas overlaps with indigenous lands.

Increasingly, however, countries throughout the region are beginning to acknowledge that conservation can be achieved in collaboration with indigenous peoples. The concept of collaborative management of protected areas is generally understood as a "….partnership by which various stakeholders [including the governmental agency in charge and associations of local inhabitants and resource users, NGOs, local governments, research institutions, businesses, and others interests] agree on sharing among themselves the management functions, rights and responsibilities for a territory or a set of resources under protected status" (Borrini-Feyerabend 1996; 2000).

Groundbreaking experiences of co-management include bio-cultural reserves in Colombia (Box 1), communal reserves in Peru, and extractive reserves in Brazil. To implement co-management arrangements, some of the key policy issues that need to be resolved include land tenure and resource-use rights; attribution of control and policing authority, including management institutions and decision-making mechanisms; sound management plans in accordance with traditional ecological knowledge and best management practices; and benefit sharing and incentives.

Box 1. Reconciling Indigenous Peoples and Parks in Colombia

Indigenous people's territories border and overlap with protected areas throughout much of the Andean Amazon. In conventional protected areas, however, the indigenous peoples' capacity to use natural resources is often legally curtailed, and in many areas conflicts erupt between park administrators and indigenous peoples. To address this problem, Colombia established a new form of protected area known as bio-cultural reserves, which seek to protect both biological diversity and cultural heritage. In 2002, the first such reserve was designated within the 68,000 hectare Alto Fragua Indiwasi National Park. Encompassing the ancestral lands of the Ingano Indians, the park is located in the Caquetá River basin in a transitional zone at the foothills of the Andes. In addition to its extraordinary biological diversity, the park contains numerous sacred sites and strong cultural traditions based on yagé and more than 500 other species of medicinal plants. The area faces an increasing array of threats from colonization and infrastructure development, deforestation, planting of illicit crops, and armed conflicts. A co-management agreement with the National Park Service empowers the local association of Ingano Indians to assume increased authority in managing the park and protecting it against these threats. The Park Service is now extending this co-management model to other protected areas of the Colombian Amazon where there is an overlap with indigenous territories, such as the Cahunari National Park.

Sources: Botero (2004), Riascos (2004), and Zuluaga (2004)

Environmental services

Environmental services are another issue with important implications for sustaining protected areas. In keeping with trends worldwide, Amazonian countries increasingly view protected areas not merely as storage sites for species but as sources of a range of goods and ecological services, including food, fiber, fuel, natural medicines and pharmaceuticals, fresh water, and genetic resources, maintenance of air quality, climate regulation, flood control, biological control, pollination reduction, cultural diversity, spiritual and religious values, knowledge systems, educational and aesthetic values, recreation, and tourism (Alcamo et al 2003).

The challenge is to provide valuation for the vast majority of goods and services that are not recognized or are undervalued by markets. In recent years, multiple initiatives have focused on water-related services. For example, recognizing that most of its water supply originates from two protected areas that extend into the Amazon Basin, the city of Quito, Ecuador, has established a fund supported by water fees that help finance these parks (see Box 2: Linking Watershed Protection). Similar efforts are underway elsewhere in Ecuador and in other Amazonian countries, especially in the Andes but also initiating in Brazil (Box 9), as part of emerging efforts to develop integrated watershed management. With increasing shortages of water foreseen in drier areas of Peru and Bolivia, sourcing water from protected areas draining into the Amazon Basin is likely to be a growing need in the years to come.

Several other promising clusters of environmental services exist, including for ecotourism, which is growing throughout the region. For example, community-based ecotourism activities in numerous indigenous territories include the Red Indígena de Comunidades del Alto Napo para la Convivencia Intercultural y el Ecoturismo (RINCACIE) in the Ecuadorian Amazon (Amazon Alliance-CONFENAE, 2002). Likewise, international markets are beginning to emerge for other services such as carbon sequestration,[2] although progress in this area has been minimal in the Amazon because of the exclusion of natural forests from the Clean Development Mechanism.

Box 2. Linking Watershed Protection and Environmental Services in Ecuador

The so-called Water Fund (FONAG) is financing the maintenance of two protected areas (Antisana and Cayambe-Coca) that provide 70 percent of the water supply used by the city of Quito, Ecuador. This fund is supported by increased water rate charges, which are paid voluntarily by the municipal water company, a local electric company, and a local brewery. The fund has accumulated $1 million in capital that is managed by an asset management company and used primarily to pay property owners in the vicinity of the protect areas to change their land-use practices. The success of this initiative depended largely on the high visibility of the water services provided by the reserves, which supply a major urban center. It also required careful building of participation by local interest groups and decision makers during many years. While research can estimate the economic value of services undetected by traditional markets, determination of additional fees ultimately depended on the users' willingness to pay.

Sources: Echavarría (1999), Piskulich (2001), Echavarria & Arroyo (2002), Benítez (2004), and Curtis (2004)

Financial mechanisms

Among the most concrete alternatives for sustaining protected areas are national biodiversity funds. Since the 1992 Earth Summit in Rio de Janeiro, Amazonian countries have established these funds with support primarily from multilateral international agencies, especially the Global Environmental Facility. Some of these funds, in particular that of Peru, have seen spectacular growth (see Box 3). The funds support a wide range of biodiversity conservation initiatives, usually related directly to protected area establishment and management, and in some cases involving innovative approaches to community-based development.

Box 3. Peru's National Biodiversity Fund

Launched after the 1992 Earth Summit, the Fondo para Áreas Protegidas (PROFONANPE) received a $5 million donation from the Global Environment Fund (GEF) in 1995 to establish an endowment. Since that date, support from a wide range of bilateral agencies (including USAID), as well as resources from debt-for-nature swaps, have enabled PROFONANPE to raise $83 million. Of this total, $16 million have been disbursed, primarily to co-management of protected areas by NGOs, enabling the Peruvian government's environmental agency (INRENA) to outsource numerous activities in which NGOs have comparative advantages. Of PROFONANPE's remaining balance of $67 million, 85 percent is a sinking fund and 15 percent is endowment, the latter supporting 60 percent of the total operational costs.

Source: Paniagua (2004)

Conservation landscapes

To achieve maximum effectiveness, biodiversity conservation should encompass the full range of habitats, including freshwater and floodplain areas, inter-montane forests, and lowland dry forests, which are poorly represented in protected area systems across the Amazon Basin. In addition, protected areas integrated into larger landscape matrices have a greater potential of decreasing the risks of habitat fragmentation and increasing or maintaining the connectivity required to maintain large-scale ecological processes (such as wide-ranging migrations, watershed protection, and mitigation against global climate change). The Amazon Basin provides one of the world's last frontiers for establishing relatively intact, large-scale conservation

[2] For example, major U.S. companies are investing in carbon sequestration initiatives, and shares of such initiatives are now traded on the Chicago commodities exchange (Bayon 2004).

landscapes or ”corridors” that maintain connectivity between restricted use areas. Some of the most notable conservation landscape initiatives currently underway in the region include:

- The Vilcabamba-Amboro corridor, which encompasses 30 million hectares from the Vilcabamba cordillera in Peru to the Amboro National Park in Bolivia
- The Canoa (Cooperación y Alianza en el Norte y Oeste Amazónico) corridor, encompassing a 70 million hectare area that stretches across the borders of Brazil, Colombia, and Venezuela and includes various types of protected areas and indigenous territories (coama.org.co)
- The Guapote/Itenez-Mamore conservation landscape, which includes 21 protected areas and 13 indigenous territories in Brazil, and four protected areas and four indigenous territories in Bolivia (Brackelaire 2003)

While ambitious in scale and undoubtedly effective in establishing new protected areas with greater linkages to surrounding lands, the governance of large-scale conservation landscapes is problematic. This is especially true for those areas involving two or more countries with distinct environmental legislation and lines of authority for protected area management and land-use planning.

Instead of delimiting conservation landscapes around existing protected areas, a more effective approach could involve configurations corresponding to geographic features that local stakeholders can readily perceive, use, and value. For instance, hydrological basins represent the most meaningful bio-geographic units in the Amazon, and they can readily link stakeholders upstream and downstream. The Amazon Basin, which in addition to the world’s largest river contains 11 major tributaries and thousands of smaller ones, is a highly appropriate locale for landscape planning based on watersheds. As shown in the case of Quito (see Box 2 above), they provide critical environmental services that local inhabitants use and value. These services are becoming increasingly important both within and beyond the Amazon Basin.

Experience worldwide shows that integrated watershed management is usually far easier to implement in small-scale river basins, where stakeholders can directly perceive the effects of upstream resource degradation. Here flexible arrangements can be reached in a face-to-face setting, accountability and monitoring of resource use is easier to implement, rights are easier to adjust in response to resource variability (Rose 2000), and community-based organizations are more responsive to local needs.

Yet conservation initiatives in smaller basins are unable to address all of the root causes of biodiversity loss in the Basin, as these are often beyond the control of local communities (Wood, Stedman-Edwards, and Mang 2000). A few small-scale initiatives scattered across the landscape may be sufficient to secure basic ecological functions such as soil conservation or maintenance of local hydrological regimes, but they are unlikely to achieve meaningful biodiversity conservation at a scale contemplated by conservation landscapes.

These considerations suggest that integrated river basin management also requires large-scale approaches that address the often conflicting needs of conserving biodiversity, maintaining environmental services, and sustaining human livelihoods. Managing river basins at large scales is complex. To function properly, economic incentives and institutional arrangements must operate at multiple scales, address diverse interests, and distribute costs and benefits fairly. Achieving this is especially challenging where the links between causes and effects are less obvious, where regional or national institutions are less responsive, and where it is harder to ensure that actions will be effective and agreements kept (Naiman 1992). Addressing such challenges is often beyond the capacity of most existing policies and institutions governing river basin management, indicating a critical need for highly adaptive approaches that clearly define critical elements such as user-groups, resource boundaries, and user rights and responsibilities (Sick 2002).

A2. Indigenous Peoples and Their Territories

Indigenous peoples and the lands they control represent one of the most important opportunities for biodiversity conservation in the region today. In recent decades, Amazonian countries have made significant advances in demarcating indigenous territories. For example, approximately 22 percent of the Brazilian Amazon is now in indigenous territories, while approximately one-half of the Colombian Amazon has been allocated to indigenous reserves (Schwartzman, Moreira, and Nepstad 2000). These figures indicate the critical importance that indigenous lands must play in any program to protect and manage biodiversity in the Amazon Basin. Indigenous peoples present the main hope for maintaining large forested landscapes in the Amazon Basin (Stearman 1996).

There are significant challenges to implementing a regional program to help protect biodiversity on indigenous reserves. The challenges relate to who controls and benefits from natural resources; complications arising from the interface of indigenous peoples with national policies, laws, and regulations; diversity of hundreds of cultures and languages; and the lack of opportunities for economic development among indigenous communities.

USAID needs a policy and specific guidelines for how it will work with indigenous peoples in the Amazon Basin, and these must be developed in direct dialogue with the people whose lands and lives are the focus (Chapin 2004). Furthermore, the programs implemented should be designed with significant involvement of indigenous peoples and should be increasingly managed by them. Initial focus on systems and process and building relations with counterpart agencies is essential.

Governance

Governance within indigenous communities has strengthened significantly in recent years. For example, in Ecuador the Cofan Indians are distributed in six communities living on separate reserves, each with its own community leaders. These communities recognize Federación Indígena Nacional de Cofanes Ecuatoriana (FINCE) as representative of the Cofan's overall interests in Ecuador. However, it is not entirely clear to what extent these institutions are authorized or prepared to make and enforce decisions about communal land or the rights to manage natural resources (e.g., harvest and sell timber). In the absence of these authorities, resource depletion continues unabated.

While the authority of the national and regional institutions to represent participating tribes is apparently limited, the national federations can be effective in addressing issues that are influenced by national policies, laws, and institutions, such as land and resource tenure, enforcement and judicial recourse, markets, and trade. For example, more than one dozen indigenous community organizations participate in Confederación de Nacionalidades de la Amazonía Ecuatoriana (CONFENAE), the national federation of indigenous communities in Ecuador. Similar national indigenous federations exist in all the Amazon Basin countries. The national federations of indigenous communities are, in turn, members of the regional federation Coordinadora del las Organizaciones Indígenas del la Cuenca Amazónica (COICA) (see Annex 6). The validity and capacity of COICA has direct relevance for regional programs focused on indigenous peoples.

Indigenous communities' institutions are also struggling to work effectively with national and local agencies responsible for enforcement of laws and prosecution of violators. The governments in the region do not have sufficient resources (personnel or infrastructure) invested in on-the-ground activities to curb violations of laws related to natural resources. Frequently, a further complicating factor for indigenous and other peoples is the ambiguity of jurisdictional authority between national-level and local agencies.

Securing control over natural resources

During the past two decades, governments, international donors, and NGOs have collaborated to help secure land titles and demarcate hundreds of indigenous reserves. Despite the impressive and ongoing gains in defining territorial rights, critical issues remain unresolved regarding the nature of those rights. There are numerous cases where two or more parties hold overlapping rights to land and natural resources, sometimes deliberately so, other times through oversight or inadequate records. In most Amazonian countries, the rights to subsurface resources (including oil and minerals) are restricted, and in some cases these restrictions even extend to aboveground resources such as timber. Development of these resources is most often arranged by government agencies and managed by corporations. Planning and implementation of resource extraction is too often undertaken with little if any input from the people living on the land, sometimes with disastrous results.

Even where indigenous peoples retain the rights to timber, game, and fish, significant conflicts remain about resources. Timber is often cut illegally or purchased at prices that are absurdly low, oftentimes to protect well connected domestic processors by ensuring low stumpage values (Stewart and Gibson 1995). Colonists harvest game from indigenous lands for their own subsistence and to sell the bush meat in local markets. In frontier areas with weak governance, the ambiguity of resource rights on indigenous territories leads to chronic conflicts, resource depletion, and cultural disintegration. A stark example occurred in early 2004, when the Cinta Larga killed 29 diamond miners and ran out hundreds of others from their 2.7 million hectare territory. Under Brazilian law, mining is illegal in indigenous areas, but lack of governmental action led the Cinta Larga to enforce the law on its own. Earlier conflicts in the same region resulted in miners killing Indians.

This ambiguity extends into protected areas in the Amazon. Despite estimates that as much as 85 percent of the world's protected areas are inhabited by indigenous peoples (Alcorn 2000), traditional activities such as hunting, fishing, and agriculture are greatly curtailed in strictly protected areas such as national parks and biological reserves. As much as 25 percent of the protected areas in the Brazilian Amazon overlap indigenous lands, generating confusion among governmental agencies and indigenous groups about management authority. Perceiving the potential of indigenous communities in defending protected areas against growing external threats, new efforts are underway to actively integrate indigenous communities in protected area management, such as bio-cultural reserves in Colombia (Box 1), community reserves in Peru, and community territories of origin in Bolivia.

In addition to clarifying ambiguities about the resource rights of indigenous peoples, the rapid expansion of destructive resource-use patterns in many areas of the Amazon (described in Section II) poses a critical threat to the integrity of their territories. Recognizing this problem, indigenous peoples are increasingly asking for assistance to increase vigilance and effective resource management. Remote sensing technologies, combined with organized vigilance on the ground, have helped the Kayapó Indians of Brazil resist rapid frontier expansion around their reserve. Likewise, remote-sensing technologies are used to guide indigenous peoples to manage their resources, not only at specific sites but across entire territories, which in the Amazon lowlands are frequently immense and contain low population densities. The priority in many territories is to zone areas for different uses, including off-limits zones that provide nurseries for fish and game, extensive zones for low-impact uses such as hunting and forest management, and more intensively managed areas designated for agroforestry and agriculture.

Capacity issues

Any biodiversity conservation program directed to indigenous peoples' lands must be developed with their collaboration. Long-term successes in the conservation of biological diversity will depend on indigenous peoples taking responsibility for everything from sustainable natural resources management and business administration to managing relationships with government agencies and international corporations. Achieving this goal will require improved access to training and education at all levels,

including practical training in natural resources management, governance, and business administration; scholarships for university and post-graduate studies; and long-range programs to inform children about environmental values. Government agencies, NGOs, and corporations compete for the assistance of the few indigenous individuals who have the necessary language and technical skills needed to help navigate and reconcile legal, economic, cultural, and social issues. Training programs are working with indigenous peoples throughout the region, and some of these are managed directly by indigenous communities. However, in many regions, capacity building (scholarship opportunities, in particular) is not adequate to meet demand and the potential. Yet another capacity issue results from the low population densities of indigenous peoples, who are increasingly unable to adequately patrol their borders and monitor resources use.

Indigenous knowledge plays a central role in how indigenous peoples manage natural resources. During the past 150 years, volumes of information have been gathered about indigenous knowledge (gained over thousands of years) and are increasingly used to facilitate communication across cultural divides. For example, resource plans and maps using indigenous concepts and symbols are being used to help describe resources management plans and document responsibilities. But more is needed to understand the details of this often disaggregated data, and how larger cultural and spiritual values of indigenous peoples contribute to their predilection to maintain the largely natural forest ecosystems as their home.

Economic development issues

Investment continues in basic infrastructure (such as local schools and potable water supplies) in many indigenous communities. However, grants or loans for Indians to start small businesses or build cooperatives to support business are rare. At the same time, large corporations have access to investment money for extraction of resources from the region, including from indigenous lands. There are also examples of permanent funds to support management of protected areas (see Box 3), and to support small business opportunities and even environmental set-asides for colonists (see Box 5). Few opportunities exist for indigenous peoples to invest in businesses based on their own land and resources.

There is potential for indigenous peoples to establish businesses based on sustainable management of natural resources and causing minimum damage to biodiversity. For instance, tourism has shown real potential to produce income for indigenous people and might eventually encourage communities to protect species appreciated by tourists, including the large mammals and birds that are currently seldom seen because they are hunted to depletion for their meat, fur, and feathers. Selling bush meat to local markets offers another possible business opportunity, but must be complemented by research and monitoring of hunted species to ensure that sustainable populations are maintained. Depending on the species present and available markets, a variety of non-timber forest products (e.g., Brazil nuts) can be collected and sold. Natural fibers, fruits, seeds, and dyes are regularly used to produce handicrafts popular among tourists. Timber can also provide indigenous peoples with a steady source of income, but if poorly managed might cause significant loss of biodiversity in the process. Fisheries provide another possibility for business development but may face substantial property rights issues. Production and marketing of certified and fair trade products and services that are being developed in the region are particularly compatible with indigenous peoples' approach to resource management. Payment for ecological services, including watershed management, climate regulation, and biodiversity management, is also possible. In developing such payments, the economic and ecological costs and benefits of indigenous lands managed for moderate income and partially subsidized for their ecological services should be compared with those of traditional protected areas, where guards and administration are completely subsidized.

This partial list of possible income sources suggests that with proper training, technical assistance, resource management, access to markets, and valuation for ecological services, indigenous peoples might generate income to advance their standard of living while significantly contributing to biodiversity conservation. Considerations about governance, capacity, and economics together raise questions about

how indigenous peoples can secure control over their land and resources (ownership, monitoring, enforcement, etc.) and use these assets to improve their well-being, while sustaining a reasonable level of biodiversity.

A3. Sustainable Agriculture

As the most widespread land use in the Amazon Basin, conversion of forests to agriculture is the greatest direct threat to biodiversity loss. The predominant forms of agriculture consist of shifting cultivation and grazing, land uses that are practiced by the vast majority of the region's rural inhabitants. While shifting cultivation is a well-established and historic component of frontier occupation, ranching is by far the most extensive form of land use. In the Brazilian Amazon, for example, cattle pastures occupy approximately 75 percent of the total area deforested. Most of this area is occupied by pastures that are prone to degradation from soil erosion and loss of soil fertility. While productivity per area is low, extensive cattle pastures are successful because they guarantee a steady flow of income and require minimal investments of labor or capital. Optimal grazing rotations are easily exceeded and herds are allowed to overgraze until more favorable market conditions bring them to slaughter. A vast array of policy incentives favors uneconomical and environmentally destructive ranching practices instead of more sustainable alternatives (see Section II). As important, extensive cattle pastures also provide an effective way of claiming vast areas of land with minimal effort. Finally, Brazil is now the world's largest beef producer (Clay 2004), and local, national, and regional markets for beef are rapidly growing throughout the Amazon Basin.

Despite considerable investment in research and development of agroforestry over recent decades, this form of land use remains minor in comparison to commercial ranching and shifting cultivation, especially at the edges of the forest frontiers. In the Brazilian Amazon, for example, less than two percent of rural land is dedicated to agroforestry systems (IBGE 1996). Multiple reasons explain this low figure. Agroforestry requires long-term investments of labor and capital, which is often beyond the means of smallholder producers in remote areas with poor access to markets. In areas where shifting cultivation and grazing are practiced, wildfires and competition for land pose obstacles to more permanent land-use systems such as agroforestry (Nepstad, Moriera, and Alencar 1999). Given that most agroforestry systems are geared toward a food-security strategy that promotes diversification, these systems generate only small quantities of saleable products throughout the year.

These considerations are critical when considering potential regional opportunities in agriculture. While numerous opportunities exist for increased regional efforts in research and development of agroforestry, the payoff is likely to be extremely limited given the vast array of powerful incentives for large-scale and more commercial land uses. Instead, an alternative approach would be to address those forces by shifting the incentive structure and policies toward more sustainable and diversified forms of agriculture that encourage biodiversity conservation. Examples of such incentives (described below) are from the Brazilian Amazon, where the problem of uncontrolled agricultural expansion is most acute.

While environmental legislation has advanced throughout the Amazon region, there are critical gaps between intent and application that undermine biodiversity conservation. For example, in Brazilian Amazon, the forestry code prohibits deforestation on 80 percent of property areas, as well as along streams, steep inclines, and other environmentally sensitive zones. In practice, however, this legislation rarely has been applied due to a lack of enforcement. This situation began to change in 1999 with a new environmental crimes law, which permits imposition of fines of up to $3 million for illegal deforestation or forest fires, and tougher federal standards requiring licensing to clear areas larger than three hectares. The state of Mato Grosso (Box 4) became the first to implement such licensing, with impressive results. This experience shows that a combination of tougher environmental standards and imaginative approaches to applying them can effectively discourage business as usual.

In addition to command-and-control approaches, positive incentives are needed to shift the current incentive structure (currently weighted heavily toward large-scale monoculture, extensive grazing, and slash-and-burn) toward more environmentally sustaining forms of land use that conserve forest cover, such as agroforestry and forest management. One such incentive, still under development in Brazil, is the so-called Proambiente program (Box 5), which would redirect a major credit line supporting conventional agricultural practices toward more sustainable alternatives.

Limited markets are another major barrier to expanding agroforestry and other forms of sustainable agriculture in the Amazon region. Overcoming this barrier requires development of new markets for alternative products and services associated with such land uses. This concept, known as "biotrade," is increasingly supported in the Andean countries, where diverse initiatives are underway. Here biotrade programs support the development of biodiversity markets using best management practices, capacity building for introducing and adapting appropriate technologies, and allocation for additional financial resources for biodiversity based enterprises (such as ecotourism and non-traditional forest products). The Andean Financial Corporation (CAF) is supporting major biotrade initiatives. The case of the sustainably harvested açaí palm offers an example of how biotrade can expand the market for non-timber forest products. Entrepreneurial vision, improved packaging technology, and marketing that highlighted both human health and Amazonian biodiversity, has enabled a beverage produced from the palm to penetrate growing markets in Brazil and the United States.

New market-driven standards are likely to increasingly influence agricultural practices in the Amazon. Major commodity buyers, food processors, and supermarkets are increasingly concerned about the sustainability of their supply chains as a matter of business and are increasingly setting up independent verification of producer conformance to proliferating standards for labor practices, food safety and traceability, and environmental impacts. Such

Box 4. Mato Grosso's Licensing System: A Strategy for Curbing Deforestation

In 1999, the state of Mato Grosso began implementing a new licensing program for deforestation. Licensing initially focused on large holdings, where landowners were required to georeference their properties and the areas contemplated for clearing before a license for deforestation was granted. This measure greatly improved monitoring of deforestation by the state, which could be enforced under a new environmental crimes law. By 2002, properties covering approximately 5 million hectares had been georeferenced under the program. Between 2000 and 2001, deforestation in Mato Grosso dropped 35 percent in comparison to the previous two years, and the state's contribution to Amazon forest fires decreased by 40 percent. At the same time, its economy grew 8.7 percent in 2001, compared to a national growth rate of only 1.5 percent. Given these results, the estimated costs of the program have been extraordinarily low — approximately $3 million per year since 1999, with most of the funding coming from the PPG-7.

Source: Carvalho et al (2004)

Box 5. Proambiente: Payments for Environmental Services from Sustainable Agriculture

Proambiente is a new program in the Brazilian Amazon that would compensate farm families for environmental services generated from sustainable agricultural practices. The rationale of the program is to help producers make the transition from the traditional slash-and-burn agriculture toward more diversified and sustainable production systems, thus slowing deforestation and greenhouse gas emissions. Unlike existing agricultural credit programs, Proambiente is designed to compensate producers for environmental services such as maintenance of forested wetlands, soil conservation, recuperation of degraded areas, and biodiversity conservation. The program proposes to reallocate funding from an existing rural credit line, the Constitutional Fund for the North (FNO), which in 2001 provided $28.5 million to finance small-scale farming projects in the Amazon region (for more information, visit www.basa.com.br).

Launching of Proambiente has been proposed in 10 pilot areas, each with 250 properties averaging 100 hectares in size. The estimated implementation cost would total $24 million during a 15-year period. This funding would be channeled as payments to help producers transition to sounder forms of land uses. Among the environmental benefits would be an estimated 437,000 tons of avoided carbon emissions per year, plus a potential 50,000 tons of net carbon uptake per year in agroforestry systems and secondary forests. Other environmental benefits from agroforestry-based production would be lower incidence of fire, soil recuperation and conservation, and lower sedimentation of streams and/or rivers. Finally, the scheme would have the potential to create an estimated 7,500 jobs and increase family income.

Source: Carvalho et al. (2004)

assessment systems incorporating rigorous economic, environmental, and social criteria are now taking hold in major commodities such as bananas, coffee, and cacao and many of the standards being used have benchmarkable performance indicators of biodiversity conservation such as the International Federation of Organic Agriculture Movements (IFOAM), which sets global standards for the $40 billion organic agriculture industry (Box 6).

Box 6: IFOAM Requirements for Organic Certification Include Biodiversity

- Operators shall take measures to maintain and improve landscape and enhance biodiversity quality.
- Clearing of primary ecosystems shall be prohibited.
- All operators shall take defined and appropriate measures to prevent erosion.
- Grazing management shall not degrade land or pollute water resources.

Source: IFOAM Basic Standard, 2003, http://www.ifoam.org/

Environmental and social benefits include reduced water pollution, water consumption, soil erosion, loss of habitat, and threats to health. Other benefits include increased efficiency of farm management and ultimately (although not always demonstrably), increased profitability. To date, however, certification of agricultural products has not penetrated deeply into the Amazon, and many of the complex standards and buyers' codes of conducts remain beyond the grasp of Amazonian smallholders.

Meanwhile, large-scale agribusinesses in the region are beginning to develop improved standards on their own. For example, the Maggi group in Mato Grosso, which is the world's largest soybean producer, is implementing no-till and reduced input technologies and has imposed strict policies regarding protection of forests and watercourses in its properties. These practices have led to decreased operating costs and contributed to the group's competitiveness in global markets. While the environmental enhancements of these practices are significant, their implications for small-scale producers are minor because of the high investment and economies of scale required for soy production. Dole, Nestles, Unilever, Starbucks, and most large agribusinesses have or are developing their own requirements to support this "triple bottom line" approach. Additional resources for these companies and standard setting organizations can be found at http://marketstandards.chemonics.net.

Improving standards for cattle ranching have more significant social and environmental implications in the Amazon, because of the predominance of this land-use system and its importance for producers at all scales. Brazil is the world's leading beef producer and supplies both an enormous domestic market and an almost insatiable global one. At present, the country's high competitiveness in export markets is largely caused by low production costs and absence of mad cow disease. Continuing competitiveness, however, will require meeting increasing demand for quality beef in international and domestic markets due to consolidation of multinational supermarket chains, such as Carrefour, that require high and uniform standards. To improve standards, the sector is undergoing rapid vertical integration to ensure quality control and food safety from pasture to consumer.

These trends could have important economic, environmental, and social implications. First, rising beef prices are capitalizing the sector, ensuring higher returns on investment and thus supporting improved pasture management. Second, improved management translates into better environmental practices on ranches which could eventually include management planning requirements that include setting aside high-value conservation areas and riparian zones and reducing effluent from abattoirs. Thirdly, more sustainable cattle operations could mean improved opportunities for medium-scale producers and create employment conditions that could slow migration and absorb some of the surplus labor that helps drive unsustainable slash-and-burn agriculture.

In short, the transformation of the ranching sector in Brazil offers significant opportunities for designing and implementing management standards that are not only economically driven but incorporate environmental and social criteria. As a result, conditions appear ripe for certification or other guarantees

of improved practice in a sector that has posed the single greatest threat to biodiversity in the Amazon. Support for the development and broad application of a triple bottom line standard for the meat and poultry industry — which does not yet exist — could have a lasting and positive impact on biodiversity in the Amazon.

One of the most serious obstacles to the wholesale application of third-party standards, codes of conduct, and certification and labeling systems in the Amazon Basin is caused by a dearth of committed commercial businesses and nongovernmental organizations. Many countries in the region that are interested in commercial recognition of better management practices must rely on expensive first world assessors for registration and auditing. In addition to a constraint in trained staff and limited awareness within various agriculture industries, many of the Amazonian country governments do not have functioning public standard setting bodies. This ensures that international standards and expensive consultants must be used.

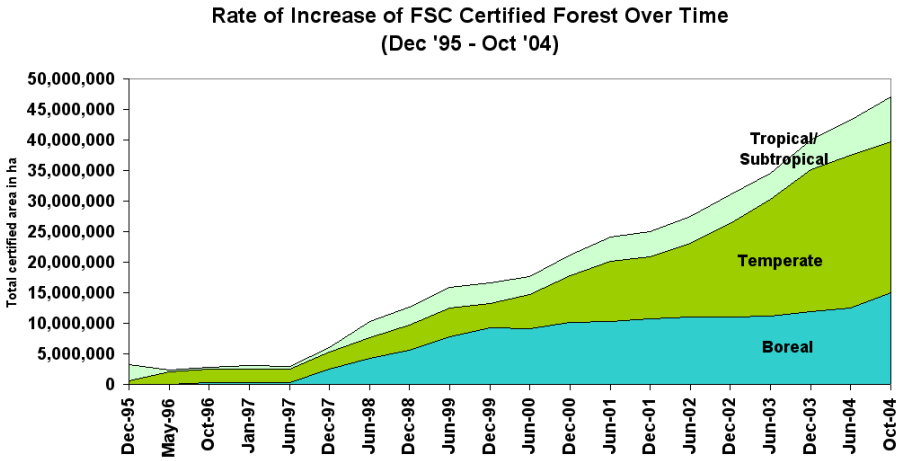
A4. Sustainable Forestry

Concerns about the environmental impacts of traditional logging have generated increased interest in sound forest management and low-impact logging as alternatives to current practices. USAID and other donors have invested significant resources into numerous pilot projects aimed at identifying more sustainable methods to extract timber on a sustained yield basis with reduced consequences on the non-timber values. Managing diverse tropical forests is complex and requires long-term investments that are difficult to obtain in developing countries where capital costs are relatively high, and where public policies fail to provide proper incentives to cover those costs. Additionally, inadequate enforcement against predatory logging, especially in remote frontier areas where governance is poor, decreases the competitiveness of sustainable forestry as a land-use alternative. There remain substantial obstacles to sustainable forestry (Rice 1997) and achieving broad application of verifiable certification systems in Amazonian countries will not be easy.

Nevertheless, forestry is a predominant and growing land use in the Amazon Basin that, like agriculture, must be addressed in any biodiversity strategy. Recent estimates indicate that the area of forest subjected to logging in the Brazilian Amazon approximates the area of forest cleared (Nepstad et al 1999). Improved monitoring at regional, national, and local levels is critical to determine the dimensions of logging, its interactions with other land uses, its impacts, and appropriate steps for enforcement. Significant technical and political advances have been made in monitoring forestry and other land uses in the Amazon. Examples include improved remote sensing using technologies such as the Moderate Resolution Imaging Spectroradiometer (MODIS), which permits monitoring at a basin-wide scale at short intervals and at low cost; use of transponders to monitor transport of wood on trucks, which Brazil's environmental agency is testing; and innovative policies such as that implemented by Mato Grosso to curb deforestation and fires (see Box 4).

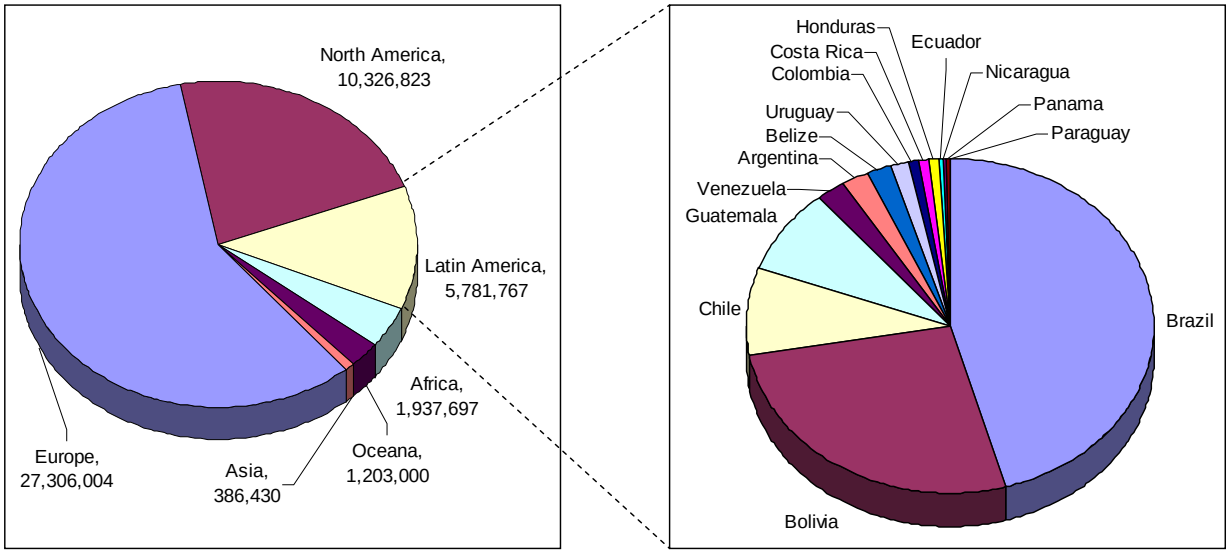
Certification of tropical forests has expanded far more slowly than in temperate areas (Figure 1), in large part because of the sector problems in the tropics noted above and the complexity of the forests themselves. Producers cite high transition costs and lack of price premiums as major disincentives. Certification of producer groups (or group certification) is a cost-reducing approach currently under testing. Nevertheless, increasing dissemination in major producing countries in the Amazon such as Bolivia and Brazil is encouraging, as is participation of large U.S. outlets such as The Home Depot — even though this demand is not yet consumer-driven, no price premiums are involved, and the scale of these companies' purchasing needs far outstrips the capacity of local producers (or even producer groups) in the region. Developing and implementing strategies to meet such demand could tip regional production patterns toward certification.

Figure 1. Increase of Forest Stewardship Council Certification over Time
Source: www.certified-forests.org



Interestingly, the certification experience throughout the Amazon region has been very uneven. Whereas Bolivia and Brazil have moved effectively into regional leadership positions other countries – such as Ecuador, Guyana, and Peru — have little or no certified forests as yet. Efforts to improve forestry operations on the ground have focused on certification, most notably in Bolivia where more than 1.6 million hectares of forest have been certified, and another 700,000 hectares are in process. This experience could be disseminated to other countries, especially through producer networks such as those that currently exist in Bolivia and Brazil and are under development in Peru. International standards of certification have been applied throughout much of Latin America (Figure 2 below), and helping to develop regional capacity to certify these standards with internationally recognized quality assurances could help make public and private investments in forest management more transparent, equity oriented, and likely more sustainable.

Figure 2. The Distribution of Forests Certified According to Forest Stewardship Council Principles and Criteria by Region and within Latin American Countries
(Data from www.fsc.org, December 20, 2004)



Tightening trade-related standards and enforcement could also provide a strong incentive for change in producer behavior. In this sense, new CITES restrictions on mahogany (and probably on many other species as they become commercially threatened) offer an opportunity to test whether the prospect of losing access to the U.S. market could encourage behavior change by producers employing marginal practices.

CITES-mandated restrictions also reflect current policy imbalances and potential opportunities involving different Amazonian countries. A relatively high degree of regulation of its forest sector has enabled Bolivia to impose such restrictions more effectively than in Peru. As a result, instead of strengthening protection of mahogany, this situation has encouraged importers to focus on Peru, where export restrictions are less effectively imposed. Likewise, Bolivia's pioneering experience in developing forest concession policies provided important lessons for subsequent development of such policies in Peru and, potentially in the future, Brazil, where a new forest concession policy is under development. In short, comparative analysis of experiences in Amazonian countries could generate strategic lessons for developing forest-sector policies in other countries.

Since the early 1990s, USAID has made substantial investments in moving forestry to a more sustainable basis in the Amazon region, particularly in Bolivia and Brazil, and more recently in Colombia and Peru. These investments have scaled up from an early focus on pilot projects to more ambitious results that include new forest policies, growing markets for sustainable forest products, improved technical knowledge about forest management, and strengthening of both NGOs and governmental agencies involved in forestry issues. To exchange experiences and lessons learned, in April 2004 the Agency convened its first meeting of forestry partners across the region in Santa Cruz, Bolivia. A core conclusion that emerged from this meeting was the critical need for region-wide approaches to address the multiple problems facing forestry in the Amazon.

A5. Sustainable Fisheries

Although the Amazon Basin has the most diverse freshwater fish fauna in the world, fish are the poorest known group of Amazonian vertebrates (Goulding, Smith, and Mahar 1996). Since pre-Colombian times, they have also been the most important group of native fauna in the regional economy. Beginning in the 1960s, however, fisheries in the region began to transform as subsidized credit and tax incentives sparked the acquisition of industrial-scale fishing fleets and new fishing technologies (such as seines and gillnets). This greatly increased the range and intensity of fishing operations along the Amazon and its tributaries. While supplies increased, demand for fish accelerated much more rapidly, fueled by rapid urbanization and new export markets. Excessive demand has driven up fish prices throughout the region.

These trends have led to overfishing, which is likely the major factor leading to the decline of major Amazonian fisheries today, including both food and ornamental fishes (see Box 7). For example, exports of the piramutuba (*Brachyplatystoma vaillantii*) catfish, which migrates as far as 3,000 km from the Amazon estuary upstream to spawn (Barthem 1990), reached $13 million in 1980 but are now less than $3 million because of declining catches (Goulding, Smith, and Mahar 1996). The fishery industry will continue to decline without initiatives to limit the catch and protect still-unknown spawning habitats in the western Amazon Basin. Such initiatives would require close international cooperation.

Environmental degradation is another factor contributing to the decline of Amazonian fisheries. In contrast to most fisheries worldwide, many Amazonian species feed on fruits and seeds produced in flooded forests, which gives them a superior taste. The tambaqui (*Colossoma macropomum*) is the best example of such a species and is one of the most valued regional fish in local, national, and international markets (Goulding and Carvalho 1982). Yet wholesale destruction of floodplain forests along a 2,000 km

stretch in the middle portions of the Amazon River, caused by expansion of pasturelands for cattle and buffalo, could pose a much greater threat to this species than overfishing.

Box 7. Aquarium Trade Fisheries

The most sought-after species in the Amazon is the cardinal neon (*Paracheirodon axelrodi*), which is found only along the middle and upper Rio Negro and its tributaries and probably accounts for 80 percent of the total catch. Mining of wild populations, plus socially exploitative sourcing based on debt peonage, has enabled the regional aquarium trade to compete with fish farms in the United States and Asia. Despite ideal conditions for fish farming, Amazonian entrepreneurs and government agencies have shown little interest in this potentially lucrative business, and researchers have largely ignored it. Following historic trends in the aquarium business, fish breeders in the southern United States or Asia should eventually begin to reproduce the cardinal neon, thereby undermining the aquarium trade from the Rio Negro. It thus seems imperative that ornamental fish breeding and farming research begin immediately in the Amazon if aquarium species are to provide a sustainable industry for this region and prevent the overexploitation of precious species.

Source: Goulding, Smith, and Mahar 1996

Growing pressure on fisheries has led to violent conflicts between industrial operations and riverine communities. In recent years, many communities have assumed increased control over local fisheries and improved access to markets. The success of communities in securing their resource base depends to a large degree on tenure. Static tenure arrangements that designate individual properties are problematic in dynamic habitats such as Amazonian floodplains, and they fail to acknowledge the tight linkages between terrestrial and aquatic habitats or to highly mobile resources such as fisheries.

To address these challenges, communities throughout the Amazon floodplain are experimenting with a variety of innovative resource tenure arrangements. In the Santarém area, limits on fishing are enforced by local communities. Other riverine communities — such as in the Mamirauá Sustainable Development Reserve along the Amazon River (or Rio Solimões) near Tefé, Brazil (see Box 8) — have set aside extensive areas of floodplain forest for protection of floodplain resources and to serve as a renewable source of fish, game, and non-timber forest products. Extractive reserves in Brazil and so-called communal reserves in Peru are being demarcated formally or informally across extensive floodplain areas. Understanding these and other experiences provides an opportunity to develop policy alternatives for defining tenure arrangements that are more socially and environmentally sustainable. The floodplain provides a creative laboratory for land tenure and property rights that could be extended into upland areas. Defining tenure arrangements that are grounded in established social arrangements provides a much firmer basis than drawing lines on a map (Soto 2000).

Box 8. The Mamirauá Sustainable Development Reserve

At present there are no floodplain parks or reserves in the lower 2,500 km of the Amazon River. Moving upstream, the first reserve of any kind is the important Mamirauá Sustainable Development Reserve near Tefé, Brazil. The 11,000 km^2 reserve was established by the state of Amazonas in 1990. A research team of the Sociedade Civil Mamirauá has conducted the most detailed biological and socioeconomic surveys of a relatively natural floodplain area in the Amazon Basin. This research provided a basis for developing a management plan in close consultation with local riverine communities. This plan has defined a core protected area that sustains local fisheries and game for hunting, which the communities actively defend against incursions by their members and outside interests (primarily industrial fishing fleets). This experience is a demonstrable case of how local communities, without governmental intervention, can develop and abide by restrictions necessary to protect biodiversity while at the same time maintaining their use of it. The Mamirauá experience could provide an important model for replication elsewhere along the Amazon River and its tributaries. Already the government of Amazonas has designated numerous other sustainable development reserves that incorporate traditional populations — including the adjacent Amanã Reserve that links Mamirauá to the Jaú National Park, creating a connected landscape of protected areas over 57,000 km^2 in extent.

Source: Instituto de Desenvolvimento Sustentável Mamirauá (http://www.mamiraua.org.br/index.htm)

The most immediate solution to meeting a rapid increase in the demand for fish is through fish farming. Fish farmers have concentrated efforts on exotic species such as African tilapia and Asian carp. Yet the Amazon region has many native species that are considered more delicious and would command higher market prices. Fish farmers have begun to experiment raising tambaqui and another regional fish, pirarucu (*Arapaima gigas*) in which weight increases of nine kilograms per year have been obtained. Fish farming has the potential to produce more animal protein than cattle, with much less destruction of the floodplain forest. Most government-sponsored animal production research, however, focuses on cattle and buffalo and at present there is much more information on how to raise exotic livestock than native fish.

The complex web of social, economic, and environmental factors governing fisheries suggests that various strategic interventions involving scientific research, community-based management, and regional policies would be effective in helping conserve the Amazon Basin's fisheries.

B. Donor Investments

This section presents financial information about biodiversity conservation initiatives in the Amazon Basin and breaks that information into themes to detect funding patterns. Data were initially collected from USAID, the Moore Foundation, The World Bank administered Pilot Program to Conserve the Brazilian Rain Forest (PPG-7), and the Global Environment Facility (GEF). Because of limitations in data availability (see Annex 3), it was not possible to present total funding across a given period for all of the donor agencies. Instead, to compare data across donors, estimated annual averages were calculated by project and theme. This approach presented two limitations:

Errors in the calculation of annual averages. In many cases, only the total funding for a particular initiative was obtained. In instances where the years during which the activity was implemented (or was projected to be implemented) could be determined, a straight average by year was calculated. In the case of USAID missions, data were provided for different time periods. Hence calculation of annual total expenditures for USAID drew on data from different years. Projected funding of initiatives that had not been formally approved was eliminated from this analysis.

Allocation of funding between themes may not reflect actual allocations. Because of a lack of specific information on budgetary allocations, estimated disbursements by theme might not reflect actual allocations.

Looking at expenditures by USAID and three other major donors or donor programs provides a broad perspective on international investments in biodiversity conservation in the Amazon Basin. Table 1 below shows the estimated average annual expenditures by USAID, the Moore Foundation, The World Bank administered PPG-7, and the GEF.

Table 1. Estimated Average Annual Expenditures (US$ millions) in the Amazon Region by Thematic Area (based on data from 1999-2005)

Institution	Protected Areas	Indigenous Peoples & Territories	Forestry	Other	TOTAL
USAID	15.10	4.78	10.47	5.99	36.34
Moore Foundation	14.47	1.14	4.80	9.58	29.99
World Bank - PPG7	0.38	1.21	1.24	7.82	10.65
GEF	15.98	1.84	0.50	4.58	22.90
Total	**45.92**	**8.97**	**17.01**	**27.97**	**99.88**

1. Nearly 70 percent of allocations were channeled to three thematic areas: protected areas, forestry, and indigenous peoples and territories.

2. Looking at the region as a whole, of expenditures in the three top thematic areas, approximately one-half went to protected areas, one-third to forestry, and one-sixth to indigenous peoples and territories. While the proportions differ between countries, it is notable that expenditures directed toward protected areas received approximately five times more expenditures than indigenous peoples and territories, even though the latter are three to four times more extensive in the Amazon Basin. This affirmation, however, requires qualification, since most protected areas in the Amazon contain indigenous populations. In countries such as Colombia, protected areas are specifically designed to protect both biological diversity and indigenous cultures. With these qualifications, nevertheless, we can affirm that substantially higher expenditures were allocated to biodiversity conservation in traditional protected areas on indigenous peoples' lands.

3. The figures for forestry also overlap with other thematic areas, in particular with the protected area and indigenous peoples and territories categories. Nevertheless, we can affirm with confidence that forestry has been a major area of funding, especially by USAID and the PPG-7.

4. The increased investments in other thematic areas (indicated as "Others" in Table 1. above) reflect a broader thematic focus (see Annex 3). Some general observations follow:

- There has been a lack of explicit investment in aquatic systems, which is notable given their importance in the regional economy and their highly threatened conservation status in many areas of the Basin. Aquatic systems received slightly more than six percent of total funding exclusively from non-USAID sources, especially the Moore Foundation.
- Research, which is not an explicit objective for USAID projects, obtained almost seven percent of the total funding. Again the Moore Foundation places major emphasis on this category.
- Agriculture received minimal explicit allocations, which is notable given its predominance as the major land-use threat to biodiversity in the Amazon Basin. This appears to reflect a general trend to underemphasize linkages between agriculture and biodiversity conservation as explicit objectives of environmental projects.

The data in Table 1 show that four major donor programs account for almost $100 million per year in support of biodiversity-related initiatives in the Amazon Basin. If all donor programs operating in the Amazon Basin were accounted for, including other multilateral and bilateral donors, total support is likely to be more than double this amount.

While these numbers would appear to be impressive, they pale when the size of other financial flows are taken into account. For example, the Brazilian government is allocating billions of dollars for infrastructure such as roads, waterways, and ports. The scale of such development-oriented investments underlines the need for region-wide perspectives on both the threats to and opportunities for biodiversity conservation in Amazon Basin.

C. Key Lessons from Other Regional Programs

Regional environmental programming within USAID provides important insights for a regional initiative in the Amazon Basin. The paradox inherent in regional programs — which aim to address vital but unaddressed regional needs while also complementing bilateral conservation programs — has also provided valuable lessons. To tease out these lessons, information was gathered on four programs: Central African Regional Program for the Environment (CARPE), the Southern Africa Regional Natural

Resources Program (NRMP), the East Asia and Pacific Environmental Initiative (EAPEI), and the Regional Environmental Program for Central America (RENARM/PROARCA). Key lessons are summarized below.

1. Ensure the focus of a "regional program." Identifying a regional counterpart is critical for the success of any regional program; without a clear regionally-focused counterpart, regional issues can become lost as missions and countries fill the void and country-specific priorities take precedence. A viable counterpart may require training and strengthening, in which case the long-term benefits are likely to outweigh the costs. In addition, the counterpart needs to participate in setting the agenda, and it should not be an institution created solely to implement the USAID activity. Within the NRMP program, a regional information and networking component managed through IUCN's Regional Office for Southern Africa ("ROSA") complemented bilateral projects by strengthening the South Africa Development Councils secretariats for biodiversity and forestry. Various possible counterparts for a regional agenda in the Amazon are described in Annex 6.

2. Obtain buy-in and ownership of the process. In 1994 Central American leaders created the Alliance for Sustainable Development (ALIDES) to increase trade and improve management of the region's rich biodiversity. The Central American Presidents also created the Central American Commission for Sustainable Development (CCAD), which was a keystone event in developing regional capacity to address land-use planning and conservation across transboundary areas. The Central America-USA Agreement (CONCAUSA) promised additional U.S. support for conservation initiatives that have included regular exchanges of information, joint mapping and protected areas planning, and harmonization of policies among all countries. CCAD is now an effective advocate organization within all Central American governments that is helping to ensure that environmental considerations are being routinely included in protected area decision-making, trade negotiations, and consideration of biodiversity within regional planning.

3. Define and stick to regional goals. There is always the risk that regional programs will be pressured to draw the issues back to a country-level focus to the detriment of the regional agenda. During its seven-year history, for example, the EAPEI program's focus has shifted in response to changing politics in the participating countries, as well as evolving U.S. foreign policy objectives. While such changes are frequently unavoidable, they can limit a program's ability to achieve its original goals. Working at the regional level affords the opportunity for transnational policy alignment. Moreover, it provides a mechanism for information sharing and collaboration between countries. In reviewing USAID's bilateral portfolios in the Amazon Basin, it becomes clear that by focusing on a clear set of goals, a regional initiative in biodiversity conservation could multiply the benefits of ongoing projects within countries. Opening channels for information exchange offers an obvious way to achieve such multiplication across the region.

4. Establish a regional management structure. While strong linkages with bilateral initiatives are important, most of those interviewed indicated the importance of maintaining a separate mandate and funding for a regional program to prevent absorption into bilateral initiatives. Even in Central America, where the regional USAID program is a good example of cooperative implementation at the multinational level, activities often struggle to maintain a regional focus. Consequently, regional programs should be provided with a separate management structure. Senior-level support is necessary but not sufficient. Regional programs benefit enormously from having a "champion," leadership from someone with recognition and clout to manage the program.

5. Build local ownership. With any regional program, just as with the bilateral programs, it is essential to establish local ownership of long-term programs. Moreover, it is suggested that the Amazon initiative

should not be seen as driven by U.S. foreign policy. Steps should be taken to ensure the participation of local actors, and regional institutions should be tapped and used wherever possible.

6. Establish transparent and standardized procedures. Procedures for competition and implementation should be well-defined and disseminated to a broad audience. Methods for implementation need to be standardized among participating implementers and data gathered in a consistent manner. The NRMP program helped develop such standards within transboundary water management, which led to numerous new initiatives. This is especially the case for monitoring and evaluation, which requires clearly defined baselines and indicators that can be shared among implementing partners.

7. Determine whether partnerships work. In addition to an enormous increase in scale, a regional program brings many new challenges that require institutional partnerships at diverse levels. Yet such partnerships usually involve substantial transaction costs, particularly for local institutions. Before embarking on a regional program, it is important to identify both the added value of partnerships and the transaction costs required to build them. Local institutional capacity should be evaluated objectively. Should partnerships make sense, the roles and responsibilities required to achieve them must be defined clearly, and the activities of each participating institution must be monitored along the way to ensure that the individual activities help support the results anticipated during the course of the program.

8. Encourage healthy competition and productive collaboration. A key lesson learned by EAPEI was that competition among potential implementers can provide important benefits. EAPEI benefited from a competitive grant program that was oversubscribed. The large number of grant proposals submitted served to constantly inject new ideas into the system. Many candidates who were not awarded grants learned from the competitive process and subsequently submitted successful proposals.

9. ***Establish effective channels for communication.*** Effective communication is critical for participants to share results, learn key lessons, and minimize duplication of efforts. At regional levels, such communication is often challenging, but it has been an important foundational element in the Central American and southern African cases. The Amazon Basin contains multiple sub-regions with highly variable environments, histories, cultures, and political contexts. Nevertheless, communication barriers are readily surmountable between the dominant languages spoken in the region (Spanish and Portuguese). Moreover, modern communication technologies such as the Internet are widely used throughout the region and provide enormous opportunities for information exchange. Travel between major Amazonian cities remains problematic because of inadequate airline linkages. Nevertheless, compared to other regions, barriers to communication in the Amazon region can be readily overcome.

IV. OPPORTUNITY SETS

The previous two sections described the threats and drivers behind loss of biodiversity in the Amazon Basin, the major sectoral needs involving biodiversity, and the status of programs to address those needs. This section identifies the opportunities that USAID might consider when designing its regional biodiversity conservation initiative in the Basin. The opportunities are organized under four topics: governance and civil society, best practices for landscape and natural resources management, markets and financial mechanisms for conservation, and public policies. To varying degrees, these four opportunity sets contribute to USAID's development goals of sustainable natural resources management, improved democracy and governance, and increased economic growth.

Within these opportunity sets, nine opportunities are identified. They were selected based on their regional scope and relevance to the threats and drivers identified in Section II and sector needs and gaps identified in Section III. Because most of these opportunities are cross-sector, they address multiple needs. While this list does not encompass all of the areas in which USAID might choose to work in the Amazon Basin, these opportunities appear to hold the greatest promise for conserving biodiversity at a regional level. As is often the case in describing program opportunities and strategies, there is overlap in the opportunities presented. A sample of possible activities is described for each opportunity.

The last section of the report assigns relative priorities to the opportunities, based on a set of four criteria, to develop a regional program for the Amazon Basin.

A. Governance and Civil Society

USAID has a long history of promoting transparent democratic practices throughout the developing world. Many of its activities and programs respond to the needs of the citizenry and help include previously disempowered peoples and groups in governmental process and decision making. Improved environmental governance holds promise for reversing ecosystem degradation by a more careful balancing of human needs and ecosystem processes (Rosen 2004).

Lack of environmental governance, particularly in frontier areas, represents one of the major impediments to increasing conservation and sustainable use of biodiversity in the Amazon Basin. During the course of this assessment, three opportunities related to governance and civil society processes were identified that are especially promising within the context of a regional initiative to conserve biodiversity in the Amazon region.

A1. Strengthening Public Sector Governance Related to Natural Resources Management

The most significant hindrance to sustainable natural resources management for biodiversity conservation in the Amazon Basin is the inability of national and, increasingly, local governments to fulfill their roles in the process. Repeatedly during stakeholder meetings in the region, the issue of governmental capacity to address issues related to indigenous people's land rights, enforcement of natural resources management and resource extraction regulations, and deficient monitoring and management of existing protected areas arose as critical constraints to the success of biodiversity conservation efforts. While a multitude of institutions and initiatives have sprung up in the Basin to address specific natural resources management (NRM) objectives (a sampling of which can be seen in Annexes 1 and 6), without the governmental capacity to provide services, enforce regulations, and effectively resolve land-based conflicts, conservation initiatives will have limited success. As a result, the strengthening of public-sector governance of natural resources in the region is an important opportunity. The following activities will help with this strengthening:

a) Promoting participatory methodologies in government. Access to relevant environmental information and participatory mechanisms in the decision-making process can improve transparency and lead to stronger forms of accountable implementation at local and national levels. Biodiversity conservation could be strengthened immeasurably by enhancing national and local government's capacity to include the private sector (e.g., timber concession holders, oil and gas producers, and agriculture producers), NGOs, and indigenous peoples' organizations in policy dialogues and decision making. Specific activities might include the funding of fora for public input to legislation and environmental reviews, and the promotion of NGO, indigenous peoples, and private-sector participation on governmental advisory boards.

b) Promoting best practices for monitoring and enforcement. Innovative examples of monitoring and enforcement against illegal forms of resource use are emerging throughout the Amazon Basin. In response to tougher federal standards requiring licensing by states to clear areas larger than three hectares, the state of Mato Grosso became the first to implement an innovative licensing system that permits property-level monitoring using satellite imagery (see Box 4. Mato Grosso). Improved remote sensing, using technologies such as MODIS, permits monitoring at a basin-wide scale at short intervals and low cost. The USAID-supported Institute of Man and Environment in the Amazon (Imazon) has pioneered the use of transponders to monitor transport of wood on trucks, which Brazil's environmental agency (IBAMA) is currently testing. A regional program could support comparative analysis of cost-effective enforcement practices and policies, followed by training for regulatory agencies, and help for national and local governments to access information on successful approaches required to meet their enforcement responsibilities. Furthermore, transparency in government can be advanced by promoting public access to the same information.

c) Encouraging public-private partnerships. Insufficient financing presents an obstacle to national governments' capacity to implement natural resources related activities. Innovative public-private partnerships provide a mechanism for financing initiatives that are otherwise insufficiently funded by governments. Activities such as the development of co-management agreements, training for park service personnel, provision of services (education, health, and sanitation) for communities living in and around protected areas, and building of monitoring systems, can all be addressed through creative cooperative agreements between public entities, indigenous communities and federations, NGOs, and private institutions willing to invest in these areas.

d) Enhancing land titling and property and resource rights. USAID is currently carrying out considerable activities in shoring up land tenure systems around the region by supporting land titling and registration. These activities should be continued and expanded in the Amazon Basin to ensure transparent land-tenure for both indigenous and non-indigenous communities. In addition, the rights to water, minerals, and natural resources should be clarified, with priority given to promoting the livelihoods of the local communities who depend on these resources. At the same time, USAID can lend its institutional capacity to provide training for governmental officials, indigenous peoples, and civil society organizations on approaches for mediating and resolving land- and property-based conflicts in the region.

A2. Strengthening the Governance Capacity of Local Communities

This opportunity has special relevance to indigenous peoples, who control about one-fourth of the Amazon Basin. Because of the growing areas controlled by indigenous and other traditional communities in forested regions worldwide (White and Martin 2002), strengthening community governance capacity is very important for biodiversity conservation. The following activities would help increase the participation of indigenous and other traditional groups in governmental processes, policy dialogues, and policy making:

a) Assessment of indigenous models for governance of land and natural resources. To deal with the increasing demands imposed by settlers, local business interests, NGOs, national governments, and international entities such as multinational companies and multilateral banks, indigenous peoples throughout the Amazon have developed numerous organizations to represent their interests. Local indigenous institutions maintain maximum authority over resource decisions within the community. Indigenous federations or organizations, such as CONFENAE in Ecuador and AIDESEP in Peru, have emerged in recent decades and play important roles in shaping these decisions by advising individual communities. Under leadership elected by their base membership, these federations also play an important political and development role by articulating and advocating for policies and projects that will benefit a series of communities or nation as a whole.

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Understanding how these emerging governance structures function and interact with outside institutions will provide a sound basis for designing subsequent interventions aimed at strengthening those structures. A participatory analysis of tribal governance at local, national, and international levels, and its effectiveness in interacting with diverse outside interests, could be used to define cost-effective programs in governance training and capacity building across the region. Dissemination of these findings could provide valuable information for governments and other institutions interested in improving their working relationships with indigenous organizations. It could also provide indigenous organizations with approaches to more effectively advocate their interests before national governments and regional organizations.

b) Provision of training and capacity building for governance. One of the more promising developments in capacity building among indigenous peoples in the Amazon is that they are providing more of it themselves. In some communities, indigenous organizations are now running their own geographic information systems (GIS) mapping programs, educational programs, health programs, and resource management programs. This approach can be effective in helping indigenous peoples learn to engage external interests on their own terms. For example, many indigenous leaders are looking for development models that offer the most sustainable future for their peoples and thus look for ways to make their own culture and traditions more dominant in their relationship with outsiders.

Training needs assessments carried out by indigenous organizations would help to empower indigenous participation in decision-making processes and enhance good governance practices. This could be followed by tailor-made (and, whenever possible, indigenous run) training programs in issues such as land-based conflict resolution, best practices in governance, bilingual programs, governmental decision making processes, media and presentation skills, fundraising, negotiation skills, and drafting of legislation and regulations.

Finally, supporting fora in which indigenous communities can share and exchange experiences and their own best governance practices may be the best strategy to empower indigenous peoples in the Amazon Basin. This activity can serve to network indigenous communities, ensuring exchange of information and lessons learned.

c) Empowering indigenous women through access to information and education. While indigenous groups in the Amazon Basin have made tremendous strides in developing and implementing their organizational capacity in recent decades, indigenous women tend to be under-represented in such organizations and often lack basic skills required to be heard. Numerous cases have shown that increasing the participation of indigenous women is an effective strategy in strengthening natural resources management (Colfer 2004). Using bottom-up and top-down perspectives, analysis of gender dynamics needs to be integrated into the planning of all initiatives related to building the governance capacity of indigenous communities. Analysis on the role of gender and equity will help ensure that the women employ and improve their skills while preserving the groups' cultural heritage and traditional gender roles.

d) Strengthening monitoring and enforcement of land and property rights. Despite their increased organizational capacity, indigenous and other local communities often lack the technical training to establish remote or even local surveillance systems of their lands and natural resources. In the Brazilian Amazon, for example, the Kayapó Indians are using satellite imagery combined with a system of surveillance posts to protect their lands from incursions by loggers and land grabbers. But sophisticated satellite technology is not necessarily the most appropriate approach. Widespread use of radios by riverine communities adjacent to the Tapajós National Forest is providing a cost-effective tool for monitoring against incursions by illegal loggers, while also strengthening local governance and improving delivery of social services such as education and health care.

Hands-on training in the elaboration of appropriate surveillance strategies and methodologies would provide indigenous peoples and other traditional communities with the tools necessary to monitor their lands and resources. Indigenous people provided with such training could become effective disseminators to other groups.

Monitoring at diverse scales could be incorporated into a system that integrates information on the status of indigenous territories across the Amazon Basin. Such a system would provide a platform for exchanging monitoring-related information and lessons, while also contributing to increased transparency and public awareness about threats to indigenous territories. In addition, it would provide a means of mobilizing public agencies in defense against incursions into indigenous territories. The same data could be used by local communities to improve land-use planning and management.

A3. Strengthening Regional Cooperation and Communication

Experience with USAID regional programs worldwide reveals the critical need to collaborate with existing institutions, programs, and networks at regional and sub-regional levels. Effective communication is critical for program governance, enabling participants to share results, learn key lessons, and minimize duplication of efforts. At regional levels, such communication is often challenging. The Amazon Basin contains multiple sub-regions with highly variable environments, histories, cultures, and political contexts. Nevertheless, the language barriers to communication are in most contexts readily surmountable, and modern communication technologies such as the Internet are used widely throughout the region.

A regional initiative should make full use of existing institutions, programs, and networks, which are numerous in the Amazon region, as indicated by the sampling of information sources used for this report (Annex 1), the wide range of donor-supported activities (Section III), and the existence of key regional and sub-regional institutions and initiatives involving biodiversity-related issues (Annex 6). Many of these institutions and initiatives already have mechanisms for dialogue. The activities below present some possibilities for strengthening regional communication and cooperation:

a) Convening key actors. Convening key actors is a critical ingredient for the success of regional initiatives. Operationally this can be assisted on a regional scale through periodic meetings, workshops, and conferences. Separate tracks with distinct networks should be pursued to address issues such as governance (including laws, regulations, monitoring, enforcement, and prosecution), which will require a particularly formal structure; natural resource information and management; and business, markets, and trade. Issues of governance and conflict resolution might be dealt with through long-term support to committees of official governmental or quasi-governmental authorities. For example, the Brasilia-based OTCA could provide an appropriate forum to discuss such issues.

b) Building collaborative networks. Promising institutional networks exist to further a regional agenda, particularly in natural resources and biodiversity protection (Annex 6). For example, the Amazon Initiative could help coordinate and implement research involving agricultural practices, policies, and markets. Collaborations among universities might be used to strengthen country-based monitoring systems that could collaborate on regional monitoring and reporting. Likewise, Redlac, which operates throughout Latin America, could provide an institutional locus for mobilizing the national biodiversity funds to develop a regional biodiversity strategy.

At the regional level, networking among indigenous organizations, as well as among other community-based institutions, is improving but remains fragile. Furthering indigenous issues at the regional level, especially those related to governance and public policies, will require considerable strengthening of linkages between COICA and its member organizations from the Amazon countries: Bolivia (CIDOB), Brazil (COIAB), Colombia (OPIAC), Ecuador (CONFENAE), French Guyana (FOAG), Guyana (APA), Peru (AIDESEP), Suriname (OIS), and Venezuela (CONIVE). Developing such linkages holds the potential to strengthen the regional coordination of these organizations, and could conceivably lead to a regional institutional framework with stronger forms of accountability for indigenous issues and interests. Achieving this will probably require a wide range of activities described under this and other opportunities: convening key actors, using diverse communication media, and developing tools for training and capacity building.

Other networks might also be supported. Strengthening civil society networks can serve as the institutional foundation for diverse initiatives in the Amazon region. For example, the regional NGO community and journalist organizations can contribute to transparency of natural resources programs and results.

c) Using diverse communication media. This would best be achieved by defining communication strategies, which are likely to vary in different programmatic areas. Media could involve diverse formats ranging from web-enabled communication to radio networks. As shown under the activity involving strengthening territorial defense, both of these communication tools can play critical and complementary roles. For example, a project entitled Video in the Villages (funded by the Norwegian Agency for Development Cooperation) produces videos showing daily life of indigenous groups for widespread dissemination to other groups. This simple concept provides indigenous peoples with vivid windows on the lives of their neighbors, and it has proved to be an effective strategy for forging new understanding and cultural linkages between formerly isolated groups.

B. Best Practices for Landscape and Natural Resource Management

While destructive resource use patterns used to occur at localized scales in the Amazon, they now take place at increasingly larger, regional scales. Yet alternatives exist that could support more sound resource planning and use across the Basin. USAID has played a leading role in developing and disseminating alternative resource uses in the region, most notably in agroforestry systems and natural forest

management. Through its support of landscape conservation, the Agency has also supported sound resource planning at larger scales. This ongoing work provides a solid foundation for a regional initiative.

At the same time, a regional perspective provides an opportunity to assess these approaches and explore new ones. Landscape conservation projects are underway in many areas, offering an opportunity to evaluate their effectiveness to date and propose complementary approaches that may be more effective. Likewise, because of its critical and growing importance as a major threat in the Amazon, cattle ranching should be part of any program that aims to have a meaningful impact on land-use patterns in the region. Other large-scale agribusinesses, such as soybean plantations, pose a growing threat and also merit consideration. The opportunities that follow examine these issues in greater detail.

B1. Supporting Conservation Landscapes

The Amazon Basin provides one of the world's last frontiers for establishing relatively intact, large-scale conservation landscapes. Efforts to plan and implement conservation landscape projects are underway in various parts of the region (as discussed in Section III), with technical and financial support from the major international conservation organizations. Many of these projects cover immense areas that do not correspond to existing political jurisdictions or mandates.

Watersheds could serve as a more meaningful biogeographic unit for developing conservation landscapes because they provide critical environmental services that stakeholders readily perceive, use, and value. Efforts to develop integrated watershed management in the region are incipient, but emerging cases indicate their growing importance as a conservation issue that can motivate a diverse array of interest groups across large landscape areas (Box 9). This is a field in which USAID has long-term experience worldwide, with total investments of at least $11 billion during the past 30 years, and more than $400 million annually in recent years (USAID Water Team 2002).

Box 9. Integrated Watershed Management in the Xingu River Basin

Covering 504,000 km^2 and extending into the heartland of Brazil in Mato Grosso, the Xingu River Basin is the fourth largest tributary of the Amazon (Goulding, Barthem, and Ferreira 2003). In recent years, it has come under intensive land-use pressure because of rapid and unplanned frontier expansion, and particularly to the establishment of large-scale agribusinesses such as ranching and plantations of soybean, rice, and cotton. Today the health of the Xingu is threatened by the indiscriminate deforestation in the basin's headwaters. Water volumes have decreased in recent years because of the degradation of springs, and siltation and pollution from agrochemicals have worsened water quality.

To reverse this situation, a diverse group of civil society actors has launched a national campaign for the protection and restoration of the springs and riparian forests of the basin. This campaign represents an unprecedented alliance of diverse interests in the basin, ranging from 5,000 inhabitants of the Xingu Indigenous Park, to large-scale ranchers and soybean farmers — all of whom are negatively affected by the declining health of the Xingu. The campaign represents the first large-scale step toward integrated watershed management in the Amazon Basin.

Source: www.isa.com.br

The following activities are aimed to develop conservation landscapes, with a focus on integrated watershed management and co-management of protected areas.

a) Analyzing the value of conservation landscapes. A regional program could support a comparative assessment of the effectiveness of large-scale projects in the region and collect information on methods

and results to date. The lessons learned from this activity could be used to design and support future conservation landscape projects in the Amazon region.

Fundacad.org

b) Implementing integrated watershed management. Integrated watershed management is central to the development of conservation landscapes in the Amazon River Basin. Under this activity, USAID could provide seed funding for such initiatives, which initially may focus on water and land-use monitoring, mobilizing stakeholders, and project design and planning. Local actors would benefit from study tours to other watersheds where USAID has long-term involvement in this area, such as the Panama Canal Watershed and a new project in the Pastaza River Basin in Ecuador.

c) Identifying and disseminating best practices in cooperative management. Successful cooperative management requires addressing a wide range of issues, including: resource tenure and rights of access to and use of natural resources, attribution of monitoring and enforcement authority, sound management plans incorporating traditional ecological knowledge and best resource management practices, benefit sharing, and proper incentives. Park managers often have little or no familiarity with these issues. Identification and dissemination of best practices in co-management of protected areas that overlap indigenous or traditional populations could provide a basis for expanding these arrangements. This could be an appropriate strategy for protected areas increasingly threatened by growing commercial interests in oil and gas exploration, logging, mining, and agribusiness.

B2. Identifying and Disseminating Best Practices for Natural Resources Management

The array of resource-use threats to Amazonian biodiversity and their associate drivers (described in Section II) undermine sustainable forms of resource use. Labor is frequently a limitation because of relatively low population densities in frontier zones. On the other hand, land and other natural resources are abundant and undervalued, and ownership in many frontier zones is established through *de facto* appropriation. For both small- and large-scale producers, this combination of factors encourages land-use practices that require little capital, minimum labor, and maximum use of resources, such as shifting cultivation and highly extensive grazing. Fire is the tool of choice for releasing nutrients from felled vegetation to establish agricultural systems on the region's characteristically infertile soils, and it poses a growing threat to more environmentally sound land-use systems such as forest management and agroforestry. In addition, the synergy of expanding ranching, agriculture, and fires is generating increasingly negative impacts on hydrographic basins and fisheries.

As discussed in Section III, USAID has provided critical support for development of best management practices in the Amazon, particularly in relation to forestry (in particular reduced impact logging) and agroforestry (including lesser known species). Building on this work, the following activities are strategic for a regional initiative. These activities involve a combined approach of gathering and disseminating

information on best practices in natural resources management, and training activities to ensure the broadest possible distribution of those practices throughout the region.

a) Gathering and disseminating information on sector-specific best management practices. In each of the sectors highlighted in this assessment, practitioners throughout the Amazon region are experimenting with best management practices that reduce environmental impacts while increasing socioeconomic benefits. Areas where substantial information is readily available include reduced impact logging, community forestry, agroforestry, and fish farming. More critically, regional research centers and practitioners have developed methods for reducing inputs and impacts of ranching and mechanized agriculture. Mining is another area in which improved technologies are under development or implementation by industries and small-scale practitioners. Information gathered on best management practices should include strategies to reduce environmental and social impacts and increase economic returns and other social benefits, especially to local communities. A regional initiative would provide comparative advantage by gathering information from highly diverse sources across the Basin.

To disseminate this information a regional initiative could develop training materials on best practices and lessons learned in each respective sector. Sponsoring of training activities should focus on building capacity among institutions involved in training and extension. A wide variety of both governmental agencies and NGOs are carrying out such work in the region. A noteworthy example of a USAID-supported institution involved in such training is the Tropical Forest Institute in Brazil, which for nearly a decade has delivered hands-on training on all aspects of forestry — ranging from reduced impact logging to community forestry to public policies — to a wide range of actors in the sector. With support from IBAMA, Brazil's environmental agency, the Institute now plays a leading role in establishing a network of training centers throughout the region. Strengthening such networks and supporting exchanges between catalytic institutions involved in training would provide a strategic approach to dissemination of best practices in all sectors of natural resources management.

b) Developing training for indigenous peoples. Long-term success in conserving indigenous peoples' lands will depend on the indigenous peoples taking responsibility for everything from sustainable natural resources management and business administration to managing relationships with government agencies and international corporations. Achieving this goal will require improved access to training and education at all levels, including: practical training in governance and business administration, scholarships for university and post-graduate studies, and long-range programs to inform children about environmental values. Potential actions for a regional program in this area could involve designing curricula and training teachers, supporting student and teacher exchanges, and providing scholarships for advanced training. In addition to sciences and natural resources management, priority subjects include: language training, essential for managing extra-tribal affairs (such as representation in government) and for collaboration in regional resource planning and management; and business administration (accounting, marketing, and negotiation skills).

c) Developing best practice among indigenous communities. As in the case of technologies for non-indigenous peoples, this activity would involve using existing best practices as a basis for dissemination and capacity building in natural resources management. Here, however, capacity building should be based on the active participation of indigenous organizations and be firmly grounded in indigenous knowledge, customs, and values. This cultural heritage is disappearing rapidly throughout the region (Plotkin 1993, Davis 1997) and salvaging it is an urgent priority. Many indigenous and support organizations throughout the Basin are engaged in this effort. A regional initiative might support the development of communities of practices, in which indigenous organizations collaborate in the wide dissemination of indigenous knowledge. Such dissemination could range from exchange visits and meetings to strengthening of Internet linkages and other forms of communication around issues related to natural resources management. It could also involve the development of training materials for basic curricula that draw on

the rich variety of indigenous peoples' resource knowledge and approaches to resource management throughout the region. Instead of providing site-specific guides to management, such materials would illustrate the diversity and commonalities of indigenous peoples' knowledge and technologies, conveying a sense of both ethnic identity and community of best practice. These same materials would be useful for educating non-indigenous students about the cultural heritage of their neighbors.

C. Markets, Trade, and Financial Mechanisms for Conservation

Because of an array of policy and market distortions discussed in Section II, the financial incentives for biodiversity conservation in the Amazon Basin are weak. Various opportunities for strengthening existing markets for sustainable products, and for developing new financial mechanisms that acknowledge the value of environmental services are discussed below.

C1. Building Markets for Sustainable Products

While large landowners play a disproportionate role as agents of deforestation in the Amazon region, the role of small-scale producers is also important and may be predominant in certain areas. Market access represents major impediments to improved resource management by this group. Many rural producers in the region are under-capitalized, distant from markets, and unaware of key marketing factors such as product prices and supply chain requirements. Poorer producers tend to be largely disenfranchised from national or regional markets, often operating through multiple middlemen and exploitative debt peonage arrangements. For example, harvesters of Brazil nut receive less than one percent of the final price FOB New York (Clay 1996). Three activities described below could address the need of developing markets for sustainable goods and services that involve small-scale producers.

a) Strengthening cottage industries based on low-impact resource uses. This approach, which is favored by many donors, uses training, technical assistance, and provision of credit to work toward the economic enfranchisement of rural poor from the ground up. This time-tested approach has been used effectively to combat poverty worldwide. The USAID-funded Peru Poverty Reduction Activity has helped identify new markets for small producers and provided them with the skills to meet market demands. Emphasizing market demand is critical from the outset, as in the case of Brazil's Reca agroforestry project (Anderson and Clay 2002) and other community development initiatives in the Amazon.

Traditionally, most projects have supported provision of technical assistance and training to strengthen community-based production and industries. While valid, this approach tends to be costly because it requires long-term assistance to ensure that rural producers gain the necessary skills to administer businesses, and confront the problems of scale, transport, under-investment, and lack of market intelligence that plague virtually all small-scale enterprises in the Amazon.

The experience of the USAID-support Fundación Puma in Bolivia (Box 10) illustrates an alternative approach that helps rural producers help themselves. Building on Puma's approach, USAID has an opportunity to help build a region-wide fund to be accessed through a competitive process by applicants from each country (or consortia from multiple countries). Selection criteria should allow for flexibility — that is, the thematic priorities could vary according to local needs, and target audiences could include community-based organizations or local institutions engaged in business development.

Box 10. Developing Community Business Capacity in Bolivia

Bolivia's Fundación Puma has established an endowment (with initial funding from a debt swap) that supports an innovative training program called School of Projects ("Escuela de Proyectos") to train communities in designing projects for environmentally sound resource production and marketing. The Foundation's approach is unusual because it does not require intermediary organizations, thereby enabling communities to develop the know-how directly to launch projects on their own. Through a competitive process, communities are selected to attend one of the Foundation's rotating courses that occur in five locations in Bolivia. During the courses, the participants prepare detailed project proposals, with information on environmental, social, and economic aspects—including financial projection sheets. Participants are provided with computers and software, thus enabling them to continue applying skills after returning to their communities.

Proposals selected through a multi-layered review receive funding ranging from $10,000 to more than $100,000. Even if the short-term development projects are not successful, the investments are likely to lead to positive long-term and sustainable results in community capacity building. Approximately 20 projects are underway, and one indigenous community used the skills developed through this training process to subsequently leverage a bank loan.

Source: Chavez (2004)

Numerous microcredit projects occurring in the region are working to increase capital access to rural entrepreneurs at scales consistent with local markets. Focusing on development of small lending institutions, these projects can help stimulate employment and income through diversified activities which can be consistent with conservation, including non-timber forest product extraction and processing, artisanal fisheries, and ecotourism. Few micro-lending programs, however, systematically incorporate environmental screening of loan portfolios for much more traditional investments such as animal husbandry, cottage timber cutting, or crops that may encroach into high conservation value forests. One study conducted by USAID in Bolivia (Chemonics 2001) noted that most of the micro-lending institutions were poorly equipped to incorporate environmental considerations into 400,000 loans that totaled more than $350 million dollars. The study concluded with several valuable recommendations included in Box 11, which should be of regional value across all countries in the Amazon. Development of a regional initiative to incorporate better environmental screening practices and appropriate training into microfinance institutions and lending practices could have a significant benefit on the environment and repayment of loans alike.

Box 11. Environment and Microfinance in Bolivia: Study Recommendations

- Support the development and implementation of systems for tracking and reporting on environmental issues in microfinance portfolios
- Seek collaboration and consensus with other multilateral donors for the implementation of a joint approach to environmental assessment and management in microfinance
- Design and implement a pilot project to test the proposed assessment and mitigation models
- Develop other lending instruments and programs to support cleaner production technology in microenterprises.

b) Fostering partnerships between communities and entrepreneurs. Producers living in isolated rural communities in the Amazon have few comparative advantages in the marketplace, which explains why capacity building in this area can be problematic. Another approach would be to foster partnerships between entrepreneurs and producer organizations. The former bring knowledge of business and markets, and frequently capital or a greater capacity to access it. Rural community organizations, in contrast, have a comparative advantage in production resources and, following a trend worldwide (White and Martin 2002), their control over the resource base is strengthening, as indicated by the dramatic expansion in lands allocated to indigenous peoples in all Amazonian countries during recent decades.

Such partnerships involve a wide range of resources. For example, a palm heart factory (Muanã Alimentos, Ltda.) at the mouth of the Amazon in Brazil has strengthened partnerships with local producer communities. As part of this partnership, the factory receives higher prices for palm heart produced according to certified specifications, and community members who help run the palm heart processing facility are gaining new skills for launching future businesses on their own. Another example of such a partnership involves Forest Management and Provision of Services, a company located near Santarém, Brazil. In newly established land reform projects, this company bids for public funding to construct access roads and helps the new settlers develop forest management plans on their lots. In exchange, they obtain rights to purchase wood at fair market value (Lima et al 2003).

Under a regional initiative, USAID could play a number of roles in fostering such partnerships between communities and entrepreneurs. A first step could be to support a general assessment of such partnerships to determine whether a critical mass of experiences exists. A follow-up action could be to convene participants of such partnerships across the Basin as an opportunity for exchange of experiences, learning, and dissemination. Finally, USAID could help support the development of partnerships between communities and entrepreneurs, either through direct, start-up funding, or by helping establish credit windows, which could be potentially attractive to lenders as a way to reduce risk.

c) Strengthening biotrade. Limited markets act as a major barrier to expand agroforestry and other forms of ecologically sustainable production in the Amazon region. Overcoming this barrier requires development of new markets for alternative products and services associated with such land uses. This concept, known as "biotrade," is increasingly supported in the Andean countries, where diverse initiatives are underway. To support markets for biotrade, a regional program could support market research for specific products, improve access to product and market information, strengthen business capacity and familiarity with biotrade within the financial sector, and support pilot biodiversity-based enterprises.

d) Disseminating market information. Access to transparent information on the market is an essential tool for both producers and buyers, and it is a foundation for well-developed commodity markets worldwide. Such information includes prices of established products, and market studies to assess opportunities for new products. USAID has experience in dissemination of market information about sustainable products and services. Under its Bolivia Market Access and Poverty Alleviation (MAPA) project, for example, price information data are being disseminated on a daily basis so that isolated producers will have the information necessary to better negotiate with middlemen who take their products to market.

USAID might consider the establishment of a market information clearinghouse for sustainable products and services in the Amazon. Such a clearinghouse could build producer networks and strengthen communication with buyers — essential elements for developing economies of scale that pose a major limitation to small-scale enterprises in the region. Ideally, such a clearinghouse could involve a wide range of actors and products, and eventually operate as a subscribed service that could be self-sustaining.

C2. Harnessing Markets to Improve Production Standards

As discussed in Section III, market forces are playing an increasing role in transforming standards in forestry, agriculture, and tourism. Internal codes of conduct and third party certification and labeling systems using rigorous environmental, social, and economic criteria have been developed for forest products and a variety of crops in Latin America, and extensive and growing areas of forest have been certified in the Amazon. While such standards have yet to be adopted by all major agribusinesses in the region, some large-scale ranchers, soy producers, and petroleum companies have begun to develop improved environmental standards on their own, sometimes in response to international pressure

(especially in mining and petroleum), in others to reduce input costs, ensure continued market access, or obtain price premiums in markets.

For example, Brazil's national petroleum company (Petrobrás) has begun systematically employing ISO 14001 and OHSAS 18001 for its environment and worker safety programs, respectively.[3] Major players in the agricultural sector have indicated interest in improving the sustainability of production systems and attention to broader environmental values. Carrefour, the largest grocery retailer in Europe and second only to Wal-Mart globally, actively promotes conservation and reduced environmental impact throughout its supply chain. Most large corporations are making increasing claims to environmental stewardship that could have significant impacts on conservation, particularly within internationally-traded commodities. The assessment team identified several opportunities for improving the application and credibility of such standards.

a) Developing improved standards for agribusinesses and mining. For international donors operating in the Amazon, this area could generate maximum impacts on biodiversity conservation. In addition to forest certification systems, many of the agriculture systems are now taking biodiversity values into account. The IFOAM standard for organic produce requires specific attention biodiversity within farm management plans and many of the codes of conduct for coffee (including those of Kraft, Starbucks, Neumann's, and others) require that producers be able to prove they have not converted primary forest for production purposes. But most efforts in agriculture have proceeded independently, with limited transparency or input from local groups in the identification of issues and mitigation strategies. Perhaps worse, the proliferation of standards and supply chain expectations has been geared for large producers and traditionally estate-grown commodities, which further isolates smallholders who can be equally destructive. USAID could play a pioneering role in moving this agenda forward by improving access to these standards, increasing and mobilizing local capacity to implement and assess these standards, and encouraging the engagement of U.S.-based multinationals with major interests in the Amazon.

Table 2. Private Standards for Forestry, Agriculture, Tourism, and Manufacturing Affecting Conservation

Sector	Standard	Additional Information
Wood products and forestry	Forest Stewardship Council (FSC)	www.fscoax.org
	Sustainable Forest Initiative (SFI)	www.afandpa.org
	Pan-European Forest Certification (PEFC)	www.pefc.org
Organic agriculture	International Federation of Organic Agriculture Movements (IFOAM)	www.ifoam.org
	European Organic Standard	www.europa.eu.int/comm/agriculture/qual/organic
Conventional agriculture	Good Agriculture Practices Standard (EurepGAP)	www.eurep.org
Tourism	GreenGlobe 21	www.greenglobe21.com
	Blue Flag Certification	www.blueflag.org
Manufacturing textile, utilities, and agriculture	ISO 14001	www.iso.ch/iso/en/iso9000-14000
	SA 8000	www.sa-intl.org

[3] See: http://www2.petrobras.com.br/internas/ingles/meio_ambiente/index.stm

b) Increasing producers' capacity to meet sustainable production standards. The development of appropriate training programs geared toward preparing producers to meet certification and improved production standards for forest, agricultural, and fisheries products would ensure expansion of sound resource management throughout the region. Experiences to date in forestry and agriculture, however, indicate that achieving certification is a costly and arduous process, especially for under-capitalized, small-scale producers. Moreover, the dependence on international assessors for both the implementation and verification of such systems makes them inordinately costly. Limited efforts are emerging to reduce those costs through approaches such as group and stepwise certification, improving local capacity to provide consulting and assessment services, and increasing overall awareness. Support for the application of social and environmental supply chain standards and certification would represent a highly strategic intervention for a regional program.

c) Strengthening the environmental competitiveness of producer networks. Market access and competitiveness constitutes a critical opportunity and impediment to small-scale producers using sound resource management — certified or otherwise. The problem in many cases is a failure to achieve required demand in quality or quantity. For certified products such as wood, organic fruits and vegetables, or coffee, demand often exceeds supply and small producers struggle. To address this problem, producer networks are springing up to achieve larger scale for crops and diverse timber and non-timber forest products. In Bolivia, cooperatives comprised of small-scale producers of numerous crops and non-timber forest products are widespread. Owing largely to buyer demands, with limited support from donors, producer groups for certified products are emerging in Bolivia, Brazil, Colombia, and Peru.

A regional program could provide an appropriate venue for strengthening communication among and between such groups, and helping them obtain market intelligence and management support. Opportunity A3 presented some alternatives for enhancing network communication and cooperation, while opportunity C1 discussed other approaches to build markets for sustainable products generated by under-capitalized producers.

Specifically in the forest sector, market demand has increased substantially because of the establishment of global buyer networks, and certification of the complex chains of custody characteristic of forest product markets. The challenge is to ramp up supply of certified products to meet this new demand, which is best addressed by strengthening producer groups to achieve the required scale. Achieving this in a regional program would involve enhancing communication between producer groups in and especially between countries such as Bolivia and Brazil. As producer networks for certified products are established, other countries with major, Amazon-based forest sectors such as Peru and Colombia are likely to play an increasing role in this process. USAID has had significant experience and a comparative advantage in such projects in most of the Amazon countries and in Central America, which could form the basis of an Amazon-wide initiative.

d) Linking buyers to producers. Finally, markets for certified agricultural and forest products sometimes fail to function because of disconnects between buyers and producers. Efforts are underway to remedy this through the establishment of buyer networks, which for forest products have sprung up both internationally and in Brazil and Bolivia. Improving communication between buyer and producer networks could constitute another strategic intervention for a regional initiative.

C3. Developing Alternative Markets and Financing Mechanisms for Conservation

A major challenge for biodiversity conservation worldwide is to provide valuation for the vast majority of environmental services that are unrecognized or undervalued by markets. This issue is of special importance for sustaining large protected areas such as parks and indigenous territories through new financial streams, but it is also assuming importance as a potential strategy for encouraging more

sustainable forms of resource use such as agriculture and forestry. Five promising activities under this opportunity are described below:

a) Learning from water valuation through integrated watershed management. Water-related services are important elements of integrated watershed management. In recent years, various initiatives have focused on water-related services, including most notably the initiative of Quito, Ecuador (see Box 2). Similar efforts are underway elsewhere in Ecuador and other Amazonian countries, especially in the Andes, where pronounced topography accentuates appreciation by stakeholders of the services that watersheds provide. With increasing shortages of water foreseen in drier areas of Peru and Bolivia, sourcing water from protected areas draining into the Amazon Basin is likely to be a growing need in the years to come.

Although a variety of initiatives to enhance water valuation through integrated watershed management are underway in the Amazon Basin, results to date have been modest. This is largely because such initiatives tend to be far more complex than they first appeared, requiring not only technical information on valuation methodologies but, even more importantly, sustained support and buy-in from key interest groups, and development of new governance mechanisms for decisions about watersheds that do not coincide with political boundaries. A regional program could support systematic analysis of the initiatives underway throughout the Amazon Basin and disseminate information and lessons learned, thereby helping guide new initiatives in this area.

b) Assessing lessons from and possibilities for ecotourism. Although just beginning in most of the region, ecotourism has shown notable growth in Amazon countries. In Ecuador, for example, it is a well-developed industry, based largely on the fame of the Galapagos Islands, but increasingly offering a wide variety of packages range from natural to historical to cultural — the latter including many indigenous groups. The Amazon Basin contains an awe-inspiring array of tourist attractions, from archeological sites and indigenous cultural groups to breath-taking scenery, diverse wildlife, and adventure tourism activities. This diversity — combined with the relatively underdeveloped status of the industry — argues for a comparative assessment of potential tourist attractions across the region, and of current and potential market demand. Such an assessment should be carried out in collaboration and with financial and logistic support from governments and industries. A regional program could generate lessons based on experiences to date and tools to help guide the further development of the industry.

c) Developing a regional biodiversity strategy and fund. As summarized in Annex 4, Amazonian countries have established national biodiversity funds with support primarily from international donor agencies. National biodiversity funds throughout Latin America are linked through an international network, Redlac (Redlac 2004), which meets annually and provides a forum for exchanging lessons. Many of these funds (such as Peru's PROFONANPE, described earlier in Box 3), have shown spectacular growth in recent years. Yet they have been less successful in accessing private funding sources either within their countries or internationally.

Following this approach, a regional program could support development of a regional biodiversity strategy and fund for the Amazon Basin. In many ways, a regional fund would be more compelling than the national-level funds because of the regional nature of biodiversity in the Amazon and the increasingly critical need for region-wide responses. A USAID challenge grant for private sector matches could launch this initiative. Models for this approach already exist in the Tropical Forest Conservation Act (see http://www.usaid.gov/our_work/environment/forestry/tfca.html).

d) Developing a fund for grants and loans for indigenous peoples. Indigenous peoples throughout the Amazon Basin generally have limited access to capital needed for self-determined social programs and economic growth. There continues to be investment in basic infrastructure in many indigenous

communities, such as local schools and potable water supplies. However, grants or loans to start small businesses or build tribal cooperatives are rare (an exception is the Fundación Puma, described in Box 10). While there are national biodiversity funds in Amazonian countries to support parks and reserves (Box 3) and a new program to support sustainable land-use practices by settlers in Brazil (Proambiente, see Box 5), no corresponding source of funds is available for indigenous peoples to invest in their own resources and enterprises.

A regional program could provide grants and loans, with strict environmental criteria, for indigenous peoples to develop new sources of income based on tourism, agro-forestry, fisheries, handcrafts, and natural products. This fund could also support periodic payments to indigenous communities for provision of ecological services, including biodiversity protection, water management, and climate change regulation. Grant funds could be allocated for planning and start-up activities, and a revolving fund could loan money to establish small- and medium-sized enterprises run or co-managed by indigenous peoples for sustainable development activities. The program could be funded by a variety of sources, including debt-for-nature swaps, government and foundation grants, payments for extracting minerals, gas, and oil. The coordinating body for the national biodiversity funds in Latin America, Redlac, could provide expertise on this initiative.

e) Analysis of compensation for environmental services from sustainable agriculture. There is an urgent need to shift current incentive structures for agriculture toward more sustainable practices. This activity could support exploratory research about existing programs compensating environmental services from environmentally sound forms of agriculture. Interesting cases could be assessed in Amazonian countries or elsewhere in Latin America, and comparative analysis could reveal opportunities for broader application. Additional research on emerging compensation mechanisms to encourage sustainable agriculture — such as Proambiente program in the Brazilian Amazon (see Box 5) — could provide insights for sharing with other parts of the region.

D. Public Policies

In the above sections, three opportunity sets have been discussed: (1) the governance and civil society systems that provide a framework for institutional interaction, (2) the technical knowledge and capacity that enable a more sustainable management of resources, and (3) the market and financial mechanisms that drive economic activities. The policies that guide or impact all of the above are the final piece of the puzzle.

Although Amazonian countries have advanced environmental policies, these tend to be undermined by macroeconomic or sectoral policies, or by non-transparent policy decisions on how to strengthen regional transport networks, increase agricultural exports, meet growing markets for forestry and fisheries products, or exploit mineral resources (see Section II). Public policies across the region are strongly tilted toward ranching and mechanized agriculture, and most countries have far more stringent requirements for managing forests than for clearing them. Many forest-sector policies are designed to protect fledgling or inefficient processing and marketing operations for domestic markets. Support for the careful and empirical evaluation of economic, environmental, and social costs of export bans and unfinished product trade restrictions should be supported.

While such issues were formerly the exclusive domain of national governments in the region, these issues now assume increasing international implications in relation to trade, infrastructure development, and border security. Furthermore, impacts on biodiversity are a major factor guiding investments by multilateral banks, and they are beginning to influence investment decisions and practices by major private sector actors (Section III) in forestry, agribusiness, and mining.

In its 2004-2012 plan, the newly strengthened OTCA (see Annex 6) has emphasized the critical importance of policies that affect biodiversity in the region. The recent strengthening of OTCA as the official forum for coordinating the policies of Amazon Basin countries across multiple sectors indicates the growing importance of regional decision making. As a result, for the first time, comparative analysis of national policies impacting biodiversity in the Amazon can reach a receptive audience of policy makers.

Two opportunities identified below aim to shift current policies that drive biodiversity loss and increase the transparency of resource-related decisions and uses.

Shifting Policies that Drive Biodiversity Loss

a) Regional analysis on sectoral policies driving biodiversity loss. A review of current policies governing agriculture, mining, and forestry investments and a review of associated trade policies could be included in the analysis. In the area of trade, for example, analysis of the differing export requirements for forest products (e.g., species, size, defects, origin, and management plans) could help develop uniform standards for trade, thereby providing a stronger basis for enforcement against future depletion of other high-value species and destruction of critical habitats. Evaluation of the economic, environmental, and social costs of export bans and unfinished product trade restrictions also could be supported.

Based on a review of the impacts of current sectoral policies, these and other analyses could propose policy alternatives that reduce such impacts. In addition, the analysis could examine policy innovations underway in Amazonian countries that could be disseminated, such as Brazil's Proambiente program (Box 5). Initially, a think tank organization might be contracted to conduct the research and, with OTCA leadership, disseminate findings and facilitate discussions among the governments.

b) Clarifying policies related to property rights. National policies defining property rights often drive resource degradation in the Amazon Basin. Confused land tenure rights and complex mechanisms for resolving tenure issues generate chronic conflicts in frontier areas. Rights to timber and fisheries are likewise vague and spur conflict. Recognition of squatter rights to land based on successful deforestation and conversion to crops or pasture frequently occurs. In most areas of the region, indigenous peoples have no rights over subsurface minerals in their territories, and governments routinely permit mining and petroleum operations in indigenous territories and protected areas; compensation mechanisms are left to the companies to determine. Such unclear property rights reflect the disenfranchisement of populations that traditionally employ common property regimes and are major agents of biodiversity conservation.

As part of this activity, a comparative analysis could be carried out for land tenure and property rights systems across the Basin. This could involve research on existing national policies, laws, and regulations, with a focus on the rights of indigenous peoples and other traditional communities over land and natural resources. Case studies made under each of the national jurisdictions could illustrate both problems and potential solutions for reducing conflicts and strengthening these rights. The analysis could present policy proposals for clarifying property rights and strengthening recognition of common property regimes. As in the previous activity, OTCA could provide a useful vehicle for dissemination of this analysis and consideration by policy makers.

V. CONCLUSIONS: TOWARD A REGIONAL PROGRAM IN BIODIVERSITY CONSERVATION

This report has reviewed the direct threats and their underlying drivers that cause biodiversity loss in the Amazon Basin. The report also examined five sectors of intervention and current donor responses to them, and identified nine promising opportunity areas for consideration under a new regional USAID initiative to conserve biodiversity. This concluding section summarizes the opportunities and actions identified by the assessment team and proposes priorities among the opportunities.

A. General Programmatic Considerations

There are four key observations that should be considered in design of the new program.

1. Strategic focus. Considering the enormity of the challenges and diversity of the region, there is a paramount need to focus the limited resources so as to achieve meaningful results within a five-year period. The prospects for success will diminish if USAID tries to accommodate too many stakeholders or targets too many objectives. The desire to obtain measurable field-level results within a particular theme must be tempered with the enormity of the scale of conservation challenges. USAID should select interventions that can catalyze lasting, landscape-scale change over tactical options with more limited scope.

2. Region vs. country. The multiple reasons for a regional focus have been emphasized throughout this report. Wherever possible, the regional program should seek synergies with ongoing country initiatives supported by USAID. This does not mean, however, that the program should merely be an extension of country-level activities. Leadership with a strong regional mandate will be required to resist tendencies to subsume the program under Mission agendas. Interventions must be regionally relevant and bilaterally supported to maximize impact.

3. Distribution of resources. Distribution of the regional program resources should not be based on a formula related to political or geographic criteria. Rather, resources should be invested where and when they can be most effective. For example, consideration should be given to areas where the threats and drivers are most in play or will be in the near future, where the political and institution conditions are most likely to support program continuity, and areas with the richest, most unique, and threatened biodiversity.

4. Political buy-in. Experience with other regional programs indicates the critical need for political buy-in from national governments and their regional representation, such as OTCA, and with national and regional indigenous organizations. This will be especially true where the program focuses on trans-frontier areas. Establishing political buy-in from the outset, and strengthening transboundary institutions, will be critical for the long-term success of this program.

B. Prioritizing the Opportunities and Actions

Section IV describes 32 actions organized under nine opportunities; these are summarized below.

A. Governance and Civil Society
A1. Strengthening public sector governance related to natural resources management
a) *Promoting participatory methodologies in government*
b) *Promoting best practices for monitoring and enforcement*

c) *Encouraging public-private partnerships*
d) *Enhancing land titling and property and resource rights*

A2. Strengthening the governance capacity of local communities

a) *Assessment of indigenous models for governance of land and natural resources*
b) *Provision of training and capacity building for governance*
c) *Empowering indigenous women through access to information and education*
d) *Strengthening monitoring and enforcement of land and property rights*

A3. Strengthening regional cooperation and communication

a) *Convening key actors*
b) *Building collaborative networks*
c) *Using diverse communication media*

B. Best Practices for Landscape and Natural Resource Management

B1. Supporting conservation landscapes

a) *Analyzing the value of conservation landscapes*
b) *Implementing the integrated watershed management*
c) *Identifying and disseminating best practices in cooperative management*

B2. Identifying and disseminating best practices for natural resources management

a) *Gathering and disseminating information on sector-specific best management practices*
b) *Developing training for indigenous peoples*
c) *Developing best practice among indigenous communities*

C. Markets, Trade and Financial Mechanisms for Conservation

C1. Building markets for sustainable products

a) *Strengthening cottage industries based on low-impact resource uses*
b) *Fostering partnerships between communities and entrepreneurs*
c) *Strengthening biotrade*
d) *Disseminating market information*

C2. Harnessing markets to improve production standards

a) *Developing improved standards for agribusinesses and mining*.
b) *Increasing producers' capacity to meet sustainable production standards.*
c) *Strengthening the environmental competitiveness of producer networks*.
d) *Linking buyers to producers*.

C3. Developing alternative markets and financing mechanisms for conservation

a) *Learning from water valuation through integrated watershed management*
b) *Assessing lessons from and possibilities for ecotourism*
c) *Developing a regional biodiversity strategy and fund*
d) *Developing a fund for grants and loans for indigenous peoples*
e) *Analysis of compensation for environmental services from sustainable agriculture*

D. Public Policies

D1. Shifting policies that drive biodiversity loss

a) *Regional analysis on sectoral policies driving biodiversity loss*
b) *Clarifying policies related to property rights*

During this assessment, various criteria were applied to filter the opportunities and actions to identify those showing the greatest promise for a USAID regional program for conservation of biodiversity in the Amazon Basin. Thus, the opportunities and actions presented here are all high priority. Four additional criteria were selected to further refine priorities and to help identify opportunities that might be most appropriate at the outset of a new regional program. These criteria are:

1. Relevance to threats and drivers of biodiversity loss. In Section II, the major threats to biodiversity loss and the drivers behind those threats were analyzed. The threats to biodiversity loss in the region are multiple, growing, and beginning to interact synergistically; hence, it is no surprise that most efforts to conserve biodiversity in the Amazon region focus on threats. The multiple drivers (which primarily involve issues related to markets, public policies, and governance) behind those threats are equally

complex, often difficult to perceive, and even more difficult to address. Yet they play a more critical role in shaping how resource decisions are made. Consequently, this assessment gives high priority to those opportunities that address not only direct threats but also the underlying drivers of biodiversity loss.

2. Additionality in relation to major donor investments in the region. Many donors are actively engaged in supporting biodiversity conservation in the Amazon Basin. The assessment team's analysis of four donor programs revealed a focus on protected areas, followed by forestry and indigenous territories. While this classification and estimates of resources allocated to them are subject to error, two major conclusions are evident: (1) biodiversity conservation in areas zoned specifically as indigenous territories has received less attention than more restrictive protected areas, despite the significantly greater proportion of the region allocated to indigenous territories; and (2) agriculture, which represents the greatest threat to biodiversity loss in the Amazon, has not been a significant focus in donor programs addressing biodiversity conservation. A third important finding points to the surprisingly small investments focused on water, watersheds, and fisheries in the region with the largest (in volume) river and highest diversity of freshwater fish in the world.

In addition to these considerations, it is important to take into account future donor trends in the region. Only fragmented information was obtained during the assessment, and further analysis is required to draw definitive conclusions. Nevertheless, it is important to consider the plans for what is far and away the largest donor focused on biodiversity operating at a regional level in the Amazon. The Moore foundation's current annual investments are approximately $30 million, and it projects investments of more than $150 million during the next five years. These investments will be directed largely to biodiversity conservation in protected areas, with significant funding also allocated to indigenous territories, sustainable land-use practices (excluding agriculture), and scientific research. At present, the Foundation plans to invest considerably fewer resources on issues that have less tangible impacts, such as public policies, markets, and governance. Likewise, following development of a new forest policy, The World Bank is currently discussing with the Brazilian government a sectoral loan for forestry in Brazil that could reach $100 million.

It is critical for USAID to design a program that is distinct and does not merely replicate the activities of these major donors. On the other hand, it will also be critical for USAID to build on and complement ongoing initiatives among the vast array of projects and programs already underway.

3. Comparative advantages for USAID. During the past 15 years, USAID has accumulated considerable experience in the Amazon Basin and the region overall, and through worldwide programs has gained expertise in many of the priority technical areas identified in this assessment. These technical areas include: governance and development of civil society institutions; management of protected areas and their buffer zones; the full array of water issues; landscape monitoring and planning; forestry and agroforestry; marketing of timber and non-timber forest products; certification standards and associated markets; and business associations and microfinance support. This experience and expertise provides critical foundations for the development of a regional program, and should be considered as an important criterion for prioritizing opportunities and activities. Moreover, a properly designed regional program will be supportive of the ongoing and future bilateral programs in the region.

4. Potential for significant and measurable, five-year results. In defining priorities for a regional program, it is important to identify those opportunities and activities with the greatest potential to produce measurable results in a reasonable timeframe. Experience in biodiversity programs worldwide indicates that long-term investments are usually required to generate such results. Nevertheless, using a five-year limit helps identify opportunities that could generate short-term payoffs to help sustain long-term interventions.

Table 3 below assesses the nine opportunities according to the four criteria described above. To minimize arbitrary judgments inherent in quantitative scoring and simplify presentation, the top four opportunities identified under each criterion are presented. To understand how selections were made, the results by criteria (columns) are discussed first.

Table 3. Prioritization of Opportunities

Opportunity Sets - Opportunities	Assessment Criteria				
	Relevance to threats and drivers of biodiversity loss	Additionality in relation to current donor investments	Comparative advantages for USAID	Potential (and measurable) 5-year results	Total
A. Governance and Civil Society					
A1. Strengthening public sector governance related to natural resources management	++++				4
A2. Strengthening the governance capacity of local communities			++++	++	6
A3. Strengthening regional cooperation and communication	++	++++		+	7
B. Best Practices for Landscape and Natural Resource Management					
B1. Supporting conservation landscapes				+++	3
B2. Identifying and disseminating practices best for natural resources management			+++		3
C. Markets, Trade and Financial Mechanisms for Conservation					
C1. Building markets for sustainable products and services			++		2
C2. Harnessing Markets to Apply Conservation Production Standards	+++	++	+	++++	10
C3. Developing alternative markets and financing mechanisms for conservation		+			1
D Public policies					
D1. Shifting policies that drive biodiversity loss	+	+++			4

1. Relevance. Opportunities related to governance, markets, and policies were identified as most relevant to the large-scale threats and drivers of biodiversity loss that occur throughout the Basin. Strengthening public sector governance (A1) is essential because it ultimately is the foundation of frontier governance. Harnessing markets to improve production standards (C2) can focus on the major land-use threats — agriculture (including ranching) and forestry — and seeks to change market incentives to improve production practice. Strengthening regional cooperation and communication (A3) among government ministries, business associations, NGOs, and others is relevant to managing the threats and drivers at a regional level. Finally, shifting policies that drive biodiversity loss (D1) is also essential, even though it may generate few effects unless the policies are implemented effectively.

Strengthening the governance capacity of local communities (A2) is slightly less relevant but still critical to addressing threats and drivers, especially at local levels. Many efforts are underway to develop conservation landscapes at diverse scales in the Amazon (B1), and this is an important tool for addressing threats at a local scale and where these areas straddle borders they serve to field test new approaches and monitor results. The opportunity to promote best management practices (B2) can also impact threats, particularly at the local scale. Other market and finance-related opportunities (C1 and C3) address threats by strengthening local producers and communities, so they are in a better position to implement environmentally friendly production methods.

2. Additionality. Strengthening regional communication and cooperation (A3) is an area in which few, if any, donors are focused in the Amazon Basin. Shifting policies that drive biodiversity loss (D1) has little donor investment to our knowledge at the regional level. In addition, harnessing markets to improve production standards (C2) is an area in which donors have operated, but as yet they have not addressed the most important regional threat: agriculture. Finally, developing alternative markets and financial mechanisms (C3) is an innovative area that many donors have overlooked.

Strengthening the governance capacity of local communities (A2) might also score high here as there are few investments in indigenous communities relative to the area of land and biodiversity they are responsible to manage. Public sector governance (A1) offers opportunities for USAID to uniquely strengthen governance as it relates to themes, such as enforcement of property rights and environmental management regulations. The two opportunities involving natural resources management (B1 and B2) were ranked lower for this criterion, reflecting the significant support they receive from multiple donors. Although many donors are involved in helping to build markets for sustainable products (C1), this opportunity has much room for USAID to contribute through specific activities, particularly at the regional level.

3. Comparative advantages. Here the assessment team made judgments with incomplete knowledge of the full range of USAID programs in the region, having focused on learning about the Agency's natural resources activities in particular. Based on extensive interviews with staff in five of the missions in the region, it was clear that USAID has comparative advantages in biodiversity conservation under all of the opportunity sets. Hence, ranking the opportunities was especially challenging under this criterion.

Strengthening the governance capacity of local communities (A2) was considered a high comparative advantage for USAID, given its long experience with building community-based institutions and support systems around the world and the ongoing work in the region. Second, issues related to best management practices (B2) constitute an area where USAID has significant experience. Third, USAID's long experience in building markets for sustainable products (C1) ranks this opportunity high for this criterion. Finally, included in the top priorities was USAID's growing experience in harnessing markets to improve production standards (C2); mission staff emphasized their interest in and commitment to this topic during the assessment interviews.

USAID has supported aspects of public sector governance (A1) in the Andean countries and so has a comparative advantage in that subregion of the Basin. The Agency has strengthened regional communication and cooperation (A3) in the many parts of the world, including Central America; experience that might translate well for a new Amazon regional program. Throughout the world, USAID has participated in large-scale conservation landscape projects (B1), including examples of watersheds that straddle national borders. This too is critical experience for the emerging programs in the Amazon Basin. Numerous examples exist of USAID's experience in developing alternative approaches to financing conservation and development (C3), making this another priority opportunity under this

criterion. The Agency has little Amazonian experience related to public policies (D1), but might draw on useful USAID experience elsewhere in the world.

4. Potential five-year results. For ranking under this criterion, the assessment team defined results as significant changes in the behavior of resource users and decision makers. Ranks were based on measurable results achieved over large scales. Among the high priorities is strengthening the governance of local communities (A2), which could build on considerable recent grassroots development taking place throughout the region, enabling indigenous peoples and other marginalized groups to defend their interests at more diverse levels. Finally, strengthening regional communication and cooperation (A3) could generate significant effects in disseminating information required to mobilize communities to respond to current and impending threats more effectively, and would be particularly relevant at a regional scale and critical to the successful start-up of a regional program. Building regional partnerships is essential to the success of a regional program.

A concentrated program supporting conservation landscapes (B1) can provide opportunities to field test new approaches and showcase successes across the region. Component activities might strengthen existing protected areas, improve management of indigenous lands, promote better sustainable development practices, increase transparency, and improve monitoring and enforcement of laws and regulations. Improvements in biodiversity, forest cover, water quality, institutions dealing with cross-boundary issues, and quality of life institutions related to conservation should be measurable within five years. Results are difficult to predict for harnessing markets to improve standards for forestry and, especially, agriculture in the region (C2), but they are likely to exert significant influence on people's behavior, affect an enormous area, and if successful would be measurable.

Strengthening public sector governance (A1) will be essential for change, but sustainable success in a five-year period and at a significant scale may be difficult to demonstrate. Identifying and disseminating best management practices (B2) is a well-established activity that can contribute to the results of the regional program. Building markets for sustainable products (C1) could achieve measurable results in five years, although probably more at localized levels than on a regional scale. These, however, could be linked through producer and market networks. Developing alternative markets and financing mechanisms (C3) has significant potential if implemented on a regional scale and leveraged to strengthen similar national-level programs. Finally, public policies (D1) are an area that is extremely difficult to predict because they depend on many external forces. While some policy focus should take place in this program, it probably will not require major investments and results will be difficult to measure.

C. Summary of Priority Opportunities

Based on the assessment presented in Table 2, one opportunity stands out as the highest priority with a score of 10 and with ranking in all of the criteria: **Harnessing markets to improve production standards (C2)**. Production standards using rigorous environmental, social, and economic criteria have been developed for forest products and a variety of crops in Latin America, and extensive and growing areas of forest have been certified in the Amazon. While such standards have yet to be adopted by major agribusinesses or mining in the region, some large-scale ranchers, soy producers, and mining and petroleum companies have begun to develop improved environmental standards on their own, sometimes in response to international pressure (especially in mining and petroleum), in others to reduce inputs, ensure continued market access, or obtain price premiums in markets. This opportunity shows high relevance to both threats (destructive forms of land use) and drivers (markets), additionality in relation to current donor investments, and potential for measurable results in a five-year period. USAID has ample experience in improving forestry production standards through certification and can draw on expertise elsewhere in Latin America in agriculture, mining, and oil production.

The next highest priority opportunity relates to governance. **Strengthening regional cooperation and communication (A3)** received a score of 7. In the Amazon Basin there is a need and opportunity to strengthen existing international networks that can serve as collaborators and counterpart agencies for a USAID regional program. Key regional organizations identified include the Amazon Treaty Organization for governmental collaborations and COICA for indigenous groups. This opportunity should be pursued from the outset, as the results of these regional collaborations can positively impact and guide the long-term development of the overall USAID regional program. Furthermore, within the natural resources sector there is a regional niche where USAID can significantly contribute where few other donors are working.

Strengthening the governance capacity of local communities (A2) scored 6 in this assessment. Strengthening governance capacity for indigenous communities is of critical importance for biodiversity conservation in the Amazon Basin. Indigenous communities must inventory their assets, have rules for how to govern these assets, and deal with government, settlers, local, national and international corporations, and other groups impacting biodiversity on their lands. Many indigenous communities have shown significant progress in managing their own affairs during the past decade and increasingly demand greater control. Addressing this opportunity, along with activities discussed in this report can significantly contribute to biodiversity conservation and reduce resource-based conflicts in the region. USAID has significant experience in the region for addressing this opportunity.

The remaining six opportunities are also important and in some contexts USAID may see them as among the highest priorities. Strengthening public sector governance for natural resources management (A1) and shifting policies that drive biodiversity loss (D1) both scored 4 in this assessment. The former addresses the inability of national and, increasingly, local governments to fulfill their roles in monitoring and enforcement of environmental laws and regulations. The latter addresses the major drivers and tries to change public policies to favor managing forests over clearing them.

The two opportunities related to promoting best practices for natural resources management — supporting conservation landscapes (B1) and identifying and disseminating best management practices (B2) — both scored 3. The Amazon Basin provides one of the world's last frontiers for establishing relatively intact, large-scale conservation landscapes. Efforts to plan and implement large-scale conservation projects are underway in various parts of the region, with technical and financial support from the major international conservation organizations including USAID. This set of opportunities and activities is designed to support these efforts.

The last two opportunities fall under the area of markets, trade, and financial mechanisms. Building markets for sustainable products scored 2 and developing alternative markets and financing mechanisms for conservation scored 1 in this assessment. Activities under the former will strengthen markets for sustainable products. The latter will increase funding, including grants and loans for environmental protection, capacity building, capitalizing new businesses, and payments for environmental services. There is a unique opportunity for creative financing of biodiversity conservation in collaboration with indigenous peoples in the Basin.

Finally, applying the above criteria at the level of opportunities, as opposed to actions, has the significant drawback of reducing the apparent importance of specific actions that are organized under lower priority opportunities, but are in fact urgent, timely, and essential to include as components of coherent regional program. USAID is encouraged to select from the above list the suite of opportunities and actions that will result in a coherent regional program for conservation of biodiversity in the Amazon Basin.

ANNEX 1. PEOPLE AND INSTITUTIONS CONSULTED

US-based Institutions and Individuals

NAME	ORGANIZATION
Rebecca Adamson	First Nations Development Institute
Kelly Aylward	Wildlife Conservation Society
Michelle Baker	First Nations Development Institute
Ivan Barkhorn	Redstone Strategy Group, LLC
Fred Boltz	Conservation International
Vincent Brackelaire	Independent consultant
Bruce Cabarle	World Wildlife Fund
Gonzalo Castro	Global Environment Facility
Roberto Cavalcanti	Conservation International
Jaime Cavelier	Moore Foundation
Avecita Chicchón	Wildlife Conservation Society
Jason Clay	World Wildlife Fund
Randy Curtis	The Nature Conservancy
Melissa Dann	Wallace Global Fund
Gustavo Fonseca	Conservation International
Adrian Forsyth	Moore Foundation
Benno Glauser	First Nations
Michael Goulding	Amazon Conservation Association
Jim Graham	Formerly with CARPE
Dietmar Grimm	Redstone Strategy Group, LLC
Daniel Gross	World Bank
Laurence Hausman	The Nature Conservancy
Michael Jenkins	Forest Trends
Carlos Klink	University of Brasilia
Peter Kostishack	Amazon Alliance
Judith Lizansky	World Bank
Tom Lovejoy	Heinz Center
Mauro Marcondes-Rodrigues	Inter-American Development Bank
Alejandra Martin	Forest Trends
Elizabeth Mayhew	U.S. Forest Service
William Millan	The Nature Conservancy
Alex Moad	U.S. Forest Service
Augusta Molnar	Forest Trends
Dan Nepstad	Woods Hole Research Center
Ruth Nogueron	World Resources Institute
Sergio Nuñez	Independent consultant
Enrique Ortiz	Moore Foundation
Mathew Perl	World Wildlife Fund
Mark Plotkin	Amazon Conservation Team
Cathy Plume	World Wildlife Fund
Maria Ramos	Amazon Watch
Tim Resch	USAID
Richard Rice	Conservation International
Ralph Ridder	World Resources Institute
Tim Rieser	U.S. Congress
Luis Carlos Ros	World Resources Institute
Steve Schwartzman	Environmental Defense
Amy Sprague	World Resources Institute

US-based Institutions and Individuals

NAME	ORGANIZATION
Meg Sygminton	World Wildlife Fund
Jerry Touval	The Nature Conservancy
Kristin Walker	Conservation International
Michelle Zweede	U.S. Forest Service

Bolivia Country Visit: September 19-22, 2004

Name	Organization
Erwin Aguilera	Vice Ministerio de Recursos Naturales y el Medio Ambiente, Ministerio de Desarrollo Sostenible
Rodrigo Ayala	PROMETA
Liliana Ayalde	USAID/Bolivia
Victor Bullen	USAID/Bolivia
Juan Carlos Chavez	Fundacion Puma
Juan Carlos Chávez Corrales	WWF-Bolivia
Karin Columba	Fundacion Amigos para la Naturaleza (FAN)
Sergio Eguino	Fundación para el Desarrollo del Sistema Nacional de Áreas Protegidas (FUNDESNAP)
Patricia Ergueta	Tropico Asociacion Boliviana para la Conservacion
Eduardo Forno	Conservation International
Jhonn Gomez	Servicio Nacional de Areas Protegidas (SERNAP), Ministerio de Desarrollo Sostenible
Tarcisio Granizo	The Nature Conservancy
Morris Israel	USAID/Bolivia
Robert Kenny	The Nature Conservancy
Edward T. Landau	USAID/Bolivia
Roger Landivar	WWF-Bolivia
Jorge Mariaca	Dirección General de Biodiversidad (DGB), Ministerio de Desarrollo Sostenible
Peter Natiello	USAID/Bolivia
Monica Ostria	The Nature Conservancy
Lilian Painter	Wildlife Conservation Society
Michael Painter	Wildlife Conservation Society
Candido Pastor	Conservation International
Clea Paz	Conservation International
Carlos Ponce	Conservation International
Gerd Resnikowski	Centro Amazónico de Desarrollo Forestal (CADEFOR)
Ricardo Roca	USAID/Bolivia
Pablo Rodríguez	Direccion Desarrollo Forestal
Ernest Rojas	USAID/Bolivia

Peru Country Visit: September 22-26, 2004

Name	Organization
Luis Campos Baca	Pro Naturaleza
Richard Chase Smith	Instituto del Bien Comun
Maria Luisa del Río	Consejo Nacional del Ambiente (CONAM)
Jorge Elgegren	USAID
Carmen Rosa Garcia Davila	USAID
Lupe Guinand	Comunidad Andina
Miriam Hermoza	Proyecto BIODAMAZ

Peru Country Visit: September 22-26, 2004

Name	Organization
Jessica Hidalgo	Sociedad Peruana de Derechos Ambientales (SPDA)
Shirley Hoffman	USAID
Manuel Huaya P.	Coordinadora Agroforestal Indígena y Campesina del Perú (COICAP)
Jessica Jordan	USAID
Eda Leyva	OXFAM
Carlos Loret de Mola	CONAM
Bastiaan Louman	World Wildlife Fund (WWF)
Héctor Maldonado	Comunidad Andina
Victor E. Miyakawa	Biodamaz and Instituto de Investigaciones de la Amazonia Peruana (IIAP)
Antonio Morizaki	Instituto Nacional de Recursos Naturales (INRENA)
Fabiola Muñoz	Ministerio de Agricultura
Richard Newberg	USAID
Alberto Paniagua	Fundo para Areas Naturales Protegidas (PROFONANPE)
Fernando Rodriguez	USAID
Lily Rodriguez	Field Museum - CIMA
Catherine Ross	OXFAM
Hildebrando Ruffner	Coordinadora Agroforestal Indígena y Campesina del Perú (COICAP)
Silvia Sánchez	Asociación Peruana para la Conservación de la. Naturaleza (APECO)
Karina Sifuentes	Instituto del Bien Comun
Antonio Telesca	Conservacion Internacional
Ing. Hernán Tello	Proyecto BIODAMAZ
Jorge Ugaz	Pro Naturaleza

Ecuador Country Visit: September 26-29, 2004

Name	Organization
Roberto Aguinda	Federación Indígena de la Nacionalidad Cofán del Ecuador (FEINCE), Cofanes
Jorge Alban	Fundacion Ambiente Sociedad
Poblo Almeides	Fundacion Jatun Sacha
Mario Anasco	CARE
Carla Avellan	World Bank
Fernando Benalcaza	EnCana (Canada/US)
Silvia Benitez	The Nature Conservancy
Amy Bodmann	Chemonics
Jose Cardenas	Repsol-Entrix
Rocio Cedeno	USAID/Ecuador
Hermel Chavez	Frente de Defensa de la Amazonía
Alegria Corral	Ecuadorian Center for Environmental Law (CEDA)
Tatiana Eguez	Ministry of Environment
Rick Garland	USAID/Ecuador
Edgar Guillen	USAID/Ecuador
Maria Helena Jarvis	Fundación Antisana
Amanda Jorgenson	WCS
Yolanda Kakabadse	Fundación Futuro Latinoamericano (FFLA)
Lars Klassen	USAID/Ecuador
Rossana Mamosalias	Ecociencia

Ecuador Country Visit: September 26-29, 2004

Name	Organization
Sebastiao Manchineri	Coordinadora de las Organizaciones Indígenas de la Cuenca Amazónica (COICA)
Leon Martinez	Fundación Sinchi Sacha
Carlos Vincente Martinez Bravo	IDB/Ecuador
Doug Mason	USAID/Ecuador
Claudia Mayer	GTZ
Manolo Morales	Ecolex
Gustavo Mosquera	Fundación Antisana
Luis Narvaez	Federación Indígena de la Nacionalidad Cofán del Ecuador (FEINCE), Cofanes
Walter Palacios	Proyecto CAIMAN
Anibal Piaguaje	Organización de Indígenas de Nacionalidad Cofán del Ecuador (OINSE), Sionas
Ricardo Piaguaje	Organización Indígena Secoya del Ecuador (OISE)
Joao Queiroz	Proyecto CAIMAN
Ruth Elena Ruiz	Fundación Natura
Vanessa Schulz	US Embassy
Catalina Sosa	Fundación Sinchi Sacha
Steve Stone	IDB/Ecuador
Luis Suarez	Conservation International/Ecuador
David Thomas	Fundación Jatun Sacha
Xavier Villaverde	PEPP
Monica Zuquilanda	USAID/Ecuador

Colombia Country Visit: September 29-October 3, 2004

Name	Institution
Camilo Aldana	Corporación Nacional de Investigación y Fomento Forestal (CONIF)
Silvia Amaya	Amazon Conservation Team/Instituto Etnobiología
Craig Anderson	USAID/Colombia
Ángela Andrade	Conservation International
Luis Guillermo Baptiste	Universidad Javeriana
Carlos Barrera	Corporación Nacional de Investigación y Fomento Forestal (CONIF)
Maria del Pilar Barrera	The Nature Conservancy
Rodrigo Botero	Unidad de Parques Nacionales
Dairon Cardenas	Instituto Amazónico de Investigaciones Científicas "SINCHI" (SINCHI)
Carlos Castaño	Conservation International
Luis Octavio Criollo	Comité Apoyo Umiyac
Rubén Darío Guerrero	Minambiente
Michael Deal	USAID/Colombia
Mustapha El Hamzaoui	USAID/Colombia
Gabriel Escobar	USAID
Herbert Froenberg	GTZ Colombia
Maria Garreta	Organización Pueblos Indígenas del Amazonas Colombiano (OPIAC)
Diana Gaviria	Unidad de Parques Nacionales
Fernando Gast	Instituto Alexander von Humboldt
Jesus Pedreros Gomez	Organización Pueblos Indígenas del Amazonas Colombiano

Colombia Country Visit: September 29-October 3, 2004

Name	Institution
	(OPIAC)
Rosario Gómez	Fundación Natura
Francisco Gonzáles	Universidad Javeriana
Fabio Arjona Hincapie	Conservation International/Colombia
Andres Home	GTZ
Wairanina Jacanamijoy	Asociación Tanda Chiridu
Sarita Kendall	Fundación Omacha
Diomedez Londoño	Cooperación Holanda
Luz Marina Mantilla	Instituto Amazónico de Investigaciones Científicas "SINCHI" (SINCHI)
Diego Marulanda	Tres Elementos
Julia Miranda	Unidad de Parques Nacionales
German Mojomboy	Comité Apoyo Umiyac
José Ignacio Muñoz	Corpoamazonía
Uriel Murcia	Instituto Amazónico de Investigaciones Científicas "SINCHI" (SINCHI)
Nestor Ortiz	Humboldt Institute
Pablo A. Palacios	Instituto IMANI - UNAL Leticia
Maria del Pilar Pardo	Humboldt Institute
Julio Cesar Puaguaje	Comité Apoyo Umiyac
Bernarda Remuy	Organización Pueblos Indígenas del Amazonas Colombiano (OPIAC)
Juan Carlos Riascos	Instituto Etnobiologia/ACT
Claudia Rincon S	Fundación GAIA Amazonas
Carlos A. Rodriguez	Tropenbos Colombia
Nelly Rodriguez	Instituto von Humboldt
Guillermo Rudas	Universidad Javeriana
Erhardt Rupprecht	USAID/Colombia
Miguel Rodríguez Sáenz	Organización Pueblos Indígenas del Amazonas Colombiano (OPIAC)
Carlos Ariel Salazar	Instituto Amazónico de Investigaciones Científicas "SINCHI" (SINCHI)
Juan Manuel Soto	USAID Colombia Alternative Development project
Esperanza Torres Rojas	Instituto Amazónico de Investigaciones Científicas "SINCHI" (SINCHI)
Fernando Trujillo	Fundación Omacha
Sandra Valenzuela	World Wildlife Fund (WWF)
Clara van Derhammen	Tropenbos; Universidad Externado de Colombia
Nancy Vargas	Fundación Natura
Enrique Viega	Corporación Nacional de Investigación y Fomento Forestal (CONIF)
Antonio Villa	Plan Colombia
Luz Amparo Villa	Organización Pueblos Indígenas del Amazonas Colombiano (OPIAC)
Martin Von Hildebrand	Fundación GAIA Amazonas
Patricio Von Hildebrand	Fundación Puerto Rastrojo
German Zuluaga	Amazon Conservation Team/Instituto Etnobiología

Brazil Country Visit: October 3-8, 2004

Name	Institution
Rosa Acevedo Marin	Associacao de Universidades da Amazonia (UNAMAZ)
Ana Luisa Albernaz	Pesquisadora
Oriana Almeida	Amazon Environmental Research Institute of Brazil (IPAM)
Samuel Almeida	Museu Paraense Emilio Goeldi (MPEG)
Manuel Amaral	Instituto Internacional de Educacao do Brasil (IEB)
Imar Cesar Araujo	Centro Biotecnologia da Amazonía
Rosalia Arteaga Serrano	Amazon Cooperation Treaty Organization
Jecinaldo Barbosa	Coordenação das Organizações Indígenas da Amazonia Brasileira (COIAB)
Joenia Batista de Carvalho	Conselho Indígena de Roraima (Wapixana)
Carlos Bueno	Amazon State Secretary of Environment and Sustainable Development
João Paulo Capobianco	Secretário de Biodiversidade e Florestas, Ministério do Meio Ambiente (MMA)
David Cleary	The Nature Conservancy
Charles Clement	Instituto Nacional de Pesquisas da Amazonia (INPA)
Jose Colares	Para Secretary for Production
Vilmos da Silva Grunvald	Para Secretary for Production
Christoph Diewald	World Bank
Gislaine Disconzi	U.S. State Department Regional Environmental Hub Office
Carmen Garcia Fernandez	Centro Internacional de Pesquisa Forestal (CIFOR)
Carmen Helena Ferreira Foro	Federacao de Trabalhadores Agrarias (FETAGRI-PA)
Mercio Pereira Gomes	Fundacao Nacional do Indio (FUNAI)
Richard Goughnour	USAID/Brazil
Antonio Hummel	Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (IBAMA)
Eduardo Lleras	Empresa Brasileira de Pesquisa Agropecuaria (EMBRAPA)
Marlucia Martins	Pesquisadora
Marli Maria Mattos	Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA)
David McGrath	Instituto de Pesquisa Ambiental da Amazonia (IPAM)
Francisca Menezes	Ministerio de Meio Ambiente (MMA)
Rita Mesquita	Amazon State Secretary of Environment and Sustainable Development
Denny Moore	Museu Paraense Emilio Goeldi (MPEG)
Magaly Pagotto	USAID/Brazil
Andrew Plowman	U.S. State Department Economic Section
Roberto Porro	Centro Internacional de Agricultura Tropical (CIAT)
Benky Pyanko	Associação Apiwtxa, (Ashaninka)
Maximiliano Roncoletta	Instituto de Florestas Tropicais (IFT)
Vasco Roosmalen	Amazon Conservation Team
Marcio Santilli	Instituto Socioambiental (ISA)
Muriel Saragoussi	Secretary of Coordination of the Amazon
Escrawen Sompre	Instituto Warã, Brasilia (Kraho)
Romier Sousa	Grupo de Assessoria em Agricultura na Amazonia (GTNA)
Eric Stoner	USAID/Brazil
Jorge Terena	Coordenação das Organizações Indígenas da Amazonia Brasileira (COIAB)
Álvaro Luna Terrazas	Centro Internacional de Pesquisa Forestal (CIFOR)
Peter Toledo	Museu Paraense Emilio Goeldi (MPEG)

Brazil Country Visit: October 3-8, 2004

Name	Institution
Johannes van Leeuwen	Instituto Nacional de Pesquisas da Amazonia (INPA)
Iran Veiga	Universidade Federal do Para (UFPA)
Virgilio Viana	Amazon State Secretary of Environment and Sustainable Development
Ima Vieira	Museu Paraense Emilio Goeldi (MPEG)

ANNEX 2. PUBLICATIONS AND REPORTS CONSULTED

This annex contains lists of publications and reports that the NRIC team consulted in preparing this Opportunities Assessment. The Annex is divided into two sections: works cited and background documents. The background documents are further separated into documents about the individual countries visited (Bolivia, Brazil, Colombia, Ecuador, and Peru) and the region as a whole.

A. Works Cited

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Annex 3. Methods of Data Gathering and Analysis

The methods for the assessment involved data gathering and analysis. Although they occurred as iterative processes, each method is described separately below.

Data Gathering

In preparing this report, four types of information were sought: (1) major environmental trends in the Amazon Basin (Section II), (2) investments by international donor agencies (Section III), (3) major regional programs supported by USAID in other regions of the world (Section III), and (4) major thematic areas and corresponding opportunities for a regional program in the Amazon Basin (Section IV).

Meetings and interviews with key actors in the U.S. and the five regional countries visited by the NRIC team (see Annex 1) provided the main source of information used in preparing this report. These actors included representatives from USAID, other major donor agencies, relevant governmental institutions, and a wide range of civil society organizations that are active in the Amazon region.

A number of people with recognized expertise in the major thematic and cross-cutting issues addressed in this report were interviewed. In addition, numerous unpublished reports from USAID and other sources were consulted, and a selective sampling of published literature was reviewed (Annex 2). The Internet also provided an indispensable source of information used in the preparation of this report.

Data Analysis

Environmental trends
The analysis of major environmental trends in the Amazon Basin focused on direct threats to biodiversity (such as logging, ranching, petroleum exploration, mining, and overfishing) and key drivers (such as population growth, construction of roads and other infrastructure, and macroeconomic policies).

International investments
Regarding international investments, the team analyzed environmental projects with a primary purpose of promoting knowledge, conservation, or sound use of biodiversity. For a comprehensive view of financial flows to biodiversity conservation projects in the Amazon Basin, the programs of major international donors that channel more than $10 million to the region per year were analyzed, including USAID, the Global Environment Facility (GEF), The World Bank-administered Pilot Program to Conserve the Brazilian Rain Forest (PPG-7), and a major private institution (the Moore Foundation). With the exception of the PPG-7 in Brazil, it was not possible to obtain financial information on the programs of other major bilateral agencies operating in other Amazonian countries — such as the European Union and the governments of Germany (GTZ and the German Ministry of Economic Cooperation and Development (BMZ)) and the United Kingdom (DfID) — because of difficulties in accessing reliable and comparable data. For the same reason, data were not obtained on major private foundations (e.g., Ford and MacArthur) other than Moore. Because several of the projects supported by the donors analyzed did not specify the country, the data summing contributions by all donors were presented for the Basin as a whole rather than country by country.

Data analysis was also constrained because of the difficulty of obtaining information about financial flows across a standard period of time. Initial data collection for USAID was guided by a project search for each of the five USAID Missions visited under this initiative. Information sought about projects

included project dates, location, funding source and amount, and a brief summary of the project. Projects were included if they were active between 1999 and 2005. In cases where only the overall project funding levels was determinable, an average of funding per year was calculated and included for each of the years that a project was active between 1999 and 2005. In addition, USAID projects were categorized into thematic areas based on the central aim of each initiative. For initiatives that appeared to have more than one thematic focus, funding was divided equally among the relevant themes supported by the project. While this process of categorization is not optimal, it does provide an approximate display of USAID funding by years and thematic area.

Similar data were sought for multilateral and bilateral institutions and agencies, and private foundations. The objective was to acquire project data by year. For this, two parameters served as guidance for the search: (1) the project must have been active within the past five years, and (2) the funding institution had to provide an approximate minimum of $10 million per year for biodiversity conservation-related initiatives in the Amazon Basin. This latter parameter helped limit the search to institutions making sizeable contributions to conservation in the Basin in any given year.

As with USAID's portfolio, an attempt was made to classify projects by theme, but as with the USAID data, the classifications provided serve as a mechanism to describe the types of ongoing initiatives in the region, rather than as an absolute illustration of all the biodiversity conservation-related activities in the region.

The methodology used for analyzing financial flows was prone to several errors. First, the fewer the years for which data were provided to base the calculation of average annual financial flows, the greater the potential sampling error. To diminish this error, every effort was made to obtain data for multiple years. Second, the definition of which themes were relevant to a given project was strictly limited to the quantity of information obtained about that project. In most cases, minimal information, such as the project title, was available to guide this definition. As a result, the thematic coverage of most projects was likely underestimated. Finally, the financial resources of a project covering multiple themes were allocated by dividing equal shares among the themes. This method, although necessary in the absence of more detailed financial information on each project, was arbitrary and does not reflect actual allocations. Despite the approximate nature of these calculations, the NRIC team believes that the data are useful for illustrating general investment trends.

Other regional programs

Regional USAID programs aimed at conserving biodiversity in other regions — such as the Central African Regional Program for the Environment (CARPE), the Programa Ambiental Regional para Centroamérica (PROARCA), the East Asia and Pacific Environmental Initiative (EAPEI), and the World Wildlife Fund's Carpathian program — were assessed. These analyses provided insights on potential complementarities with other programs, gaps not currently addressed by other agencies, and insights from other regional programs that could help guide a new initiative to conserve biodiversity in the Amazon Basin.

Opportunities assessment

To identify appropriate thematic areas for assessment of opportunities, a comparative analysis of the national biodiversity strategies was carried out for the five Amazon Basin countries visited (see Annex 4). As part of this analysis, five thematic areas were analyzed to determine key regional needs that donor programs identify and address. Using the information gathered from diverse sources, potential opportunities were identified in each thematic area and then analyzed through a cross-sector lens. The opportunities were assessed using the following four criteria:

1. Relevance to threats and drivers of biodiversity loss

2. Distinctiveness in relation to major donor investments in the region
3. Comparative advantages for USAID
4. Potential for measurable, five-year results

These criteria were used to determine the priority areas that USAID might choose to include in a regional program.

ANNEX 4. LINKAGES BETWEEN FOCAL AREAS AND NATIONAL BIODIVERSITY STRATEGIES

Based on an analysis of the National Biodiversity Strategies of the five Amazonian countries visited as part of this assessment, five broad thematic areas emerged that address various components of those strategies (Table 1). The five thematic areas are: (1) protected areas and conservation landscapes, (2) indigenous peoples and their territories, (3) sustainable agriculture, (4) sustainable forestry, and (5) sustainable fisheries. These themes were analyzed in detail (Section III) to identify key sectoral needs of relevance to biodiversity conservation.

The National Biodiversity Strategies include a series of cross-cutting issues — including monitoring of biodiversity, technology transfer, capacity building, institutional development, financing and incentives, and mainstreaming of biodiversity into key sector policies such as agriculture, energy, transport, and trade.

Under each thematic area, the report examines key background issues, presents a series of opportunities, and then assesses those opportunities based on 11 criteria — such as added value of a regional approach, relevance to regional biodiversity threats, complementarity to existing initiatives, institutional capacity, innovation, potential results and impacts, and financial sustainability.

Table 1. Linkages between Key Components of the National Biodiversity Strategies and Five Thematic Areas Analyzed to Identify Key Sectoral Needs

Components of National Biodiversity Strategies	Linkages with Thematic Areas Analyzed to Identify Key Sectoral Needs
Knowledge/understanding	
• Scientific research to characterize biodiversity components (from biome to genome)	The thematic area of Protected area management and landscape conservation examined in this report requires basic scientific research on biodiversity. However, such research usually involves long gestation times and its direct impacts on biodiversity conservation are often difficult to measure.
• Recovery and protection of indigenous peoples' traditional knowledge.	Traditional knowledge of indigenous peoples is directly relevant to the thematic area of Indigenous peoples and their territories examined in this report.
Conservation	
• Consolidation of a regional system of protected areas on public and private lands.	All of these issues are directly relevant to Protected area management and landscape conservation.
• Ecosystem restoration and species recovery through *in situ* conservation of endangered species and habitats.	
• Prevention of biodiversity loss due to invasive species and illegal trade of fauna and flora.	
• Mitigation and reduction of habitat fragmentation due to agricultural expansion, illegal crops, mining and infrastructure.	

Components of National Biodiversity Strategies	Linkages with Thematic Areas Analyzed to Identify Key Sectoral Needs
• Inclusion of indigenous territories in a regional protected area system to guarantee land tenure rights, and promote the autonomy, cultural identity, and social integrity of indigenous tribes.	Inclusion of indigenous territories in a regional protected area system is directly relevant to Indigenous peoples and their lands and is highly complementary to Protected area management and landscape conservation.
• *Ex situ* conservation through gene bank collections, botanical gardens, herbariums, zoos and aquariums.	While *ex situ* conservation also contributes indirectly to Protected area management and landscape conservation, it primarily involves investments in infrastructure and personnel that are more appropriately supported by national programs or private donations.
Sustainable use & equitable benefit sharing	
1. Natural resources uses: • Forestry (timber & non-timber forest products)	Developing sustainable forest uses and practices is directly relevant to the thematic area of Sustainable forestry examined in this report.
• Agriculture	Developing sustainable farming practices and uses is directly relevant to the thematic area of Sustainable agriculture examined in this report.
• Cattle ranching	Developing more sustainable ranching practices is of relevance to the thematic area of Sustainable agriculture examined in this report.
• Fishing	Developing sustainable fishing practices and resource uses is of direct relevance to Sustainable fisheries examined in this report.
• Mining	Except in the case of gold, mineral mining is a highly localized threat to biodiversity in the Amazon Basin. Petroleum exploration is a growing threat that is associated with infrastructure development. Mining is one of the least transparent land-use activities in the region, and for this reason only partial information was obtained (see Section II).
2. Biodiversity's economic potential (Biotrade): • Ecotourism	Development of sustainable forms of ecotourism is a key requirement for Protected area management and landscape conservation.
• Environmental services	Development of markets for environmental services is a key requirement for Protected area management and landscape conservation.
• Non-traditional crops	Development of non-traditional crops is a key component of Sustainable agriculture.
3. Economic valuation methods for biodiversity components (from biome to genome)	Development of economic valuation methods for biodiversity components is a key requirement for Protected area management and landscape conservation.

ANNEX 5. COUNTRY-BY-COUNTRY INVESTMENTS BY USAID IN THE AMAZON BASIN DURING FY 1999-2005

This annex, derived from the USAID Program Profile for each country, provides a summary of USAID's strategic objectives and environmental programs for missions in Bolivia, Brazil, Colombia, Ecuador, and Peru. Table 5 provides an estimated thematic breakdown of USAID's environmental programs in the Region.

A. USAID/Bolivia

USAID/Bolivia's program is divided among five strategic objectives (SOs): Democracy, Increased Economic Opportunities, Improved Health, Natural Resources Sustainably Managed, and Alternative Development. The largest percentage of funding for the present and past three fiscal periods has gone to the Alternative Development SO, which for FY 2005 comprises less than 36 percent of the Mission's program. Alternative Development is followed closely by the Improved Health SO, almost 30 percent of the Mission's program, and then by Increased Economic Opportunities (19 percent). The Natural Resources Sustainably Managed SO ranks fourth (5 percent). The level of funding for this SO has remained relatively stable over the course of the past three (3) fiscal years: $7.853 million in FY 2002, $4.932 million in FY 2003, $4.773 million in FY 2004, and $5.416 million in the current FY 2005. USAID/Bolivia's environment program is funded predominantly by development assistance (DA) funding, with $1.3 million supplemental economic support funding (ESF) in the past three (3) fiscal years.

B. USAID/Brazil

USAID/Brazil's program is divided among six SOs: Environment; Clean and Efficient Energy; HIV/AIDS and tuberculosis; At-Risk Youth, Communicable Diseases; Energy; and Small- and Medium-Enterprise Growth, Trade, and Poverty Reduction. The largest percentage of funding for the present and past three fiscal periods has gone to the Communicable Diseases SO, currently comprising 45.5 percent, of the Mission's program. The Environment SO is second, comprising just over 32 percent of the Mission's program, followed by the At-Risk Youth, Clean and Efficient Energy, and SME Growth, Trade, and Poverty Reduction SOs. During the past three fiscal years, USAID/Brazil's environmental portfolio has been supported entirely by Development Assistance funding, and it has remained relatively stable: $3.349 million in FY 2002, $6.319 million in FY 2003, $5 million in FY 2004, and $4.738 million in the current FY 2005 (www.usaid.gov "Brazil: USAID Program Profile" last updated May 26, 2004).

C. USAID/Colombia

USAID/Colombia is unique among the five countries covered in this report in that it does not have a separate environment program, and the entirety of its funding comes from the Andean Counterdrug Initiative. The Mission's portfolio is divided into three SOs: Democracy, Alternative Development, and Internally Displaced Persons. The Alternative Development SO receives the largest portion of Mission funding, $54.3 million for FY 2005, which comprises approximately 44 percent of the Mission's portfolio. Funding for this SO has remained relatively constant during the past three fiscal years: $49.4 million in FY 2002, $50.429 million in FY 2003, and $54.2 million.

USAID/Colombia's activities in the Amazon Basin are strongly influenced by Plan Colombia, which follows a multi-pronged and integrated program, including initiatives in Alternative Development, Governance, Infrastructure, and Economic Alternatives. As a result of the lack of a stand-alone environmental SO, natural resources management initiatives must be addressed as component parts of other Mission activities, and it is virtually impossible to address natural resources management and biodiversity conservation initiatives without tying those to coca eradication, specifically as coca production contributes to environmental degradation. The Colombia Mission is focusing on an approach that addresses livelihoods, governance, forestry, and indigenous peoples, and is committed to approaching these issues from the standpoint of sustainability of Mission initiatives.

D. USAID/Ecuador

USAID/Ecuador's portfolio is broken up into five SOs, including Biodiversity Conservation, Southern Border Development, Democracy and Conflict Prevention, Northern Border Development, and Economic Opportunities. The largest percentage of funding for the present and past three fiscal periods has gone to the Northern Border Development SO, currently comprising 40 percent of the Mission's program. It is followed by Democracy and Conflict Prevention, with 21 percent of the Mission's program. The Biodiversity Conservation SO comprises the third largest share of the Ecuador Mission's portfolio, presently capturing 15 percent of the Mission's funding. Biodiversity Conservation is followed by Economic Opportunities (16.9 percent) and Southern Border Development (5 percent). USAID/Ecuador's environmental portfolio has decreased somewhat in the past three fiscal years, having received $7.375 million, $6.097 million, $5.691 million, in FY 2002, FY 2003, and FY 2004, respectively. USAID/Ecuador is currently requesting $5.645 million for its FY 2005 budget. USAID/Ecuador's environmental mission is focused on conserving some of the richest biodiversity resources in the world. The Mission's strategy is to "focus on improving the country's environmental policy and legal framework, developing improved natural resources management practices and strengthening the capabilities of local groups to carry out effective conservation actions" (www.usaid.gov "Ecuador: USAID Program Profile" last updated May 26, 2004). In addition to its work in the Galapagos, the Mission is making significant strides toward protecting Andean region that descends into the Ecuadorian portion of the Amazon Basin.

E. USAID/Peru

USAID/Peru's program is divided into seven SOs: Alternative Development, Economic Growth, Health, Democratic Strengthening, Environment and Natural Resources, Education, and Health and Family Planning. Environment and Natural Resources ranks fifth with a three percent share of the Mission's funding. Alternative Development receives the largest percentage of Mission funding (47.7 percent), and the other SOs receive funding as follows: Economic Growth (24 percent), Health (12 percent), Democratic Strengthening (nine percent), and Education (one percent). (The Health and Family Planning SO did not receive any funding in FY 2004 and was not included in the Mission's request for FY 2005 funding.)

Funding for USAID/Peru's Environmental and Natural Resources SO has remained relatively stable during the past three fiscal years: $4.8 million in FY 2002, $3.802 million in FY 2003, $4.06 million in FY 2004, and $3.525 million in the current FY 2005 (www.usaid.gov "Peru: USAID Program Profile" last updated May 26, 2004).

USAID/Peru's environmental program is predicated on close coordination with the Government of Peru. The Mission collaborates with the Government of Peru "to strengthen the national environment policy and legal framework and to increase environmental awareness, understanding, and demand. USAID supports the adoption of proven environmental policies and technologies, strengthened local capacity to

interpret and apply policies (ordinances); increased national level knowledge of environmental issues and mitigation alternatives and increased citizen awareness of these environmental issues."

		2005 Pillars and Strategic Objectives										
		Democracy, Conflict and Humanitarian Assistance			Economic Growth, Agriculture and Trade					Global Health		
		Democracy and Conflict Prevention	Internally Displaced Persons	Peru-Ecuador Border Region Development	Increased Economic Opportunities, Economic Growth, and SME Growth, Trade, and Poverty Reduction	Alternative Development	Biodiversity Conservation, Natural Resources Sustainably Managed, Energy and Environment	Education	Northern and Southern Border Development	Improve Health	Communicable Diseases Program	At-Risk Youth Program
Activities by Country	Bolivia	511-xxx - Administration of justice/rule of law, Institutional strengthening of the national legislature, Local government capacity building, Anti-corruption			511-002 - Rural Financial Services, Rural Business and Market Efficiency, Support to Primary Schools, and New Technologies for Increased Food Security	511-005 - Sustainable production of licit crops/Chapare region, Market linkages and improved roads/Chapare region, Technical assistance and infrastructure improvements/Yungas region, Social capital and democracy activities/Chapare region, Citizen participation, health and education investments/Yungas region	511-004 - Sustainable forest management, Parks and protected area management, Cleaner production practices by Bolivian industry			511-003 - Improve Health Practices, Improved quality and increased coverage of health services, Improved government policies and administrative system		
	Brazil				512-011 - Increased economic opportunities for trade, SME growth and poverty reduction, Promotion of the Free Trade Area of the Americas		512-008 - Improve sustainable forest management practices, Develop markets for environmental goods and services, Monitor and design sustainable landscapes enhancing environmental and socioeconomic benefits incorporated into government planning and policies 512-009 - Implement policies supportive of renewable energy and energy efficiency, Increase technological cooperation between U.S. and Brazilian firms, Develop a market for renewable energy, Increase access to information on market-based mechanisms for renewable energy and energy efficiency projects				512-007 - Expand condom social marketing, Strengthen NGO capacity and performance in providing services to high-risk populations and youth, Improve epidemiological surveillance and research, Expand Directly Observed Therapy Short Course	512-010 - Marketable skills training for disadvantaged youth, At-risk youth increased access to formal employment opportunities, Improved policies and programs to curb trafficking in persons,
	Colombia	514-007 - Modernization of the justice system and increase access to legal services, Human rights, Local governance, Transparency and accountability, Peace initiatives	514-009 - IDPs and other vulnerable persons assisted, International, national, and local IDP programs strengthened, Former child combatants and other vulnerable children served			514-008 - Strengthening national and local institutions, Rural social infrastructure, Supporting licit productive activities, Improve management of natural resources and environment, Program management						
	Ecuador	518-012 - Justice reform, Local democratic governance, Anti-corruption, Elections support			518-014 - Macroeconomic policy reform, Access to microfinance services		518-001 - Conservation in indigenous lands, Biodiversity program in the Galapagos, Conservation of the tropical Andes		518-013 - Improve Living Conditions of the Northern Border Citizens, Create Employment Opportunities, Expand Public Awareness About Coca/Cocaine threat 518-011 - Expand and improve social services, Improve natural resources management, Local government strengthening			
	Peru	527-009 - Citizen participation in key policy reforms, Decentralization and strengthening of local governments, Congressional reform, Justice sector reform		527-008 - Increased economic integration and trade, Increased support for the peace accords	527-010 - Policy reforms/institutional strengthening, Market access, Financial services, P.L. 480 Title II food assistance	527-013 - Voluntary eradication, Sustainable local/regional development, National framework for counternarcotics/alternative development, Communications,	527-012 - Renewable natural resources, Industrial and urban pollution	527-006 - Policy and program reforms, Quality basic education		527-011 - Quality health services, Healthy behaviors, Health sector policies		

Table 2. USAID Thematic Breakdown of Projects (1999-2005) - Funding in US$ Millions

Country	Project	Protected Areas	Indigenous Peoples & Territories	Forestry	Aquatic Systems	Research	Education & Capacity Building	Monitoring & Evaluation	Agriculture	Policy	Economic Development	TOTAL
Bolivia	BOLFOR I	0.77		0.77						0.77		2.30
	BOLFOR II	0.67		0.67						0.67		2.0
	CADEFOR			0.97								0.97
	Global Development Alliance GDA (Wood Hub)			2.3								2.3
	Global Development Alliance GDA (Forestry Chamber)			0.35								0.35
	Parks in Peril	3.2										3.2
	GPC Southwest Amazon (WWF)	1.33										1.33
	CI Corridor	1.57										1.57
	WCS Landscapes	1.13										1.13
	BiRD											0.00
Subtotal, Bolivia		*8.66*	*0.00*	*5.05*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*1.43*	*0.00*	*15.15*
Brazil	International Institute of			0.21				0.21			0.21	0.63

Country	Project	Protected Areas	Indigenous Peoples & Territories	Forestry	Aquatic Systems	Research	Education & Capacity Building	Monitoring & Evaluation	Agriculture	Policy	Economic Development	TOTAL
	Education of Brazil (IIEB)											
	Tropical Forest Institute			0.28								
	Institute of Forestry and Agricultural Management and Certification (Imaflora)			0.60								
	Institute of People and the Environment in the Amazon (Imazon)			0.20				0.20			0.20	0.59
	Group of Research and Extension in Agroforestry Systems of Acre (Pesacre)			0.09				0.09			0.09	0.27
	University of Florida			0.14								0.14
	World Wide Fund for Nature (WWF-B)			0.40								0.40
	SOS Amazonia Association	0.24										0.24
	Kaninde - Association for Ethnoenviron-mental Defense		0.22									0.22

Country	Project	Protected Areas	Indigenous Peoples & Territories	Forestry	Aquatic Systems	Research	Education & Capacity Building	Monitoring & Evaluation	Agriculture	Policy	Economic Development	TOTAL
	Center for Amazonian Workers (CTA)										0.28	0.28
	Brazilian Forest Stewardship Council (FSC-Brazil)			0.12								0.12
	Instituto de Pesquisa Ambiental da Amazonia (IPAM)		0.12	0.12				0.12				0.36
	The Woods Hole Research Center (WHRC)		0.10	0.10				0.10				0.30
	The Nature Conservancy	0.17										0.17
	Instituto Socioambiental (ISA)		0.18									0.18
	Fundacao Viver, Produzir e Preservar (FVPP)		0.18									0.18
	Grupo de Trabalho Amazonico (PROTEGER)										0.68	0.68
	Instituto Floresta Tropical (IFT)			0.11								0.11
	Forest Service			0.30								0.30
Subtotal, Brazil		*0.41*	*0.80*	*2.67*	*0.00*	*0.00*	*0.00*	*0.72*	*0.00*	*0.00*	*1.46*	*6.05*

Country	**Project**	Protected Areas	Indigenous Peoples & Territories	Forestry	Aquatic Systems	Research	Education & Capacity Building	Monitoring & Evaluation	Agriculture	Policy	Economic Development	TOTAL
Colombia	ACT – Sustainable Development for Colombian Indigenous Communities		0.56									0.56
	Support to National Parks	3.55										3.55
	Putumayo - Wood and Forests Program											0.00
Subtotal, Colombia		*3.55*	*0.56*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*4.11*
Ecuador	Condor Reserve (PIP)	0.89										0.89
	CAIMAN		1.23									1.23
	U.S. Dept. of Interior							0.02				0.02
	USFS	0.01		0.01								0.02
	Evaluations							0.01				0.01
	Special Development Activity Authority (SDAA)										0.01	0.01
	Southern Border		0.64	0.64								1.28
Subtotal, Ecuador		*0.90*	*1.87*	*0.65*				*0.03*			*0.01*	*3.46*
Peru	CEDEFOR		1.55	1.55								
	Pacaya Samiria (PIP)	0.3					0.3					

Country	**Project**	Protected Areas	Indigenous Peoples & Territories	Forestry	Aquatic Systems	Research	Education & Capacity Building	Monitoring & Evaluation	Agriculture	Policy	Economic Development	TOTAL
	Cordillera Azul National Park	1.28		0.55								
	STEM TMA										1.51	
	SENREM/STEM							0.25				
	BIOFOR/STEM						0.28					
Subtotal, Peru		*1.58*	*1.55*	*2.10*	*0.00*	*0.00*	*0.58*	*0.25*	*0.00*	*0.00*	*1.51*	*7.57*
TOTAL		**15.10**	**4.78**	**10.47**	**0.00**	**0.00**	**0.58**	**1.00**	**0.00**	**1.43**	**2.98**	**36.34**

ANNEX 6. ANALYSIS OF REGIONAL INSTITUTIONS AND PROGRAMS RELATED TO BIODIVERSITY IN THE AMAZON BASIN

This annex provides an analysis of current initiatives for 12 regional cooperation and institutions operating in the Amazon Basin.

A. Organización del Tratado de Cooperación Amazónica

In 1978, the countries of the Amazon Basin signed the Tratado de Cooperación Amazónica — Amazon Cooperation Treaty (TCA) with the aim of creating a regional vision for biodiversity conservation in the Amazon Basin. However, this first constitution of the TCA resulted in a primarily political instrument that lacked technical capacity and had little true impact in the region. In 1995, the TCA was transformed in an international organization whose members are eight countries of the Amazon Basin (Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Surinam, and Venezuela), and in 2002 its permanent secretariat was established in Brasilia, Brazil. The TCA operates within what it has defined as the legal boundaries of the Amazon Basin.

As Secretary General of the Organización de Tratado de Cooperación Amazónica (OTCA), Rosalía Arteaga has described this new organization that has received full political endorsement of its member countries, as an instrument for achieving sustainability and a forum for regional cooperation. For this reason, the OTCA's strategic plan for 2004-2012 is being presented as an umbrella document and a navigational tool that can guide activities of governments, nongovernmental, and international organizations toward a set of sustainable development goals in the region. The strategic plan will guide regional activities of OTCA and its partners around four axes and six priority areas:

Axes:

- Conservation and sustainable use of natural resources of the Amazon Basin
- Promotion and increasing of knowledge and technological exchange
- Integration and regional competitiveness
- Institutional strengthening

Priority Areas:

- Water
- Forests, soils, and protected areas
- Biological diversity, biotechnology, and biotrade
- Land-use planning, human settlements, and indigenous issues
- Social infrastructure: health and education
- Infrastructure on transportation, energy, and communications

Although it is clear that Amazon Basin countries have made some advances in political decentralization, local governance, and development, the current fragmentation of different ongoing processes in the region is also apparent. The efforts of regional and border cooperation have been limited and often isolated. As a result, one of the most pressing challenges facing the OTCA is to work for a stronger role and leadership in coordinating and promoting collaboration between governments and civil society.

Given its renewed political role as a coordinating body for its member countries, in the Amazon Basin, the OTCA is a key potential partner for the implementation of the thematic areas identified in this

assessment. However, since OTCA represents governments, it is also important to take into account other regional and sub-regional processes lead by civil society that could inform the OTCA of issues for the development and implementation of its strategic plan (OTCA 2004).

B. Coordinadora de las Organizaciones Indígenas de la Cuenca Amazónica

Coordinadora de las Organizaciones Indígenas de la Cuenca Amazónica (COICA) is an international indigenous organization established in 1984 to protect and reclaim the rights of indigenous peoples to their ancestral lands, the right to self-determination, and the respect of their cultural, economic, environmental, and human rights. Additionally, COICA works for the promotion and development of mechanisms of integration and interaction among indigenous tribes of the Amazon and between the COICA and its member organization from nine Amazon countries (AIDESEP -Peru, APA-Guyana, CIDOB-Bolivia, COIAB-Brazil, CONFENAE-Ecuador, CONIVE-Venezuela, FOAG-Guyana, OIS-Surinam, and OPIAC-Colombia).

COICA (www.coica.org) has developed a strategic plan for the next 20 years called "the Indian agenda for the Amazon." This document defines the organization's priorities and includes human sustainability, legal security, and tenure rights over ancestral lands; *sui generis* legal systems; development of constitutional political, economical and cultural rights; strengthening of ancestral and traditional systems and organizations; and scientific and academic capacity and training.

COICA is widely recognized as a political organization representing indigenous interests in international forums like the United Nations environmental and labor conventions. It is seen as an ambassador of the indigenous tribes of the Amazon; however, given the fragmentation of the indigenous groups in the Amazon Basin, COICA's representativeness and legitimacy is often criticized. Nevertheless, COICA has endured for more than two decades, and it commands significant experience and can provide valuable lessons learned to contribute to a regional biodiversity conservation effort.

C. Comunidad Andina de Naciones

The Comunidad Andina (Community of Andean Nations, CAN) has highlighted the need to work collaboratively taking advantage of the opportunities and facing the challenges brought about by globalization. A main challenge is the harmonization of environmental and sustainable development policies in such a way that sustainable economic growth can be achieved, reducing poverty levels, improving the quality of life of the population, and respecting sound environmental standards. Andean countries share a large part of their natural and cultural heritage; therefore, they are looking to develop their comparative advantages as a region. The tropical Andes of the CAN are a global epicenter of cultural and biological diversity, as they concentrate approximately 25 percent of the planet's biodiversity. The CAN decided to put forth policies and strategies to take advantage of ecosystem services, improve access to drinking water, and develop a comprehensive management of water resources that faces the effects of climate changes and looks to prevent natural disasters. By prioritizing these initiatives, the CAN has been acting jointly in biodiversity, environmental management, and trade-related issues.

Regional Biodiversity Strategy
The regional biodiversity strategy is the sub-regional platform that channels efforts and financing for the preservation and sustainable use of the Andean Community's biodiversity (Adopted by Decision 523, July 7, 2002).

In addition, there is the Andean Biotrade Program. The CAF, the UNCTAD, and the Andean Community General Secretariat have designed this program to encourage the use of biodiversity, with sustainability

criteria, to generate opportunities that will contribute to the economic and social development of the Andean Community's member countries. Biotrade initiatives exist in most Andean countries (Bolivia, Colombia, Ecuador, and Peru).

Environmental Management
The Environmental Management and Sustainable Development program has been working on the design and development of policies and actions aimed at aspects such as climate changes, water resources management, and sanitation.

Trade for Sustainable Development
The development of international trade negotiations has revealed the need to analyze the trade — environment relationship, so that the Andean Community may take on this challenge in a constructive manner, taking advantage of the potential benefits deriving from multi-lateral and international agreements. The main players involved in the development of the CAN's environmental agenda are the environmental authorities of the member countries, civil society, and the Andean Community's General Secretariat (Comunidad Andina 2004).

Finally, it is important to point out that, in September 2004, CAN-OTCA General Secretariats signed a memorandum of understanding to jointly promote sustainable development in the Amazon Basin. The joint work program will focus on water resources, forests, and biodiversity and promote specific actions to boost bio-commerce and to combat bio-piracy. Amazon Basin countries, which the Andean countries form part of, represent more than 7 million square kilometers, 20 percent of the world's freshwater reserves, and more than 50 percent of the Andean area.

D. Amazon Initiative

The Amazon Initiative Consortium for Conservation and Sustainable Use of Natural Resources (AI) is an international, multi-institutional, and interdisciplinary initiative launched in 2003. AI's core members include the National Agricultural Research Systems (NARS) of Bolivia, Brazil, Colombia, Ecuador, Peru, and Venezuela; four centers of the Consultative Group on International Agricultural Research (CGIAR); and by the Programa Cooperativo de Investigación y Transferencia de Tecnología para los Trópicos Suramericanos (PROCITROPICOS). AI represents the agreed-upon strategy of these institutions for formulating and implementing a collaborative research and development agenda in the Amazon region. In addition to the core partners, AI will include — as associate institutions — regional research centers, regional conservation and development organizations, and universities based and/or operating in the Amazon (Amazon Initiative Annual Report, October 2004. www.asb.cgiar.org/iniciativaamazonica.html).

The AI functions as a distributed network of scientists, practitioners, and research fellows engaged in technical, institutional, and policy discussions, and on research and development activities on four thematic priorities (land degradation assessment, sustainable land-use systems for degraded lands, human and social dimensions of land degradation, and social and natural resource policy for recovery of degraded lands), and one cross-cutting program (capacity building, training, and outreach). The AI will enable better understanding of the interfaces between resource degradation and poverty, and provide the basis for realistic policies to promote sustainable land use. The thematic agenda for AI's intervention priorities focuses on reducing and reverting land degradation in the Amazon.

This initiative is truly regional in scope. The AI is not an independent organization but rather an association of institutions working collaboratively toward common objectives in concert with the OTCA which has recognized the AI as one of the inter-institutional networks to be integrated within OTCA operational program. The AI member institutions have expressed the need for consortium activities to be designed and developed in harmony with OTCA's strategic planning. In addition, OTCA has expressed

the need for further extension of AI Cooperation Agreement to include Guyana, Suriname, and, eventually, French Guyana. Given its regional approach, this initiative presents good opportunities for partnership for USAID conservation effort in the Amazon.

E. Amazon Alliance

The Amazon Alliance, a Washington, D.C.-based NGO, is the product of a meeting between U.S.-based environmental organizations and representatives of COICA held in Iquitos, Peru in 1990. In 1993, the "Amazon Initiative: A Working Conference to Protect Indigenous Rights" was held in Washington, D.C. to strengthen and broaden the "alliance" between indigenous peoples of the Amazon and groups and individuals who share their concerns for the future of the Amazon and its peoples.

The Amazon Alliance operates through working groups in the Andean and Brazilian Amazon, and in the Guyana shield. These working group's primary efforts are focused on decreasing the adverse impacts caused by extractive industries involved with oil, gas, mining, and timber, as well as strengthening indigenous organizations to protect their territories and enforce their cultural, political, and economic rights.

One of the major strengths of the Amazon Alliance is its leading role in coordinating one of the largest network of indigenous and conservation organizations that are working in the Amazon Basin. Active members include more than 80 NGOs from Bolivia, Brazil, Colombia, Ecuador, French Guyana, Guyana, Peru, Suriname, United Kingdom, United States, and Venezuela that review policy making and decisions being developed by the United Nations, Organization of American States, The World Bank, Inter-American Development Bank, and other entities, and communicate with agencies, governments, and organizations around the world.

Given its experience at a regional level, this organization can contribute to a regional biodiversity initiative by connecting indigenous organizations across the Basin using peer exchanges and indigenous expertise. Additionally, the Amazon Alliance provides a clearinghouse linking indigenous and nongovernmental organizations that can provide technical assistance to develop programs for capacity building on a variety of themes including mapping, environmental monitoring, strategic planning, legal defense, and integrated resources management.

F. Constitución de una Alianza en el Norte y Oeste de la Cuenca Amazónica

Constitución de una Alianza en el Norte y Oeste de la Cuenca Amazónica (CANOA) is an alliance of NGOs to promote coordination and collaboration in the northern part of the Amazon (Colombia-Venezuela-Brazil). CANOA works within an existing territory of some 70 million hectares of a combination of various types of protected areas and indigenous territories. CANOA helps consolidate these areas in a bio-cultural corridor across the borders of these countries to conserve the region's high cultural and biological diversity. This corridor aims to coordinate conservation strategies among the three countries and carry out actions relating to indigenous land-use rights, health, education, economic alternatives, and protection of traditional knowledge (Brackelaire 2003, COAMA 2004).

G. Guyana Shield Initiative

The Guyana Shield Initiative has been supported by IUCN/Netherlands to facilitate coordination and collaboration of agencies and organizations working in conservation and sustainable development in this area. It covers the Guyana shield, from northeastern Colombia to the State of Amapá in Brazil, including French Guyana, Guyana, Surinam, and Venezuela. This area has little integration compared to the rest of

the Basin. The Initiative had helped set up conservation priorities in the region and basic instruments for cooperation such as digital maps and natural resources inventories, and provided support for building institutional capacity. It is important to point out that the indigenous groups of French Guyana are active members of COICA and in 2005 they will hold the organizational regional congress and that the environmental entity (Diren) is an active member of the RAISG network. This type of regional participation should help this part of the Amazon better integrate with its neighbors and to participate in regional processes related to sustainable development. Finally, the establishment of the national park in the south of Guyana, which covers one-half of the country, could help coordinate conservation actions with the state of Amapá in Brazil, where a connecting protected area, the Tumucumaque National Park, has been established (Brackelaire 2003, Guyana Shield Initiative 2004).

H. Bolsa Amazônia

A civil society initiative based in Belém, Brazil, Bolsa Amazônia is part of Programa Pobreza e Meio Ambiente na Amazônia (POEMA) program of the Federal University of Pará. While still in a pilot phase, Bolsa Amazônia is working in Brazil and has established institutional links in Bolivia, Colombia, and Ecuador. It supports sustainable productive processes that are equitable to both local communities and bigger companies and works as a broker between small-scale producers and buyers (companies with environmental and social responsibility, which tend to be more organized). Bolsa Amazônia strengthens the management, technological, and marketing capacities of rural communities of the Amazon by providing a marketing information system through which users can access information about supply and demand for natural products. Bolsa Amazônia also promotes knowledge and technology transfer to improve productive processes, an experience that offers an opportunity to explore regional cooperation and coordination with other initiatives like biotrade in the Andean countries (www.bolsaamazonia.com/eng/default.asp).

I. Corporación Andina de Fomento — Andean Finance Corporation — BioCAF Program

Established in 2002, BioCAF is a program under Corporación Andina de Fomento – Andean Finance Corporation's (CAF) Environmental Unit that supports the development of the economic potential of biodiversity through the use of markets and sound environmental and social practices. The areas supported by this program, all related to the CAF's operations, include international negotiations on trade and environment, development of mechanisms and tools to promote biodiversity products and services, the use of biodiversity through biotechnology, and the promotion of conservation initiatives for ecosystems and species. The biological resources of the Andean countries, which are considered "mega-diverse" by the rest of the world, offer enormous potential for sustainable economic development, as long as sound environmental and social practices are employed (www.caf.com).

CAF has invested $750,000 in the implementation of the BioCAF program. Moreover, since 2003, additional resources from GEF (a donation of $350,000) helped finance a biotrade initiative in the Andean countries. By the end of 2005, the BioCAF program will be presenting a new medium-term project (4-5 years) to continue working on biotrade, which could present a window of opportunity for potential collaborations with other international organizations that are working in the region on biodiversity-related issues.

The BioCAF program has focused on strengthening the legal and institutional framework to support biodiversity conservation and further develop and consolidate commercial opportunities for sustainable enterprises using biodiversity. The program seeks to develop complementarities with other donors in the region to coordinate investments and therefore increase their environmental and economic impacts (Source: Maria Teresa Szauer, Head of Environment & Sustainable development Unit at CAF, personal communication).

J. Red Amazónica de Informaciones Socio-ambientales Georeferenciadas

The Red Amazónica de Informaciones Socio-ambientales Georeferenciadas (RAISG) initiative was developed in 1996 by ISA (Instituto Socioambiental of Brazil) to build a space for active and coordinated dialogue that encourages collaboration between organizations working in geo-referenced information of the Amazon Basin. RAISG supports processes related to collective rights of civil society and indigenous peoples, and the conservation and sustainable use of biodiversity. This initiative has been organizing international workshops in São Paulo, Brazil, with the participation of the eight Amazonian countries and French Guyana. RAISG has consolidated a network of current social and environmental information of the Amazon Basin to facilitate the identification and analysis of different regions of the Basin. The strategic character of this information could have political impact, especially in relation to transparency and access to information issues (Brackelaire 2003, www.socioambiental.org and www.amazongis.org).

K. Inter American Biodiversity Information Network

The Inter American Biodiversity Information Network (IABIN) is a hemispheric initiative created in 1996 that seeks to provide a standardized information about infrastructure (such as standards and protocols) and content required by the countries of the Americas to improve decision making, particularly for issues at the interface of human development and biodiversity conservation. It has developed an Internet-based platform to give access to scientifically credible biodiversity information currently scattered throughout the world in different institutions, such as government organizations, museums, botanical gardens, universities, and NGOs. All Amazon Basin countries are participants of this network (www.iabin.net).

L. Initiative for Regional Infrastructure Integration in South America

The Initiative for Regional Infrastructure Integration in South America (IIRSA) is a multinational collaboration between 12 South American countries to coordinate the development of infrastructure projects on the continent. The initiative is supported by three financial institutions, the Inter-American Development Bank (IDB), the CAF, and the Financial Fund for the Development of the River Plate Basin (FONPLATA). However, IIRSA is not a donor agency. Rather, it provides a forum in which the 12 participating countries may reach consensus on a regional vision and plan for the coordinated development of infrastructure projects in the region. The primary objectives of the initiative are:

- Design a more integrated vision of infrastructure
- Frame projects within a strategic plan based on the identification of axes of regional integration and development
- Modernize and update regulatory systems and national institutions that regulate the use of infrastructure
- Harmonize policies, plans, and regulatory and institutional frameworks between South American countries
- Valorize the environmental and social dimensions of projects
- Improve the quality of life and opportunities of local populations within the axes of regional integration
- Incorporate mechanisms for participation and consultation
- Develop new regional mechanisms for project programming, execution, and management
- Structure financial plans adapted to the specific configuration of risks of each project

IIRSA focuses on 10 regional hubs, of which five are partially or entirely in the Amazon Basin: Eje Andino, Eje Andino del Sur, Eje del Amazonas, Eje del Escudo Guayanés, and Eje Perú-Brasil-Bolivia.

IIRSA has developed a planning methodology under review for eight of the 10 hubs in which it is involved.

To date, IIRSA has helped forge consensus on a large portfolio of infrastructure projects in the region. Each of these individual projects is at a different stage of planning, and the IDB, CAF, and FONPLATA will structure funds to assist with pre-feasibility studies for infrastructure projects. Next year, IIRSA hopes to begin incorporating environmental impact assessments into its planning methodology, For example, there is presently an initiative in Guyana that proposes to construct a road between Boa Vista, Linden, and Georgetown. This road would cross through the heart of the jungle, presenting a number of complex issues and considerations for environmental impacts in the area. IIRSA hopes to assist the Government of Guyana in its planning of this activity and to carry out all of the pre-feasibility and environmental impacts assessments necessary before beginning implementation of the project.

In December 2004, the 12 countries will participate in a Presidential Summit. IIRSA will be included in the agenda, and one of its key objectives is to achieve consensus on 30 infrastructure projects in the region.

Table 1. Summary of Regional Institutions Working on Biodiversity in the Amazon Basin

Regional Institutions and Programs Related to Biodiversity in the Amazon Basin	
Organization	Summary
Organización del Tratado de Cooperación Amazónica (OTCA)	Formed in 1978 and revamped in 1995, the OTCA is made up of the eight (8) Amazon Basin countries. The organization, which has received full political endorsement from member nations, seeks to serve as a coordinating body for achieving sustainability.
Coordinadora de las Organizaciones Indígenas de la Cuenca Amazónica (COICA)	Established in 1984, COICA is an international indigenous organization that seeks to protect and reclaim the rights of indigenous people in the Amazon Basin. COICA is an umbrella organization that works with national indigenous organizations.
Comunidad Andina de Naciones (CAN)	The Andean Community is a sub-regional program that seeks to promote the equitable development of member countries through regional integration and economic and social cooperation.
Amazon Initiative, Consortium for Conservation and Sustainable Use of Natural Resources (AI)	The Amazon Initiative is a consortium of individuals and institutions working collaboratively to formulate and implement a collaborative research and development agenda in the Amazon region. AI works in concert with OTCA, and the two are seeking to deepen their relationship.
Amazon Alliance	The Amazon Alliance was created in 1990 to facilitate coordination between indigenous and conservation organizations. It operates through working groups in the Andean and Brazilian Amazon and the Guyana Shield and has a membership of over 80 non-governmental organizations.
Constitución de una alianza en el norte y oeste de la cuenca Amazónica (CANOA)	CANOA is an alliance of NGOs working to promote coordination and collaboration in the northern part of the Amazon (Colombia, Venezuela, and Brazil)
Guyana Shield Initiative	The Guyana Shield Initiative seeks to facilitate coordination and collaboration of agencies and organizations working in conservation and sustainable development in this area.
Bolsa Amazônia	Bolsa Amazônia aims to support sustainable productive processes that are equitable to both local communities and private companies by brokering relationships between buyers and sellers, and by strengthening management, technical, and marketing capacities of rural communities
Corporación Andina de Fomento – Andean Finance Corporation (CAF) – BioCAF Program	The BioCAF program, started in 2002 under CAF's environmental unit, is primarily focused on strengthening the legal and institutional framework to further develop and consolidate commercial opportunities for sustainable enterprises using biodiversity components and resources.
Red Amazónica de Informaciones Socio-ambientales Georeferenciadas (RAISG)	RAISG is a regional initiative started in 1996 by ISA to encourage and promote collaboration between organizations working to georeference social and environmental information about the Amazon Basin.
Inter-American Biodiversity Information Network (IABIN)	IABIN is a hemispheric initiative created in 1996 that seeks to provide information (such as standards and protocols) and content required by the countries of the Americas to improve decision-making, particularly for issues at the interface of human development and biodiversity conservation. It has developed an Internet-based platform to give access to scientifically credible biodiversity information currently scattered throughout the world in different institutions, such as government organizations, museums, botanical gardens, universities, and NGOs. All Amazon Basin countries are participants.
Initiative for Regional Infrastructure Integration in South America (IIRSA)	IIRSA is a multinational collaboration between twelve (12) South American countries to coordinate the development of infrastructure projects on the continent. It provides a forum in which the participating countries may reach consensus on a regional vision and plan for the coordinated development of infrastructure projects.

U.S. Agency for International Development
1300 Pennsylvania Avenue, NW
Washington, DC 20523
Tel: (202) 712-0000
Fax: (202) 216-3524
www.usaid.gov