



ECOSYSTEM PROFILE

VILCABAMBA-AMBORÓ FOREST ECOSYSTEM
OF THE
TROPICAL ANDES BIODIVERSITY HOTSPOT
PERU AND BOLIVIA

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INTRODUCTION

The Critical Ecosystem Partnership Fund (CEPF) is designed to better safeguard the world's threatened biological hotspots in developing countries. It is a joint initiative of Conservation International (CI), the Global Environment Facility (GEF), the Government of Japan, the MacArthur Foundation and the World Bank. CEPF provides financing to projects located in biodiversity hotspots highly threatened regions representing only 1.4 percent of the planet's land surface, where some 60 percent of all terrestrial species diversity is found.

CEPF has been designed to build on the World Bank's commitment to biodiversity conservation and sustainable management, primarily implemented through the GEF and channeled to governments. CEPF will complement the efforts of the World Bank and the GEF to conserve biodiversity conservation by providing a streamlined funding mechanism to a broad range of civil society partners, including NGOs, community groups and private sector partners.

CEPF will further the overall goals of the Bank at the country level by offering an opportunity to engage local communities and other stakeholders in biodiversity conservation and ecosystem management. CEPF will also provide an important learning experience through an innovative online grant system at www.cepf.net and by focusing on on-the-ground results and experience. The site is designed to serve as a central node, disseminating lessons learned and facilitating cross-regional information exchange on conservation successes. It will also promote replication of successful projects by providing access to a wide range of resources designed to aid project implementers in the biodiversity hotspots.

CEPF will strive to use lessons from other programs, particularly the GEF's medium grants procedure, to ensure that funds are provided expeditiously and with appropriate, cost-effective levels of accountability. CEPF will also use the GEF national focal points to ensure client country endorsement of the strategic direction of CEPF. CEPF is intended to complement, rather than duplicate or overlap with, regular GEF activities.

CEPF will support strategic working alliances among community groups, NGOs, government, academia and the private sector, combining unique capacities and eliminating duplication of efforts for a more comprehensive approach to conservation challenges. CEPF is unique among other funding mechanisms in that it focuses specifically on biological areas rather than political boundaries and will look at conservation threats on a corridor-wide basis for maximum return on investment. It will also focus on transboundary cooperation when areas rich in biological value straddle national borders or in areas where a regional approach will be more effective than a national approach. CEPF aims to disburse funds to civil society in a more agile manner, complementing current funding available to government agencies.

In the Vilcabamba-Amboró Forest Ecosystem, CEPF will serve a unique niche because the emphasis of the funding is on catalyzing transboundary coordination between Peru and Bolivia and on coordinating the activities of participants in the region to achieve a common vision of the corridor. Similarly, CEPF will aim to coordinate donor investment in the region, ensuring that diverse stakeholders agree on the top priorities to achieve the greatest impact in conserving biodiversity in the corridor.

CEPF will support strategic initiatives that complement existing and proposed investments in conservation and thereby take advantage of the relatively strong presence of conservation NGOs in the region. While current trends in conservation investment are encouraging, most maintain a

tight site focus, although there are important national-scale initiatives such as the World Bank/GEF support for strengthening Bolivia's National System of Protected Areas. The corridor concept will bring efforts of both narrow and broad geographic focus into synergy in an area of the highest biological importance within the Tropical Andes Hotspot. CEPF funding should be used to create a framework of activities, ranging from biodiversity audits and threat assessment to strengthen existing protected areas and create new ones. This framework will sharpen the focus of government agencies, NGOs, and indigenous communities already at work in the corridor, establish a consensus for action among these groups, and strengthen alliances.

Funds will be used to provide small grants to conservation projects managed by private, NGO and civil society groups working in the critical ecosystems. Funding from CEPF directed at the project level will leverage additional financial and in-kind contributions. By funding conservation efforts in production landscapes, such as agricultural areas, CEPF has the potential to build broader-than-usual support for conservation measures within the agricultural community, specifically encouraging agroforestry initiatives that maintain connectivity in corridor landscapes.

In summary, CEPF offers an opportunity to promote the conservation of some of the most important ecosystems in the world — places of high biodiversity and great beauty. In addition, the importance of meeting conservation goals is enhanced by the growing recognition of the values provided by healthy, diverse ecosystems in areas such as agriculture, forestry, water supply and fisheries. These issues are critical to the Bank's efforts to alleviate poverty. CEPF will deliver assistance in an agile manner and it will allow the engagement of a wide range of local community groups, civil society organizations, NGOs and private companies in addressing conservation needs.

BACKGROUND: VILCABAMBA-AMBORO FOREST ECOSYSTEM

In February 1999, as part of the initial design of the Critical Ecosystem Partnership Fund, Conservation International convened a binational workshop, with participation from government officials, NGOs and scientists from both Bolivia and Peru, to discuss threats and articulate a common vision for a binational biological corridor for Tambopata-Madidi. The participants, who represented the Wildlife Conservation Society, the United States Agency for International Development, the National Service of Protected Areas (SERNAP), Fundacion ProNaturaleza and the National Institute of Natural Resources (INRENA), among others, achieved consensus on a vision for the corridor and agreed on both short- and long-term recommendations to achieve this vision in one of the most diverse ecosystems in the world. The panel recommended that CEPF:

1. ensure that laws in the region are compatible with the overarching vision;
2. recognize the importance of binational coordination;
3. include political leaders in the process;
4. develop programs that provide economic benefit to the local populations;
5. promote a conservation awareness and constituency;
6. ensure legally protected status for the proposed and existing natural areas; and
7. increase scientific knowledge in the region.

The workshop participants agreed that the Manu-Tambopata-Madidi areas form the nucleus of this extended corridor effort. Results from the initial workshop include the first conceptual outline of a biodiversity corridor and joint work plans.

In July 2000, Conservation International reconvened a group of binational technical participants to reevaluate the corridor concept, which then was expanded to include the entire Vilcabamba-Amboró Forest Ecosystem. This workshop resulted in the creation of a revised

strategy for the region that builds upon the initial platform established in the first workshop. Together, these two processes form the baseline of consensus-driven priorities that have been translated into a CEPF Ecosystem Profile for the Vilcabamba-Amboró Forest Ecosystem.

The Vilcabamba-Amboró Ecosystem Profile outlines the biological importance of the Tropical Andes Hotspot as a whole and particularly the importance of the Vilcabamba-Amboró Forest Ecosystem. It also contains a review of known threats to biodiversity and the current level of investment that has been mobilized by donors, NGOs and government agencies to combat the threats. The results of this analysis determined the strategic niche that CEPF investment can fill to complement existing efforts in the region. This niche is summarized in an investment strategy aimed at delivering six main outputs:

1. effective mechanisms for transboundary coordination, collaboration and catalytic action;
2. strengthened binational coordination of protected areas systems;
3. community-based biodiversity conservation and natural resource management;
4. expanded public awareness and environmental education;
5. strengthened environmental policy and legal frameworks to mitigate the impacts of extractive industries, transportation and infrastructure projects, and large-scale tourism; and
6. an integrated corridor information and monitoring system in sensitive corridors.

The purpose of the investment strategy is to facilitate effective participation by nongovernmental and other private-sector organizations in the conservation of biodiversity in the Vilcabamba-Amboró Forest Ecosystem.

To be eligible for funding under this ecosystem profile, a project must not only contribute to one or more of the strategic funding outputs, but must also meet the following general criteria:

1. Project execution must be within World Bank client countries that have ratified or otherwise acceded to the Convention on Biological Diversity. (In the Vilcabamba-Amboró Forest Ecosystem, projects executed within Peru and Bolivia would meet these criteria.)
2. Project funding may by no means result in the physical relocation of people, be used for the purchase of land, be directed toward a government entity, or be used for the capitalization of trust funds or similar financial instruments.

BIOLOGICAL IMPORTANCE OF THE VILCABAMBA-AMBORO FOREST ECOSYSTEM

This section in the ecosystem profile provides a brief overview of the biological importance of the entire Hotspot region. However, CEPF's initial strategic focus will be to support projects that will affect the Vilcabamba-Amboró Forest Ecosystem within the countries of Peru and Bolivia. The lowlands and montane forests of the Andean region countries — Venezuela, Colombia, Ecuador, Peru, and Bolivia — contain some of the most diverse and threatened biological complexes in the world. Two biodiversity hotspots (Tropical Andes, Chocó-Darién/Western Ecuador) and a major tropical wilderness area (Amazonia) fall wholly or partly within the five countries that make up this region. The Chocó-Darién/Western Ecuador Hotspot, which features some of the wettest tropical forests on Earth, is a major feature of this region but is not represented in the biodiversity corridor that is the focus of this profile. In the Amazon basin, Bolivia, Peru, Ecuador, Colombia, and Venezuela share the Amazonian wilderness area with the Guianas and Brazil, and this series of lowland tropical forest ecosystems intersects with the corridor to some degree.

The Tropical Andes Hotspot has been referred to as the "global epicenter of biodiversity" by Dr. Norman Myers, who introduced the hotspot concept in the late 1980s, and this distinction

was reiterated in an analysis of the world's most biologically diverse, unique and threatened ecoregions conducted by Conservation International in the late 1990s. The hotspot covers 1,258,000 square kilometers in the countries of Venezuela, Colombia, Ecuador, Peru, Bolivia and Argentina. The centerpiece of the hotspot is the tropical portion of the Andes mountain chain that runs north to south in Bolivia, Peru and Ecuador, splitting into three major mountain ranges in Colombia and extends further to the northeast into the northwestern corner of Venezuela. The western border of the hotspot is marked by the eastern edge of the Chocó-Darién/Western Ecuador Hotspot at the 1,000-meter elevation. On the eastern slopes of the Andes in Ecuador, Peru and Bolivia, the 500-meter elevation marks the hotspot's border with the Amazonian lowlands.

The Andes mountain range, its constituent ranges, and the vast array of slopes, peaks and isolated valleys provide a multiplicity of micro-habitats that have led to the evolution of an incredible number of plant and animal species, even surpassing that of the much more extensive Amazon plain stretching to the east across South America.

Some experts divide the Tropical Andes into northern and southern zones, marked by an arid, east-west valley that coincides roughly with the Ecuador-Peru border in the far north of Peru extending north into neighboring Ecuador. At this nexus, called the Marañon Gap or Huancabamba Depression, elevations drop to around 500 meters, creating one of the most important barriers to faunal and floral migration in the Andes. The southern Andes below the Marañon Gap are older and narrower than the northern Andes and there are significant differences in the biodiversity of these two regions.

The southern Andes fuse into a single, broad cordillera that in Peru and Bolivia is bounded by the Peruvian/Chilean Atacama Desert to the west and the Amazon Basin to the east. Rivers of the southern Andes drain toward the Atlantic Ocean in two widely diverging watersheds, one north towards the Equator, which joins the central Amazon headwaters, and the other toward the south joining the Madeira River, the main southwestern tributary of the Amazon. The southern Andes are characterized by high, snow-capped peaks, such as those of the Cordillera Real, and by deep canyons like the Cañon del Colca near Cabanaconde, the deepest gorge in the world, plunging to twice the depth of Arizona's Grand Canyon. A complex maze of smaller cordilleras and isolated massifs dots the interface between the Andes and the Amazon Basin, including the Peruvian Cordillera Azul and the Cordillera de Vilcabamba.

The Andes Cordillera in Bolivia can be characterized by two major watershed systems. From Lake Titicaca to Amboró lie the many rivers that drain towards the Amazon Basin. South of Amboró, numerous effluents of the large Rio de la Plata Basin drain towards Argentina. Biologically, it is possible to distinguish two different regions in the Bolivian portion of this hotspot. The northern section from Lake Titicaca to Amboró has higher mountain ranges that run from east to west and from altitudes of 500-6,500 meters. Between the peaks are inter-Andean valleys that reach higher altitudes than peaks elsewhere in the region and exhibit high levels of terrestrial vertebrate endemism, especially for birds. To the south of Amboró, the mountain ranges are smaller and run parallel to one another in a north-south direction.

The vegetation of the Tropical Andes Hotspot follows a gradient from lowlands to highlands, with tropical wet and moist forests occurring at 500-1,500 meters, cloud forest formations of several kinds (variously referred to as yungas, ceja de selva or ceja de montaña) which occur at altitudes from 800-3,500 meters, and grassland and scrub land systems, which are referred to as punas in the southern Andes. The latter begin at about 3,000-3,800 m and extend up to 4,200-

4,800 meters, usually ending at the snow line. The sub-Andean forests of the eastern slopes, which begin at about 500 meters, are similar to those of the hot Amazonian lowlands to the east, but have fewer palm species, lianas and buttresses.

The *yungas* is a montane cloud forest ecosystem that includes the Marañon Gap and extends south along the slopes of the Andes to cover an area of approximately 250,000 square kilometers in Peru and an equal or greater area in Bolivia. These Andean slope forests are among the richest on Earth in terms of diversity and endemism. The number of distinct plant and animal communities in this relatively narrow strip is enormous and there is a far greater packing of biodiversity per unit area than virtually anywhere else, especially in terms of vascular plants, birds, amphibians, butterflies and several other groups.

The *puna* is a distinct vegetation type that is found predominantly in Andean Peru, but also extends into adjacent areas of Bolivia. A high-altitude, alpine-like grassland vegetation found below the snow line, it covers most of the Peruvian departments of Huancavelica, Ayacucho, Apurmac and Puno, plus smaller portions of several other departments. The dominant vegetation in this cold, relatively dry habitat is bunchgrass surrounded by a variety of herbs, grasses, sedges, lichens, mosses and ferns. While animal diversity in the *puna* is low, endemism is high. At least 30 bird species are restricted to this zone, including the puna rhea (*Pterocnemia tarapacensis*) and the ornate tinamou (*Nothoprocta ornata*). The *puna* is also home to the world-renowned vicuna (*Vicugna vicugna*), the smallest of the South American camelids and one of the region's most important flagship species for conservation.

Along the dry Andean slopes of Peru in particular, usually at altitudes of 2,000-3,000 meters, are *Polylepis* forests, another vegetation type unique to the Andes. This tree genus is restricted to the montane area of western South America and can be a particularly conspicuous element of some high-elevation tropical habitats because it is often the only kind of tree growing in areas dominated by low grasses, herbs, and shrubs.

The Tropical Andes leads virtually all other hotspots in terms of species diversity and endemism. Perhaps the most impressive figures are those of vascular plants, with an estimated 45,000-50,000 species, or about 15% of the world total and twice as many as in any other hotspot. Levels of plant endemism are equally impressive, with some 20,000 species found nowhere else on Earth.

The Tropical Andes also has the highest bird diversity (1,666 species) of any hotspot, and the highest level of endemism (677 species, or 41%). Based on a recent analysis by BirdLife International, Peru and Colombia rank among the top three countries in the world for restricted-range species, and the bulk of these species are found in the Andean portions of these countries. BirdLife International also recognizes 19 Endemic Bird Areas (EBAs) that lie either entirely or partly within the Tropical Andes Hotspot and that cover almost its entire area. Those of specific concern to this hotspot profile include the Peruvian High Andes with 29 restricted-range species, 20 of which are confined to the EBA and three of which are critically endangered, the Peruvian East Andean Foothills with 14 restricted-range species, six of which are confined to the EBA, the Bolivian and Peruvian Lower Yungas with 15 restricted-range species, seven of which are confined to the EBA, and the Bolivian and Peruvian Upper Yungas with 20 restricted-range species, 15 of which are confined to the EBA.

Species diversity and endemism among amphibians and reptiles in the Tropical Andes exceeds figures for plants and birds. Amphibians total 830 species, including 604 endemics (73%), and

both figures rank first among the hotspots. There are 479 species of reptiles in the Tropical Andes Hotspot, of which 218 (46%) are found nowhere else on Earth, figures that rank fourth and fifth among the hotspots, respectively. Mammal diversity and endemism is also noteworthy. Of a total of 414 species of mammals (third among the hotspots), 68 (16%) are endemic (ninth among the hotspots).

When all terrestrial vertebrates are considered, figures for the Tropical Andes Hotspot top the charts. It has 3,389 vertebrate species, not counting fish -surpassing the next-ranking hotspot by 530 species (18%); with 1,567 endemics (46.2%), it surpasses the next-ranking hotspot by 408 endemics (35%). Both figures, in fact, are also higher than those for any country on Earth.

Prioritization of Corridors within the Tropical Andes Hotspot

The entire Tropical Andes Hotspot represents a global conservation priority. However, its vast size presents a logistical and management challenge that demands a phased approach to achieve the greatest conservation impact. To this end, Conservation International and other groups have identified and prioritized landscape-scale corridors within the hotspot. The design and implementation of conservation initiatives within these corridors represent the first step toward preservation of species and ecosystem diversity of the greater hotspot. Factors important to the identification and selection of target corridors included:

- levels of biodiversity and endemism;
- the extent of remaining wilderness areas and intact ecosystems;
- the feasibility of carrying out successful conservation projects (e.g., government support for conservation, political stability in the region, a significant presence of local and international conservation groups, reasonable access, etc.);
- the potential for biodiversity conservation on indigenous land; and
- the potential for connectivity between adjacent protected areas.

Based on an analysis of these factors, CEPF determined that a strategic focus on one of the following corridors, presented in order of highest priority, is a logical first step for a phased approach to CEPF involvement within the Andean region:

- Vilcabamba-Amboró Corridor (Tropical Andes Hotspot)
- Condor Corridor (Tropical Andes Hotspot)
- Southern Chocó Corridor (Chocó-Darién/Western Ecuador Hotspot)

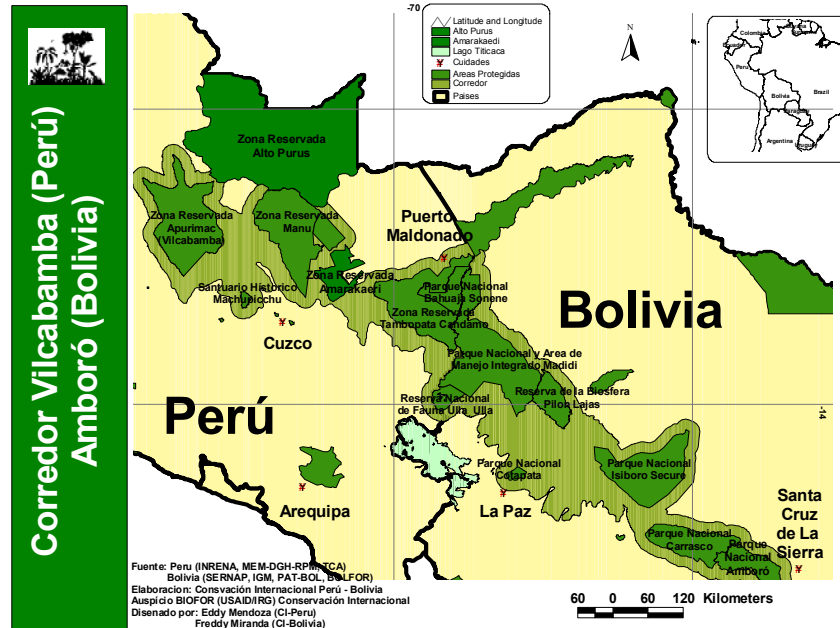
The Vilcabamba-Amboró Forest Ecosystem Corridor and its Biological Importance

The Vilcabamba-Amboró Forest Ecosystem is situated in the southern half of the Tropical Andes Hotspot, stretching from the Vilcabamba mountain range in south-central Peru southeast to Amboró National Park in central Bolivia. Three distinct protected area complexes composed of national parks, reserved zones, multiple-use areas, and indigenous reserves provide the fundamental structure of the corridor:

- Vilcabamba-Manu complex: Apurimac Reserved Zone (17,000 square kilometers), Ashaninka and Machiguenga communal reserves, Amarakaeri Reserved Zone (4,191 square kilometers), Alto Purús Reserved Zone (50,000 square kilometers), Machupichu Historical Sanctuary (330 square kilometers), Manu National Park (15,330 square kilometers), Manu Reserved Zone.
- Tambopata-Pilón Lajas complex: *In Peru*: Tambopata-Candamo Reserved Zone (4,886 square kilometers), Bahuaja-Sonene National Park (10,914 square kilometers). *In Bolivia*: Madidi National Park (18,960 square kilometers) and Integrated Management Area (4,745 square kilometers).

kilometers), Pilón Lajas Biosphere Reserve (4,000 square kilometers) and Indigenous Territory.

- Cotopata-Amboró complex: Cotopata National Park (583 square kilometers) and Integrated Natural Management Area, Isiboro-Sécure National Park (12,000 square kilometers) and Indigenous Territory, Carrasco National Park (6,226 square kilometers), Amboró National Park (6,376 square kilometers) and Integrated Natural Management Area.



Together, the three protected-area complexes within this forest ecosystem form a biodiversity corridor that supports remarkable biological and cultural diversity. In between these complexes lie private and public lands in various stages of development, ranging from untouched to those completely devastated by destructive gold mining practices. Notwithstanding these problems, when stitched together into a single chain of 30 million hectares, the Vilcabamba-Amboró Corridor takes on a biological and cultural richness perhaps unparalleled anywhere else in the world.

THREAT ASSESSMENT

As in most of South America, the Vilcabamba-Amboró Corridor is threatened by human activity and population growth. Direct threats include vulnerable and inadequately managed protected areas, hydrocarbon development, gold mining, uncontrolled logging, road construction and associated colonization, dam construction, insufficient information on the biological and socio-economic characteristics of the region, and limited collaboration and information sharing among stakeholders in the corridor. These threats are discussed below, many in context of associated developments and opportunities to improve biodiversity conservation practices within the proposed corridor.

Vulnerable and inadequately managed protected areas

Although a large portion of the Vilcabamba-Amboró Corridor is presently represented in protected areas, many of these parks and reserves are inadequately managed and ineffectively protected for the purposes of biodiversity conservation. In some cases, these factors have led to the encroachment and invasion of protected areas by human settlements and corporate entities. For example, within Madidi National Park, the Tambopata Reserve Zone, Pilón Lajas Biosphere Reserve, and Carrasco National Park, there are concessions for the extraction of hydrocarbons,

wood, and other resources.

At the northwestern end of the Vilcabamba-Amboró Corridor in Peru, the Apurimac Reserved Zone has been in a transitional legal status for more than 12 years. The national government has no management structure specifically located in or devoted to the Apurimac Reserved Zone, and the area faces the threats of increasing hydrocarbon development in Camisea and elsewhere.

In the Tambopata Reserve Zone and the adjacent Bahuaja-Sonene National Park, there are at least six functioning guard posts, although they are not consistently occupied.

Despite the declarations of new protected areas and the expansions of other areas, the National Institute of Natural Resources-Peru (INRENA) is still lacking nationally provided resources and is not as effective as it could be.

Because the Vilcabamba-Amboró corridor spans two countries, the national protected area legal frameworks are different, and this adds to the challenge of developing an integrated conservation-planning approach. In Peru, natural resource exploitation is not permitted in national parks, which has necessitated the status of "reserved zone" for areas in which natural resources are extracted. This status is also used to provide temporary protection, a transition toward permanent protected status. In Bolivia, "integrated natural management area" and "reserved zone" designations are used to provide access to natural resources, but with some level of protection for the larger area. National parks, however, are not immune from natural resource extraction. In fact, in Madidi National Park, there are oil concessions inside the park, as well as plans for a large hydroelectric project that would flood much of the protected area.

The World Bank has identified habitat destruction as the main threat to many of Bolivia's protected areas. The principal causes are deforestation (approximately 400,000 hectares/year nationwide over the last 10 years) and mining. The main causes of deforestation have been the advance of the agricultural frontier (including coca cultivation), over-exploitation, and uncontrolled fires. Mining is allowed inside certain protected areas with more flexible zoning regimes, such as multiple use-protected areas, provided that it does not conflict with the objectives for which the protected area was created. Illegal mining also occurs in some protected areas.

The underlying driving forces of deforestation and the consequent losses of biodiversity are numerous and complex. The most important driving forces in protected areas are policy conflicts that promote investment in extractive activities, particularly mining, agriculture and logging, weak and politicized institutions at both national and local levels, poorly-defined protected area boundaries, spontaneous settlement, strong markets for coca leaves, and rural poverty. This situation is not only threatening biodiversity, but it is also putting the growth of a potentially lucrative ecotourism industry at risk. While the government of Bolivia is making a determined attempt to address the issues that threaten its biodiversity, the task is formidable.

Hydrocarbon exploitation

Oil and natural gas extraction is increasing in the Andean region and is viewed by international companies as new and promising territory. As of mid-2000, oil and natural gas concessions have been granted in several areas within the Vilcabamba-Amboró Corridor, including within the Vilcabamba region, Madidi National Park, Isiboro-Sécure National Park, Carrasco National Park and Amboró National Park. These concessions are being granted to a wide range of national and international oil companies, some with poor environmental records. However, many companies

are increasingly aware of the need to establish and maintain good environmental practices, and this awareness creates opportunities to work with these companies to minimize the direct and indirect effects of their operations. There are also promising developments on the regulatory side of the equation. For example, the World Bank is developing a project with the Government of Bolivia to strengthen the environmental management capacity of the hydrocarbon sector.

The largest-known deposit of natural gas in South America is located in Camisea, on the fringes of the Apurimac Reserved Zone along the Urubamba River in the northern reaches of the Vilcabamba-Amboró Corridor. Camisea is located directly between the Apurimac Reserved Zone and Manu National Park. After initial work and subsequent abandonment of the block by the Shell/Mobil consortium, the Peruvian government has awarded the block to a consortium headed by Pluspetrol. The Pluspetrol consortium will carry out the second phase of exploration and possible development of a gas pipeline, a section of which will cut across the southern tip of the protected area complex. This gas development could lead to unplanned and negative environmental and social consequences in Vilcabamba if land-use and conservation planning activities are not implemented.

In the 1990s, the Peruvian government established several large hydrocarbon exploration blocks in the Tambopata region. One very large concession, Block 78, ran from Peru's border with Bolivia to the edge of Manu National Park. It passed through the center of the Tambopata Reserved Zone and included many areas that conservationists believed should have been included in Bahuaja-Sonene National Park when the park was declared, and the hydrocarbon block, were established in 1996. Exploration and test drilling were carried out between 1996 and 1999, concentrating in the Candamo basin in the foothills of southern part of the Reserved Zone. In August 2000, Block 78 was returned in full to the Peruvian government. The area within Tambopata that was originally supposed to be Bahuaja-Sonene National Park, and that had become Block 78 from 1996 to 1999, is now included within the national park. In fact, the park is now slightly larger than originally proposed.

In the Madidi region there is a single oil concession the Tuichi Block, which is in the early stages of exploration and is operated by a consortium made up of Repsol Exploration Sécure, S.A. and Perez Compania, S.A. This same consortium has concessions in the Pilón Lajas area. The development threat appears minor at the moment.

Much more worrisome are concessions in and around the national parks of Isiboro-Sécure, Carrasco, and Amboró. This area, and the Chaco further to the south and east, is the traditional oil and gas exploitation area in Bolivia. The gas fields are so large that a pipeline financed by the World Bank, IDB and CAF was built beginning in February 1999 and gas exports to Brazil began in July of the same year. That pipeline is outside the corridor, but discoveries of significant amounts of gas inside the corridor could prompt the development of a branch to extract the gas and send it to Brazil. In the last five years, oil companies have stepped up their activities in Cochabamba and Beni near Isiboro-Sécure National Park, and there are reports of significant finds in Carrasco and Amboró.

Mining

Mining, especially for gold, is taking a serious toll on habitats within the Vilcabamba-Amboró Corridor. Many of the mining concessions are small or informal, unlike hydrocarbon concessions, so their regulation is much more difficult. Mining in the region between Manu National Park and the Bahuaja-Sonene National Park has produced massive local damage, in some cases completely eliminating native vegetation and filling rivers with sediment and

pollutants. Mercury, used to separate gold from accompanying sediments, is especially problematic because it is so persistent in the environment. Elevated levels of mercury have been detected in fishermen and others in Puerto Maldonado, where people consume large numbers of catfish, a bottom feeder. There are significant mining operations in Puno, in the higher elevations to the south of Tambopata, and around Macchupichu. In Bolivia, there are mining operations near Apolobamba, and in the tributaries and upper reaches of the Beni River, that have produced local environmental damage, watershed contamination, and contributed to elevated levels of mercury in fishermen in the Rurenabaque area. Although the Apolobamba and Madidi protected areas have been established for several years, permits for mining concessions continue to be granted.

The new Cotapata — Santa Barbara road has encouraged an increase in gold mining activity, with associated high impacts due to low technology hydraulic mining technologies. Since the mid-1990s, mining of gravel for road construction has also increased in the Amboró region.

Logging and sustainable forest management

Many large timber concessions have been granted over the last several years to industrial-scale operations in Madre de Dios, Peru. These concessions are particularly concentrated in the Rio Las Piedras watershed, to the north of the Bahuaja-Sonene National Park. Some of these concessions overlap with productive Brazil nut zones and most of the concessions are operated with little oversight. INRENA put a hold on further harvesting in these concessions in early 2000 while it investigates their legality. This action has thrown a number of loggers out of work, heightening tensions in a region still very dependent on wood and wood products. Furthermore, a clandestine 100-kilometer logging road was recently discovered in this zone, near Tahuamanu, off the road that runs from Iñapari to Iberia. Fortunately, authorities shut down the road, but its presence could still be discerned on Landsat images.

Timber extraction in Madidi National Park continues to be a threat, although less so than in the early 1990s, partly because much of the commercial mahogany stock has been exhausted. Furthermore, park guards have begun to exercise their authority to deter timber extraction within the park. Finally, in 1999, Conservation International successfully spearheaded negotiations with a logging company, FATIMA, to "buy out" the company's 45,000-hectare concession within the park. As a major unexpected side benefit, the government of Bolivia converted 300,000 hectares within Madidi from multiple use to strictly protected status. Much of Madidi now enjoys the strict protection of a national park.

There are also forestry concessions in the Tacana Indigenous Community Territory to the northeast of Madidi, and along the road from San Buenaventura to Ixiamas and its extension to Puerto Heath. There are concessions within Pilón Lajas, in the area connecting Pilón Lajas with Isiboro-Sécure National Park, and on the northern border of Isiboro-Sécure.

The timber industry in Bolivia is in crisis due in large part to conflicting changes in logging policies. As a result, several concessionaires have shut down their operations and the industry is effectively in "free-fall." Nevertheless, there is still an effort to maintain the industry. BOLFOR, a project of USAID, seeks to replace forestry systems that harvested 1-2 cubic meters per hectare of mahogany and cedar on a selective basis with much more intensive and better-planned forestry operations that will harvest at least 12 species at volumes approaching 10-12 cubic meters per hectare. Under these intensive systems, production costs can be cut by 40-50%. BOLFOR argues that placing land under sustainable forest management slows deforestation and conserves diversity. While tropical forests managed for timber production may not conserve all

of their original diversity, they conserve more than the alternative land use, agriculture.

Road Construction

Road building and maintenance continues to be a major element of the portfolios of bilateral and multilateral lending institutions. The Corporación Andina de Fomento (CAF), for example, is funding the paving of the Cotapata-Santa Barbara section of the Beni-La Paz-Peruvian border road corridor. The Inter-American Development Bank (IDB) and World Bank also have major road projects in their portfolios, which may necessitate efforts to mitigate their environmental impact.

Several road projects now underway in the Vilcabamba-Amboró Corridor, legal and illegal, demand attention. In the Vilcabamba region, a logging company is constructing a road from Puerto Ocopa, a community only three hours by road from the major commercial town of Satipo, to the Tambo River, which flanks the Apurimac Reserved Zone to the north. Loggers hunt game for meat and deplete local wildlife populations. This road has also triggered significant colonization with associated deforestation, erosion, and other problems.

On the eastern border of Manu National Park there is a highway project that would connect Shintuya to Choque. The local population is blocking the project, however, fearing that its completion would constitute a serious threat to their natural resources, especially wood and land. The proposed highway link would also bisect the newly declared Amarakaeri Reserved Zone.

In the Tambopata region, there are several proposed road projects that have the potential to induce colonization. Two roads in the Puerto Maldonado area, currently only passable during the dry season, are slated for improvement, which would ease passage year round. One road connects Puerto Maldonado to Iñapari, on the Peruvian border with Brazil. Another road connects Mazuko, on the road to Cuzco, with Puerto Maldonado. Both roads represent links in one of several much-discussed inter-oceanic transportation routes. There is already considerable colonization along both of these road segments, and their improvement would ease transportation from beyond Cuzco, serving to encourage further development of the area. Such transportation would also encourage the migration of farmers from the crowded highlands around Lake Titicaca. A third is under construction in the southern border area of the Bahuaja-Sonene National Park, in the Alto Tambopata region of the Puno department. With support from the municipal government in Putinia Punco, road builders wish to reach the settlement of Azata, on the Tambopata River. There is an increase in colonization associated with this road, and much of the area is prime coffee production zone.

In Madidi National Park, the most serious conservation threat is pressure to expand and improve roads in and around the park. Bridges are currently under construction over the twelve streams that the San Buenaventura-Ixiamas road must cross. Road expansion, driven by private timber concessionaires, also continues along the flanks of the Serranía del Tigre, approaching the upper Madidi. Construction of a road from Tumupasa to San José has reportedly expanded several kilometers into the park without the required environmental impact assessments and mitigation. This road is being promoted by the La Paz Prefecture and by local municipal officials, who are also seeking funding for the construction of a road between Apolo and Ixiamas, which would bisect Madidi. Proposals have also been floated periodically to international lenders to construct a road from Ixiamas to Puerto Maldonado, via Puerto Heath. This road, and an extension to Cobija on the Brazilian border, stands a good chance of being built as part of a broader Ixiamas development strategy. In fact, the construction of this road and many others in Bolivia are likely, so the issue is not one of stopping construction but of finding

ways to mitigate impacts, especially colonization. There are already problems with human settlements in Ixiamas, population movements near the Peruvian border, and slash-and-burn farming near Apolo.

The road system from La Paz to Yungas through the Cotapata - Santa Barbara main road has an impact on the Cotapata protected area. This road will be completed in the near future with funding from Corporación Andino de Fomento (CAF). Although road use will be high, it is feasible to limit the impact on Cotapata with appropriate monitoring and enforcement. This road corridor also passes between the Pílon Lajas Biosphere Reserve and Isiboro-Sécure National Park, effectively bisecting and possibly creating a gap in the corridor. It will be important to monitor this gap closely and pursue the means to maintain connectivity between these two protected areas.

It will also be important to assess and monitor the road that runs from Trinidad through the eastern end of Isiboro-Sécure National Park. Another road also crosses part of Carrasco National Park and continues into the Chapare region, a major coca production zone where there are numerous efforts to replace coca with other crops. Roads are considered an essential element of these "alternative development" programs.

Community Development Incompatible with Biodiversity Conservation

Roads built to allow the extraction of timber, hydrocarbons and gold almost invariably bring new populations to rural areas. The subsistence and commercial agriculture and cattle ranching practiced by these settlers, in many cases subsidized by the central government or multilateral institutions, leads to dramatic alterations of the landscape. There is often little control over settlement patterns when new roads are opened, and many roads have been developed in very environmentally sensitive areas. Local governments promote roads to increase their political clout but sometimes have little awareness of, or interest in, tools for economic planning and environmental impact assessment. Furthermore, once established, colonies may demand land rights and development infrastructure (credit, utilities, education, public health), and often want limits on the size of, and restrictions placed on, protected areas (e.g., August 2000 protests in Madre de Dios).

As discussed elsewhere in this threat assessment, in Peru there are major increases in colonization on the roads from Cuzco to Puerto Maldonado and from Puerto Maldonado to Iñapari on the Brazilian border. In Bolivia, there is colonization pressure along the park and reserve borders of Madidi, Pílon Lajas, Isiboro-Sécure, Carrasco and Amboró. Though the details will vary, colonization takes on a similar pattern from place to place:

rapid conversion of forest along roads, first to subsistence agriculture and then, in many cases, to cattle ranches supporting no more than a head or two per hectare;
lack of markets for anything but a few agricultural commodities, providing little incentive for people to diversify their agricultural holdings;
low productivity of agricultural and ranching systems, forcing many people to seek new land after a few years, continuing the deforestation trend;
the depletion of wildlife and fish stocks; and
conflict between colonists and the indigenous people who have worked, hunted, and fished the region for generations with little long-term impact on natural resources and biodiversity.

In addition to the illicit agricultural and ranching activities that take place on the agricultural frontier, both Peru and Bolivia face continuing threats from illegal coca cultivation in *yungas*

regions. Within the corridor, significant coca cultivation continues in the Rio Apurimac/Ene area of Peru and in the Chapare region of Bolivia.

Dam Construction

In Bolivia, a major potential threat is the recently resuscitated proposal for a Bala Narrows dam, an idea first proposed in 1955 and again in 1973. The proposed 205-meter structure would dam the Rio Beni 15 kilometers south of Rurrenabaque. The dam would affect Beni tributaries, inundating a large area (estimates range widely, by a factor of 10) of forest, eliminating riparian habitat and interrupting migrations of several fish species that spawn in the upper Beni. In the Madidi National Park, the resulting lake would likely submerge the Chalalán ecolodge run by the community of San José in collaboration with Conservation International and the Caquiahuara macaw licks, as well as a lodge built nearby by EcoBolivia. With the election of a new director of the La Paz prefecture in 2000, local political support for the dam dropped considerably. However, a feasibility study is still underway, so the project has not been abandoned entirely.

There are several small hydroelectric projects under discussion in the Cotapata area, very close to the Inca trails and ruins. They are being proposed by ELECTROPAZ S.A., an energy company serving La Paz. The SERNAP and the company are still in discussions regarding this project.

Limited Coordination and Information-Sharing Among Institutions; Insufficient Information on Cultural and Natural Resources

The lack of coordination and information sharing among institutions, and the associated lack of information on cultural and natural resources, is a problem throughout the Vilcabamba-Amboró Corridor. During a CEPF-sponsored strategic planning workshop for the Corridor held in Cuzco in July 2000, this issue emerged repeatedly. Better information on the biophysical, socio-economic, and cultural realities of the corridor, as well as on the threats facing the corridor, will lead to better decision-making. The collection, analysis and distribution of this information can also serve as a springboard for better coordination and planning among the institutions responsible for making the Corridor an integrated and functioning entity that spans two countries.

ASSESSMENT OF CURRENT INVESTMENT

Despite the threats facing the Vilcabamba-Amboró Corridor, there are many opportunities to make this a world-class conservation effort. The Corridor proposal has been enthusiastically received by many governmental agencies in Peru and Bolivia, high-level representatives from these agencies have participated in planning meetings, and Conservation International and other NGOs have received numerous endorsements of the concept. There is also a wide range of donors interested in developing strategic alliances with local and international NGOs for the purpose of leveraging funds in support of conservation in the Corridor. Support for the corridor is not limited to bilateral and multilateral donors. Indigenous peoples in the region, for the most part, also support conservation and control increasingly large areas of the corridor, making them natural allies in this effort. The following section describes who is currently investing and participating in biodiversity conservation in the region.

Donor Organizations

Multilateral Donors

Inter-American Development Bank (IDB), Multilateral Investment Fund (MIF) (Bolivia): In 1994, the MIF approved a US\$1,250,000 grant to Conservation International-Bolivia to carry out a project entitled "Sustainable Development and Ecotourism in San José de Uchupiamonas

and the Buffer Zone of the proposed Madidi National Park in Bolivia." CI contributed US\$200,000, bringing the project total to US\$1,450,000. This project will be completed in December 2000. The IDB is contemplating a third phase of this successful project, with an expanded scope of work.

World Bank (including GEF): The World Bank has several major projects in process or under development that directly or indirectly affect the corridor. In Peru, the World Bank is supporting the development of INRENA's protected area management capacity through a GEF-funded project to support the establishment of a National Trust for Protected Areas (PROFONANPE). Approved in 1995, the goal of this project is to build Peru's capacity to finance the recurrent costs of protected area management by supplementing scarce government funds. A midterm evaluation of PROFONANPE concluded that, despite the initial challenges inherent with an effort of this magnitude, PROFONANPE has succeeded in raising additional funds and is becoming an important source of recurrent cost financing. Current capitalization of the trust stands at about US\$20 million. The WB/GEF is preparing a second project for financing.

GEF is supporting Conservation International, CEDIA, and ACPC with a US\$727,000 medium-sized grant for improved protected area management at Vilcabamba. INRENA's support for conservation in the Apurimac-Manu protected area complex region is clearly demonstrated by the July 2000 establishment of the Alto Purús and Amarakaeri Reserved Zones.

The government of Peru also seeks to promote greater involvement of local communities, particularly indigenous peoples, in the direct management of protected areas. The World Bank, with strong GEF financing, is supporting this effort through a project to manage globally important forest and freshwater ecosystems in the Peruvian Amazon, focused on the establishment of protected areas to be co-managed by indigenous people. This US\$24 million project will not directly affect the Vilcabamba-Amboró Corridor, as pilot areas are in other parts of the Amazon; however, the institutional experience gained through these co-management arrangements should be very valuable for INRENA and should help improve management practices in the corridor over the medium and long term.

In coordination with the project to involve indigenous peoples in the management of protected areas, the World Bank is also preparing to implement a project designed to strengthen indigenous and Afro-Peruvian communities and organizations to design and implement community development sub-projects, better articulate their proposals, and effectively utilize services offered by the State and other sectors within civil society. This project will be implemented in five pilot zones and will involve indigenous and Afro-Peruvian women's organizations. The Technical Secretariat for Indigenous Affairs (SETAI) and the Multisectoral Commission for Indigenous Affairs (CAI) will act as the major Peruvian government implementers.

In Bolivia, the World Bank is developing a 15-year project designed to conserve biodiversity by strengthening the national system of protected areas by:

1. developing a consensus-based long-term state vision of the national system of protected areas, including its management philosophy vis-à-vis decentralization and private sector participation;
2. developing mechanisms to achieve long-term social, financial, and ecological sustainability of this system;
3. establishing and capitalizing a private trust fund;
4. improving the management of protected areas in the short and medium term; and
5. enhancing understanding of biological trends within protected areas.

The first six-year phase of this project, to be financed at the level of US\$46.7 million (with US\$15.3 million in GEF funding), is going to the World Bank's board of directors for approval in November 2000 and will establish the basis for the longer-term program. Although this project requires considerable financial support, the sheer scope of bolstering Bolivia's emerging protected areas system is such that, even if this effort is very successful, SERNAP and FUNDESANAP will only be able to provide minimal levels of support for the existing protected areas. Furthermore, GEF funding will focus on only ten protected areas that are in particular need, only two of which — the Apolobamba Integrated Management Area (abutting Madidi National Park) and the Pílon Lajas Biosphere Reserve — fall within the Vilcabamba-Amoró corridor. Other donors, such as the German and Dutch governments, will provide funding for other protected areas in the corridor as part of the World Bank-led project.

Other significant projects in the environmental sector under development include:

- Indigenous and Afro-Peruvian Peoples Development Project;
- PROFONANPE II;
- Center for Biodiversity; and
- participation of civil society and the private sector in the conservation of biodiversity and protected areas.

Medium-sized World Bank/GEF projects in the Bolivian portion of the Corridor include a project to "Strengthen the Conservation of Madidi National Park through Applied Research, Monitoring and Management Capacity Building." Project objectives include developing scientific knowledge of the park, training professional personnel for scientific research, identifying and analyzing regional conservation threats, incorporating participation of local communities and other institutions in the process of addressing threats, and establishing interactive networks of research, training, and tourism with nearby protected areas in Peru and Bolivia. This project is still under development and will be implemented by Conservation International-Bolivia.

The **International Tropical Timber Organization (ITTO)**: ITTO is in the process of reviewing a two-year grant of about US\$1 million that would support the collection of environmental and socioeconomic data for Tambopata and Madidi and the development of a geographic information system to manage these data. The grant would also support participatory planning for the corridor and the identification and development of environmentally sound economic alternatives. CI and the governments of Peru and Bolivia will administer the project and provide counterpart funds worth about US\$340,000, bringing the project total to about US\$1.3 million over two years. This project will strongly complement the CEPF investment strategy discussed below.

United Nations Development Program (UNDP): UNDP/GEF is supporting a project on the Peruvian side of the Corridor entitled "Conservation and Sustainable Use of the Biodiversity of the Amaraeri Indigenous Lands," which is still in its preparatory stages. UNDP has also supported the development of a national biodiversity strategy in Peru and has provided financing for the development of regional tourism strategies in Tambopata and the "Region Inka." In Bolivia, the government is also preparing a national biodiversity strategy with UNDP support. The participation of SERNAP and National System of Protected Areas (SNAP) within this process is being supported by the German Government's Agency for Technical Cooperation (GTZ). Bolivia's National Biodiversity Strategy highly recommends strengthening of the national system of protected areas.

GEF/UNEP has funded a network of Conservation Data Centers managed by The Nature Conservancy. The Conservation Data Centers were established to provide updated biological information and scientific data that will aid in the identification of globally important priority sites and assist governments in the development and implementation of conservation strategies. There are two CDCs that support the Vilcabamba-Amboró region, one located in Bolivia and managed by the Bolivian NGO called TROPICO and the other is in Peru, located in the Forestry Department of La Molina University.

The **GEF Small Grants Programme (GEF/SGP)** was launched in 1992 by UNDP. The GEF/SGP provides grants of up to US\$50,000 and other support to community-based organizations and NGOs for activities that address local problems related to the GEF areas of concern. Since its inception, the GEF/SGP has funded over 1500 projects in Africa, North America and the Middle East, Asia and the Pacific, Europe and Latin America and the Caribbean. Today, the programme is operational in 50 countries, including Peru and Bolivia. In Peru, the program is housed within PROFONANPE. The GEF/SGP is collaborating with CARE in Bolivia and PRAIA to develop activities that will support Madidi National Park. Likewise, the GEF/SGP is supporting an indigenous organization called CIPTA in Tacana, near Madidi National Park.

The GEF/SGP recognizes the essential role that households and communities, applying locally appropriate solutions, can play in conserving biodiversity, reducing the likelihood of adverse climate change, and protecting international waters. The programme operates on the premise that people will be empowered to protect their environment when they are organized to take action, have a measure of control over access to the natural resource base, have the necessary information and knowledge, and believe that their social and economic well-being is dependent on sound long-term resource management. However, the GEF/SGP is more than simply a fund that provides small grants to improve the local environment. By raising public awareness, building partnerships, and promoting policy dialogue, the GEF/SGP seeks to help create a more supportive environment within countries for achieving sustainable development and addressing global environment issues.

The decentralized structure of the Small Grants Programme encourages maximum country- and community-level ownership and initiative.

Bilateral Donors

Finland: The Finnish embassy supports Programa Macchupichu and associated strategic planning efforts, as well as proposals to increase the size of Macchupichu.

Germany-GTZ and KfW: The German government, through its technical assistance (GTZ) and development loan (KfW) agencies, is a significant contributor to biodiversity conservation efforts in Peru. Germany also contributes to the protected areas system in Bolivia, as mentioned above, through SERNAP and other entities. GTZ and KfW are expected to provide US\$9.4 million in parallel financing for the World Bank/GEF project to strengthen SERNAP and its network of protected areas. German support targets four such areas: Sajama National Park, Tariquia National Reserve, Cotapata National Park, and Madidi National Park the latter two being part of the Vilcabamba-Amboró Corridor. The objective of this financing is to consolidate these protected areas and to strengthen the national management capacity. German financing supports:

1. development and implementation of protected area management plans, including investment,

- consolidation, protection, zoning, and tourism development;
2. legal establishment of the selected protected areas;
 3. infrastructure development and the acquisition of equipment;
 4. training; and
 5. the establishment of a fund to finance tourism development and other economic activities identified during implementation.

It is estimated that US\$3.7 million will be allocated for investments, US\$1.5 million for consulting services, and US\$1.1 million for implementation of related activities. Recurrent costs are estimated at US\$3.1 million over a four-year period, for a total of US\$9.4 million.

The Netherlands: The Dutch government supports the Programa de Desarrollo Basado en la Conservación en Tambopata (PRODESCOT) project. Conservation International-Peru manages the portion of this project related to buffer zones and natural resources management in and around the Tambopata-Candamo Reserve Zone (now Bahuaja-Sonene National Park). INRENA manages the portion related to the strengthening of the administrative functioning of Tambopata-Candamo. Funding for the second phase of PRODESCOT will end in the third quarter of 2000.

In Bolivia, the Dutch government financed the staffing of Madidi National Park and has supported protection efforts since 1997. Since 1999, and in conjunction with the World Bank/GEF, the Dutch government has funded the Project in Support of the Bolivian National Protected Areas System (PASNAPH, for *Proyecto de Apoyo al Sistema Nacional de Areas Protegidas Holanda*). PASNAPH promotes protection of eight lowlands parks including the Isiboro-Sécure Indigenous Territory and National Park, Carrasco National Park, Madidi National Park, Noel Kempff Mercado National Park, Amboró National Park, Manuripi Heath Amazonian National Reserve, Cotapata National Park, and the Beni Biosphere Reserve, five of which are located within the Vilcabamba-Amboró Corridor. PASNAPH will contribute US\$1 million per year to the protected areas system over six years (2000-2005 inclusive) via a sinking fund, for a total of US\$6 million.

It is important to note here that the Dutch government recently appointed a new Minister of Foreign Affairs who has initiated a review of all foreign assistance policies. As a result, Dutch funding may not be forthcoming for a third phase of PRODESCOT, and there is no guarantee that it will be available in either the medium or long term for environmental-sector projects in Peru. However, Bolivia remains on the list of countries that the Dutch are prepared to assist.

United States Agency for International Development (USAID): USAID, through its Global Bureau, recently awarded World Wildlife Fund significant three-year funding to expand its activities on the Bolivian side of the Corridor and to step up its efforts in Manu, Peru. World Wildlife Fund's project for the Madidi-Amboró corridor includes the following elements: initiation of a collaborative structure for defining and managing the corridor, gathering information to enhance the database of available knowledge, conducting analysis and planning to inform conservation decisions, establishing a monitoring system, and identifying and undertaking strategic actions that support a corridor conservation plan.

In Peru, USAID supports several activities under BIOFOR in Madre de Dios, including a comprehensive training program for local institutions that intend to implement biodiversity and forest management activities. USAID has also awarded four grants (total value of approximately US\$425,000) for the improvement of agricultural practices, management of fish resources, and the efficient harvesting of forest wood products. USAID also helped the Peruvian Amazon Research Institute complete Ecological Economic Zoning for Madre de Dios.

USAID/Peru also supports the Alternative Development (AD) Program, a joint U.S.-Peru counter-narcotics strategy that combines effective interdiction, law enforcement and coca eradication to drive down the farm-gate price of coca leaf with economic development to sustain coca reduction. The AD Program is supporting this strategy by:

1. building schools, health posts, potable water systems and strengthening community participation;
2. identifying and supporting certain economic activities;
3. rehabilitating critical roads and bridges;
4. strengthening environmental awareness and natural resources conservation; and
5. increasing awareness of the problems caused by drug abuse.

Within the corridor, this program is active in the Rio Apurimac/Ene area.

In Bolivia, USAID provides significant support for the Biodiversity in Regional Development (BiRD) project in Madidi. Conservation International-Bolivia is a lead implementer in this project, together with the Wildlife Conservation Society, CARE, the World Wildlife Fund, EcoBolivia, the Institute of Ecology, Missouri Botanical Garden, and Noel Kempff Natural History Museum, among others. This project entered its third and final year in October 2000. Its objectives are to increase scientific understanding of Madidi National Park's biodiversity, inform policy makers regarding the economics of conserving protected areas, and improve regional, national, and international awareness of the importance of Madidi National Park and the surrounding region to biodiversity conservation in the Tropical Andes.

USAID also supports the BOLFOR project, which helped pass legislation to establish a legal and institutional framework for the sustainable management of Bolivia's natural forests. With USAID funding through BIOFOR, Conservation International-Bolivia has collaborated with Conservation International-Peru to develop the concept of the Vilcabamba-Amboró corridor as an integrated conservation-planning unit.

In the Chapare region, at the southern end of the corridor between Isiboro-Sécure and Carrasco, USAID/Bolivia supports an Alternative Development program similar to that being carried out in Peru.

Peru/Canada Counterpart Fund: The Peru-Canada Fund (*Contravalor Perú-Canadá*) supports Conservation International-Peru's PRODESCOT project through a combination of grants and loans for the purpose of improving Brazil nut management and harvest in and around the Tambopata-Candamo Reserved Zone. The US\$296,000 in funding began in September 1998 and should continue until August 2001.

Other Donors

W. Alton Jones Foundation: The W. Alton Jones Foundation provided support within Madidi National Park by assisting in the purchase of land under a logging concession and also has begun extensive conservation work in Los Amigos Watershed in Peru.

John D. and Catherine T. MacArthur Foundation (Peru): The second phase of Conservation International-Peru's PRODESCOT project also receives funding from the MacArthur Foundation through a multiyear US\$130,000 grant approved in June 1997, which was recently approved at the level of US\$190,289 for a new three-year cycle. Funding under this proposal began in July 2000 and will support the characterization of wildlife and fisheries resources, implementation of management plans for wildlife, fisheries and agro-ecosystems in the buffer zone, and

dissemination of project results.

Government

Peru

COPESCO: COPESCO is a special project of CTAR-CUSCO and the regional government of Cuzco. CTAR-CUSCO, an agency within the Ministry of the President, was established to promote the integrated development of the greater Cuzco region. In the government's view, the greater Cuzco region includes Vilcabamba, Manu, and Tambopata, as well as Macchupichu and other important highland archaeological sites such as Choqekiraw and Saqsaywaman. In light of the tremendous environmental, cultural, and archaeological resources of this region, COPESCO was established to provide strategic support to the tourism sector. COPESCO projects include:

1. excavation and restoration of colonial and pre-Colombian sites and structures;
2. restoration of important works of art;
3. development of basic transportation infrastructure needed to access important sites;
4. strengthening of local towns and villages for the purpose of absorbing and accommodating tourists;
5. establishment of basic tourism infrastructure, such as hotels and restaurants in key towns and destinations; and
6. support for strategic tourism planning in the greater Cuzco region.

Instituto Nacional de Recursos Naturales (INRENA): Due to economic and political turmoil in the late 1980s and early 1990s, many protected areas in the corridor saw little evidence of any official presence. During that time, ProNaturaleza and other NGOs assumed park administration functions. INRENA's Protected Areas and Wildlife Directorate is now reasserting itself and taking the lead role in the planning and management of the region's protected areas, though management practices in Tambopata, Bahuaja-Sonene, and Vilcabamba remain inadequate. Nevertheless, INRENA appears to be committed to expanding its reach; the recent declarations of the Alto Purús and Amarakaeri Reserved Zones, and the expansion of Bahuaja-Sonene National Park, are all signs of this. PROFONANPE will help in managing these vast new areas, but institutional strengthening and consolidation of INRENA's operations in existing areas are definitely needed.

The good working relationships among INRENA, The Nature Conservancy, ProNaturaleza and Conservation International have resulted in draft master plan and zoning recommendations for the Tambopata-Candamo Reserve Zone and Bahuaja-Sonene National Park, which were prepared in late 1999.

National Environment Council (CONAM): CONAM is the Peruvian government's leading agency for environmental policy making in which it plays a high-level cross-sectoral role. USAID, among other donors, is supporting CONAM through its Sustainable Environmental and Natural Resource Management program, the first major activity under USAID's current ENR strategy in Peru. CONAM is also responsible for negotiating international accords related to biodiversity and is the focal point for the development of a national biodiversity conservation strategy.

National Trust for Protected Areas (PROFONANPE): As mentioned earlier, the World Bank approved a GEF-funded project in 1995 to support the establishment of PROFONANPE. This support will continue in a second phase.

A seven-member board of directors, including three from the Peruvian Government, three from

Peruvian conservation NGOs, and one from the GTZ, manages PROFONANPE. PROFONANPE has set a target of US\$40 million for the trust fund principal. PROFONANPE provides a reliable window for debt donations for environmental and development purposes, an option Peru did not have before the GEF endorsed the fund.

Technical Secretariat for Indigenous Affairs (SETAI): SETAI is a permanent part of the new organizational structure of the Ministry of Women and Human Development (PROMUDEH). Created in 1996, PROMUDEH seeks to establish and implement strategies for the inclusion of vulnerable groups in the development process. SETAI has been granted considerable authority to orient, coordinate, and articulate policies and multisectoral actions for the human development of indigenous and Afro-Peruvian populations. In addition, SETAI has proved to be an innovative technical secretariat charged with promoting participatory development. PROMUDEH also recently created a multi-sectoral Commission for Indigenous Affairs (CAI) composed of representatives from the public sector and indigenous organizations. CAI seeks to provide the Peruvian government with a unit that will allow different ministries and agencies to coordinate development efforts for the indigenous peoples of Peru. CAI and SETAI are collaborating to help develop and strengthen the organizational capacity of Peru's indigenous and Afro-Peruvian peoples with the ultimate goal of allowing these populations to take development into their own hands.

Bolivia

Ministry of Sustainable Development (MDS): The Ministry of Sustainable Development is the arm of the Bolivian government with the greatest direct interest in the Corridor. In 1998, the Ministry was reorganized and the SERNAP was created. The Dirección General de la Biodiversidad, also within the MDS and which had been in charge of protected area planning and management, still exists as well. The Vice Ministry of Environment, Natural Resources and Forestry Development (VMMARNDF) is part of this ministry.

Dirección General de la Biodiversidad (DGB): The DGB was responsible for protected area planning and the passage of the Supreme Decree that created Madidi NP-IMA in 1995, among other protected areas. Mario Baudoin, the founder of the Instituto de Ecología in Bolivia, which is considered the national science institute, directs the DGB. The DGB is now a department within the VMMARNDF, along with SERNAP. At the federal and site levels, DGB and SERNAP have close relationships with Conservation International-Bolivia, World Wildlife Fund (WWF), and other local and international NGOs.

National Protected Areas Service (SERNAP): Bolivia is making good progress in its establishment of a national system of protected areas. At present, 22 protected areas preserving 17% of the country have been created. These national parks, reserves and management areas cover 35 of the 50 major ecosystems or biogeographic provinces found in the country. Nevertheless, most protected areas in Bolivia need improvement in terms of management and enforcement, and the protected area system as a whole is in a process of overhaul and change.

The Ministry of Sustainable Development was reorganized in 1998 to create the SERNAP. This is now an autonomous institution whose responsibilities were formerly under the National Biodiversity Directorate (DGB). Gabriel Barracatt, a former NGO leader and staunch conservationist, directs SERNAP. Nearly 17% of Bolivia's land area has been designated as protected (18 protected areas), but only a small number of areas are considered well-managed. The World Bank/GEF is developing a major project to address protected area management issues.

Foundation for the Development of the National Protected Areas System (FUNDESNA): In response to the administrative problems and loss of credibility of FONAMA, the Bolivian government has decided to close this Fund and to replace it with a series of private or private/public Trust Funds to support specific environmental sectors. In the case of the protected area system, and as a result of the preparation of this Corridor project, the government has agreed to establish a new, private Trust Fund, FUNDESNA, with the specific objective of financing the recurrent costs of the protected area system. This trust fund will have a governance structure dominated by civil society, and its operating principles will be based on the key lessons learned through the GEF Evaluation of Trust Funds Study.

The Vice Ministry of Environment, Natural Resources and Forestry Development (VMMARNDF): There are several directorates within this Vice Ministry that have an influence on the corridor, including the Dirección General de Biodiversidad (DGB); Dirección de Calidad Ambiental; Dirección Forestal; Dirección de Ordenamiento Territorial; and Dirección de Cuencas. In general terms, the Vice Ministry sets broad environmental policies while the directorates focus on regulatory functions. SERNAP and the National Agrarian Reform Institute (*Instituto Nacional de Reforma Agraria*) also reside within this ministry, but they report directly to the minister and thus have greater autonomy than the departments. The World Bank notes that these agencies have initiated consultation processes, in the past but have limited capacity to intervene in the field and less capacity to organize wide-ranging consultation processes with stakeholders. It is crucial to strengthen their capacity, ensure that they become sustainable and efficient in order to ensure that they are able to conduct these types of processes in the future.

Vice Ministry of Indigenous Affairs and First Peoples (VAIPO, for *Vice Ministro de Asuntos Indígenas y Pueblos Originarios*): This Vice Ministry resides within the Ministry of Sustainable Development and Planning. VAIPO's mission is to formulate, promote, apply and supervise the objectives, policies, strategies, and programs of the Bolivian state regarding indigenous peoples, and to do so with respect for the cultural, economic, organizational, political, and social values of those peoples. Half the population of Bolivia, about 4.2 million people, belongs to one of 37 different indigenous groups. Half of these people reside in indigenous reserves, several of which either border or overlap with protected areas in the corridor. Given VAIPO's goal of improving the quality of life, advancing the socioeconomic status, and affirming the cultural identity of Bolivia's indigenous peoples and the large presence of TCOs in the corridor, this agency will be a major partner in the establishment and promotion of conservation initiatives.

NGOs and Civil Society

Peru

Cutivireni Patrimony Conservation Association (ACPC): ACPC, together with CEDIA, is active in the Vilcabamba region and has long been an advocate for improving the livelihoods and land tenure security of indigenous groups in the region. ACPC and CEDIA are partners of Conservation International-Peru in the World Bank/GEF-sponsored medium-sized project in Vilcabamba.

Amazon Conservation Association (ACA): The Amazon Conservation Association has proposed a plan that would conserve the entire 1,000,000-hectare Los Amigos watershed to the north of the Madre de Dios River. This watershed would provide a direct link between the Bahuaja-Sonene National Park and Manu National Park. Conservation International, through its newly created Tropical Wilderness Protection Fund, is providing technical assistance (so far

limited to economic analysis of conservation options in the watershed, including the leasing of conservation concessions) and funding for infrastructure development and other project expenses. ACA also receives support from the W. Alton Jones Foundation. Coordination between ACA and Conservation International-Peru is strong. Thus, it may be possible to expand the scope of the ACA plan to include the Las Piedras watershed, further to the north, an area that is inhabited by an isolated indigenous group that has great potential for ecotourism and is an important Brazil nut zone. The indigenous population is actively resisting the penetration of mining and timber concerns in this area and, along with FENAMAD, the organization that represents them, are natural allies of Conservation International and other conservation groups.

Southern Jungle Conservation Association (ACSS, for *Asociación para la Conservación de la Selva Sur*): The ACSS originated as the "Friends of Manu," and has worked in the national park of that name. The organization conducts ecotourism operations and now works in the Lago Sandoval area near Puerto Maldonado.

Peruvian Conservation Association (APECO, for *Asociación Peruana para la Conservación*): APECO's focus is on environmental education. The association has a formal agreement with Peru's Ministry of Education to develop a training course for teachers to integrate environmental education into their curricula. APECO is also active in Manu National Park.

CARE: CARE's Multi-Sectoral Population Project improves the quality and availability of family planning information and services for 300,000 families living in high-need areas. CARE provides material and technical assistance to the National Reproductive Health Services Program. The project builds on existing projects by using community organizations as sources of volunteers, working in more than 1,400 rural and peri-urban communities in Piura, Cajamarca, La Libertad, Loreto, Ancash, Puno and Ayacucho.

Amazonian Indigenous Development Center (CEDIA, for *Centro de Desarrollo Indígena Amazonica*): CEDIA, together with ACPC, is active in the Vilcabamba region and has long been an advocate for improving the livelihoods and land tenure security of indigenous groups in the region. CEDIA and ACPC are partners with Conservation International-Peru in the medium-sized World Bank/GEF project underway in Vilcabamba.

Centro Eori: This group's focus is on strengthening local communities and their capacity for development and conservation of resources. Centro Eori has worked to assist native communities in gaining recognition for their territorial rights, has conducted related research in the Ese'ejá communities, and has assisted other organizations such as FENAMAD and FADEMAD (see below).

CESVI: An Italian NGO, this group has aims similar to those of FENAMAD (see below), which include aid to Ese'Eja communities for needs such as Brazil nut dryers, wells, and small animal husbandry.

Comercio Alternative para el Desarrollo de Productos no Tradicionales para Latinoamérica (CANDELA): Candela's work centers on marketing alternative forest products. Its Puerto Maldonado operation has focused on Brazil nut marketing strategies to increase benefits to nut collectors. Support for Candela has come from the European donors and through Conservation International-Peru.

Conservation International-Peru: Conservation International-Peru was an early advocate for creation of the Bahuaja-Sonene National Park, having conducted a Rapid Assessment Program (RAP) expedition in the area that provided supporting evidence for the park's importance. Currently Conservation International-Peru is involved in a variety of activities including work on sustainable agriculture along the Cuzco road, work to increase efficiency of Brazil nut collection in the lower Madre de Dios basin, promotion of shade coffee in the Puno portion of the area, fauna and fisheries management, and management of non-timber forest products. These activities comprise the PRODESCOT (Tambopata Program for Conservation-based Development) initiative, which will complete its second and final phase in late 2000. In addition, Conservation International-Peru helped monitor the biological impacts of Mobil Oil Corporation's operations in the Tambopata Reserved Zone (prior to its inclusion in the Bahuaja-Sonene National Park), with funding from the company's foundation, and is active in the Vilcabamba region, with support from a World Bank/GEF medium-sized grant. The latter project focuses on increasing the capacity of government and indigenous groups to manage the Apurimac Reserved Zone and surrounding indigenous territories for conservation purposes.

Federación Agraria Departamental de Madre de Dios (FADEMAD): FADEMAD represents 5,000 farming families who live along the principal roads and rivers of Puerto Maldonado. FADEMAD's objective is to increase the sustainability of colonist agriculture and it has collaborated with Conservation International-Peru in natural resource management projects in the buffer zone of the Bahuaja-Sonene National Park.

Federación de Nativos de Madre de Dios (FENAMAD): FENAMAD represents 40 indigenous groups in the province of Madre de Dios, four of them in the Tambopata area. Within the Tambopata Reserved Zone it assists the native communities with Brazil nut management and the use of river turtles, among other projects.

Fundación Peruana para la Conservación de la Naturaleza (ProNaturaleza): With a staff of more than 150, Pro Naturaleza is one of the largest environmental organizations in Latin America. ProNaturaleza played a lead role in the management of the Pampas del Heath National Sanctuary (now the Bahuaja-Sonene National Park) from 1990 to 1996. The group did not have a presence in the Madidi region in the mid 1990s, but has reestablished its Puerto Maldonado base and will now focus on conservation of Bahuaja-Sonene National Park and the northern portion of the Tambopata Reserved Zone (now incorporated into the Bahuaja-Sonene National Park). ProNaturaleza receives funding from the Dutch Embassy in Lima, as part of the PRODESCOT project, to support INRENA in the management of the park. This funding will end in late 2000. The group has also worked in the Amaraeri region between Tambopata and Manu since the mid-1990s, though there is speculation that it will leave that area. The Nature Conservancy and ProNaturaleza are major partners.

PREVIT: This NGO has supported projects in Aymara and Quechua communities in the Puno portion of the Tambopata-Candamo Reserved Zone.

Tambopata Research Society (TREES): TREES supports small-scale conservation activities, particularly in biological research. TREES has carried out wildlife monitoring work both in the northern and southern portions of the region and has investigated the impact of human activities on local fauna.

The Nature Conservancy (TNC): Within the corridor, TNC is most active in Bahuaja-Sonene National Park as a major supporter of ProNaturaleza.

Wanamey: This organization promotes education on environmental themes in Puerto Maldonado.

World Wildlife Fund (WWF): The World Wildlife Fund was instrumental in the successful establishment of Peru's Manu National Park. WWF continues to support the park and has expanded its efforts to include the Amarakaeri area to the southeast of the park. As part of its Southwestern Amazon Ecoregion program, WWF will support efforts for an "upgrade" of the institutional status of the Manu Reserved Zone to the definitive protected area category of National Reserve. Manu Reserved Zone comprises 257,000 hectares on the border of Manu National Park. Final categorization of the Manu Reserved Zone and subsequent activities related to this will strengthen the Manu Biosphere Reserve and directly contribute to the establishment of the Vilcabamba-Amboró Corridor. WWF's projects in Peru complement its projects in Bolivia.

Bolivia

CARE: CARE has established an integrated conservation and development project serving 120 families in six communities located in the Madidi buffer zone. The project helps indigenous and new migrant communities build rural water and sanitation systems, protect watershed areas and promote sustainable forms of land use. CARE is now expanding that project to a projected 35 communities, providing assistance to the government in management of the park and developing the park's management plan together with the Institute of Ecology, Wildlife Conservation Society, and Conservation International. At the southeastern end of the corridor, the Amboró Conservation and Development Project seeks to conserve the natural resources of the Amboró National Park in Santa Cruz Department while promoting sustainable economic development among 2,000 impoverished families who live nearby. Project activities include strengthening the capacity of local authorities and NGOs to effectively manage the protected area and protect its natural resources, promoting farmers' direct involvement in the research and development of high-impact agroforestry practices and promoting sustainable forest resource management.

Cultural Defense Center (CEDEC, for *Centro de la Defensa de la Cultura*): CEDEC is a local NGO that has been implementing health programs based on malaria eradication and emergency response in and around the Madidi National Park since 1996. The group is also developing a crafts center in Tumupasa and intends to expand its activities to include sanitation linked to productive activities.

Conservation International-Bolivia: Conservation International-Bolivia was an early advocate for creation of the Madidi National Park and Integrated Management Area, following documentation of the area's biodiversity in a 1990 RAP expedition. Since 1994, Conservation International-Bolivia has worked on nursery production, agroforestry research and implementation of a community ecotourism project within the integrated management zone, with support from the IDB's Multilateral Investment Fund. The project has social/health development, enterprise and scientific research components. Since 1995, Conservation International-Bolivia has monitored impacts and threats posed by logging, hunting, roads and oil/gas development, and in 1997, launched an outreach campaign that focuses on endangered primates and the impacts of illegal hunting on species and nature-based tourism, and conducted a second RAP expedition to Madidi. In 1998, Conservation International-Bolivia began the second phase of its IDB project, which is scheduled to end in December 2000, while discussions for Phase 3 are already underway. Also in 1998, Conservation International-Bolivia initiated activities under USAID's Biodiversity in Regional Development (BiRD) project. The BiRD

project will enter its third and final year in October 2000.

Environmental Defense League (LIDEMA, for *Liga de Defensa del Medio Ambiente*): LIDEMA, a high-profile network of NGOs established in 1985, is one of Bolivia's leading environmental organizations. Its mission is to contribute to environmental protection and sustainable development through programs in environmental management, conservation planning and education, basic and applied research, support for the management of protected areas, and promotion of ecotourism and appropriate technologies. LIDEMA receives funding from USAID, UNDP, the Dutch Embassy, WWF, and the MacArthur Foundation, among others. Among its many projects, in 1998 LIDEMA organized a workshop on "The Enforcement of Environmental Laws in the Framework of Judicial Reform in Bolivia." Other current projects include a UNDP-funded small grants program, a national program on training for institutional development and strengthening, and the "Campaign for Quality of Life."

Friends of Nature Foundation (FAN, for *Fundación Amigos de Naturaleza*): FAN is a partner of The Nature Conservancy and has a significant presence in Amboró National Park and Integrated Management Area. The collaboration includes the hiring and training of park staff, development of positive relationships with local communities, purchase and installation of communications and transportation equipment, and the construction of control posts and visitor facilities.

Institute of Ecology, University of San Andres: The Institute of Ecology is a major conservation research institution in Bolivia. The Institute is part of the Faculty of Pure and Natural Sciences, itself a division of the University of San Andres' Postgraduate and Social Interaction Research unit. The Institute has a broad range of activities, including basic and applied research, consulting, and environmental assessments. It maintains strong links with the DGB and with international organizations such as Ramsar. Within the corridor, the Institute is involved in several projects, including the USAID-funded BiRD project in Madidi, development of the management plan for Apolobamba, analysis of the environmental impacts of the roads near Cotapata, and evaluation of the environmental impacts of the San Borja-Trinidad road.

Noel Kempff Natural History Museum: The Museo Noel Kempff in Santa Cruz is one of the most prestigious conservation research institutions in Bolivia. Staff has ongoing research in all of the protected areas in the Department of Santa Cruz, including Amboró National Park. The Museum has a strong collaborative relationship with the Bolivian government and national and international NGOs. The Department of Communications and Environmental Education is dedicated to increasing public awareness of the importance of biodiversity conservation and improving natural resource management. The Museum was part of the team that prepared the management plan for Amboró and has extensive collections of its flora and fauna. Botanists have installed four permanent vegetation plots there and have conducted research on the population biology of tree ferns and economic botany.

Vertebrate data for Amboró is also extensive, including a detailed study of the spectacled bear. The invertebrate collection is particularly large, and staff recently published a guide to the butterflies of Amboró. The Museum has a wildlife management and monitoring program in Amboró and Pilon Lajas, as well as a botanical monitoring project in Amboró and the surrounding Natural Integrated Management Area.

The Museum has a sophisticated Remote Sensing/GIS lab that is producing a georectified satellite image mosaic of the Vilcabamba-Amboró corridor. The lab has digital elevation models

for Amboró, Carrasco, and Madidi (in part) and vegetation maps for all Bolivian protected areas in the corridor (and elsewhere in the lowlands), as well as other digital archives of the corridor area. The RS/GIS lab has experience in detecting changes in land use and land cover, and in modeling future land use.

The Nature Conservancy (TNC): TNC is active in Noel Kempff National Park in the Department of Santa Cruz and in the Tariquia Flora and Fauna National Reserve in southern Bolivia. In the corridor, TNC supports the work of the FAN in Amboró National Park.

The Smithsonian Institution: The Smithsonian Institution developed an assessment completed in 1997 entitled "Biodiversity Assessment and Long-Term Monitoring: Lower Urubamba Region." This provided a detailed assessment of the region and was made available in Spanish and English.

Union of Workers and Social Action Institutions (UNITAS, for *La Union de Instituciones de Trabajo y Acción Social*): UNITAS is an umbrella organization of 23 NGOs dedicated to the creation of a democratic, equitable, and just Bolivian society through the establishment of development alternatives. UNITAS works closely with grassroots social development organizations and provides them with coordination support, technical assistance, and other forms of institutional strengthening. UNITAS supports the efforts of grassroots organizations to increase their involvement in local and regional development decision-making and backs the development of a national decentralized system of private development assistance organizations. Given the importance of developing strong networks of communities, indigenous groups, NGOs, and other civil society bodies for the purpose of conservation in the corridor, UNITAS would be a key partner in the corridor support alliance.

Veterinarians Without Borders (VSF, for *Veterinarios Sin Fronteras*): VSF has co-managed the Pílon Lajas Biosphere Reserve, where it has worked with colonists and the indigenous Chimáne people.

Wildlife Conservation Society (WCS): WCS is active in Madidi National Park, the Apolobamba Integrated Management Area, the Pílon Lajas Biosphere Reserve, and a proposed Tacana Indigenous Territory near Madidi. Their program focuses on research and management of five wildlife species with landscape-scale requirements: the tapir (*Tapirus terrestris*), the white-lipped peccary (*Tayassu pecari*), the spectacled bear (*Tremarctos ornatus*), the Andean deer (*Hippocamelus antisensis*), and the jaguar (*Panthera onca*). The landscape conservation approach will ensure that significant tracts of natural and semi-natural habitat will retain a high conservation value while providing the local population with incentives to adopt a sustainable management practices.

WCS is also involved in strengthening the National Directorate for Biodiversity (*Dirección General de Biodiversidad*) and the Institute of Ecology, and providing technical and legal assistance to the Tacana Indigenous Organization in support of their request for an indigenous territory bordering Madidi National Park.

World Wildlife Fund (WWF): WWF has developed a major project that focuses on protection efforts within a string of national parks and indigenous reserves along the eastern foothills of the Andes, beginning with the Amboró National Park at the southern limit and extending northwesterly to Madidi National Park and into Peru. With support from USAID, WWF is working in both countries to develop sound management of these areas, forming an ecological

corridor that will link with Tambopata-Candamo, Bahuaja-Sonene, and Manú protected areas in Peru.

As part of this initiative, WWF works with SERNAP to:

1. properly zone the corridor;
2. propose a participatory process for improving control measures;
3. develop a monitoring system as an analytical tool; and
4. focus on policy development and interactions with multinational organizations, such as the hydrocarbon and mining industry.

CEPF NICHE FOR INVESTMENT IN THE REGION

In developing this profile, root causes considered included: demographic increase in the highlands of Peru and Bolivia; economic and social marginalization in the highlands; and national-level policies that encourage resource extraction and infrastructure development that directly or indirectly threaten biodiversity. More proximate threats include local community activities that are incompatible with biodiversity conservation; small-scale/informal mining; and lack of local awareness of conservation issues and biodiversity values. Given the relatively small amount of money available through CEPF for this corridor, project designers had to make some choices regarding resource allocation. This project is fundamentally regional and transboundary in its approach. As such, it proposes to tackle some national-level root causes directly, such as policies regarding natural resource extraction and infrastructure development. In other cases, it addresses more proximate-cause issues, such as problems at the level of communities and municipalities. The communications component seeks to build a constituency ranging from ministers and the general public in capital cities to the most local of polities and communities. Recognizing that its resources are limited, CEPF has always proposed to play a strategic coordination role and in so doing leverage considerably more resources in support of conservation than it could possibly bring to the table itself. In this spirit, CEPF proposes to invest significantly in activities that will focus the many disparate efforts at work in this vast corridor while ensuring that the best and most objective information is available to shape decision-making by a broad range of actors. In this way, CEPF expects to influence the root causes of biodiversity loss, albeit indirectly in some cases.

It has been determined that the most strategically compelling niche for CEPF is to focus on filling the gaps between existing efforts and investments. For this reason, defining the mechanisms to ensure the proper coordination among existing efforts is a major component of each of the profiles.

It must also be understood that the set of CEPF objectives is not meant to resolve all of the threats described in the profile. CEPF is one small element of much larger strategies in each ecosystem. Given the current levels of investment, the programs and strategies already in place and those anticipated, CEPF strives to fill a particular niche that has yet to be addressed at the level required for positive impact. This niche, and the main objective of CEPF, is to provide civil society, organizations, and individuals with the capacity to manage biodiversity conservation more effectively. CEPF focuses on this group based on the hypothesis that sustainable biodiversity conservation will only be realized if civil society groups existing within the critical ecosystems drive the process. To extend the logic, if these groups become the actors and voices for biodiversity conservation, then decision-makers will begin to incorporate these issues into national and transboundary policies, legislation and action. Only if this impact is achieved will resources from CEPF be able to realize sustainable biodiversity conservation.

CEPF INVESTMENT STRATEGY AND PROGRAM FOCUS

Overview

The assessment of current investment in the corridor demonstrates that the international donor community is keenly interested in the conservation of the Vilcabamba-Amboró Corridor and that there is a strong national and international NGO presence in the region. Grassroots organizations and indigenous group representation are also well established.

Despite significant threats to the corridor, the presence of so many groups with an interest in conservation provides tremendous opportunities to find lasting solutions to the Corridor's problems. The problem of vulnerable and inadequately managed protected areas can be addressed by the major infusions of resources planned by the international donor community, if done in close collaboration with national government, local and international NGOs, indigenous people, local communities, and local governments.

Establishing a uniform information system for the corridor that will contain data on biodiversity, threats, and socioeconomic conditions can address the problem of limited coordination and information sharing. Data for this information system can be gathered through a coordinated assessment that capitalizes on the considerable knowledge of the many institutions in the region.

A monitoring system that builds on this assessment, and that uses the corridor information system to manage the data, can provide timely and accurate information to policy-makers and assist their decision-making regarding infrastructure and agricultural development projects, as well as the siting of mineral, timber, and hydrocarbon concessions.

A concerted program to raise awareness regarding the environmental importance of the corridor can indirectly influence public officials, and other groups, and can contribute towards building a conservation constituency for the corridor. The problem of rural development that is incompatible with biodiversity conservation can be addressed by presenting alternative development options to strategic communities.

CEPF will support strategic initiatives that complement existing and proposed investments in conservation and thereby take advantage of the relatively strong presence of conservation NGOs in the region. While current trends in conservation investment are encouraging, most maintain a tight site focus, although there are important national-scale initiatives such as the World Bank/GEF support for strengthening Bolivia's National System of Protected Areas. The corridor concept will bring efforts of both narrow and broad geographic focus into synergy in an area of the highest biological importance within the Tropical Andes Hotspot. CEPF funding should be used to create a framework of activities, ranging from biodiversity audits and threat assessment to strengthen existing protected areas and create new ones. This framework will sharpen the focus of government agencies, NGOs, and indigenous communities already at work in the corridor, establish a consensus for action among these groups, and strengthen alliances.

Conservation objectives

As a result of CEPF intervention, the protected areas and natural habitats of the Vilcabamba-Amboró Corridor should be functionally associated. To achieve this, key stakeholders must improve their awareness of environmental issues and translate that improved awareness into respect for protected areas and adoption of conservation-compatible land uses throughout the corridor.

The major elements necessary to establish a corridor support framework and to contribute to the achievement of the conservation goals are described below.

1. Establish Effective Mechanisms for Transboundary Coordination, Collaboration and Catalytic Action within the Vilcabamba-Amboró Corridor

For the Vilcabamba-Amboró Corridor to serve as an effective conservation-planning unit, it is essential to establish effective mechanisms for transboundary coordination, collaboration and catalytic action. Such mechanisms might take the form of a formalized coordination unit established by one or more collaborating organizations. In addition, processes for stakeholder involvement and buy-in will be included amongst the various mechanisms to be supported by CEPF. Finally, a core binational working group of NGOs and government agencies should be supported for the purpose of achieving effective coordination and collaboration. This should be coupled with a small-grants or action fund mechanism to be managed within the region and aimed at supporting grassroots initiatives, community outreach, time-sensitive research and other similar small-scale projects. Thus, to achieve its strategic focus, CEPF should facilitate the development and support of projects that seek to:

- coordinate the establishment of strategic alliances and initiate a collaborative structure for defining and managing the corridor;
- provide an interface between CEPF and grant recipients;
- provide a repository and clearinghouse for information about the corridor;
- conduct analysis and planning to inform conservation decisions;
- develop a monitoring framework;
- identify and undertake strategic actions that support a corridor conservation plan;
- act as a neutral forum and host for meetings and workshops; and
- manage a conservation action fund for the corridor.

2. Strengthen Binational Coordination of Protected Areas Systems

Three major protected area complexes, one of which is binational, characterize the Vilcabamba-Amboró Corridor. As discussed in the review of threats, these complexes are, as a rule, large, recently declared, under-funded, and poorly managed. There are also shortcomings in the policy frameworks that underpin the management of these areas. To address these issues, there are major national-level projects underway in Peru and Bolivia to strengthen protected areas by formulating strategic plans; building financial and administrative capabilities; establishing joint management arrangements among NGOs, indigenous groups, and communities; and ensuring long-term monitoring and management systems in protected areas throughout the corridor. However, it is also necessary to coordinate the planning and implementation of protected areas in the broader binational corridor. CEPF should support projects with this objective.

Ideally, Peru and Bolivia will establish a set of complementary protected area management strategies, share information across their borders, and encourage exchanges of protected area managers. CEPF should ensure such coordination through the mechanisms outlined above. Also, because a good deal of the funding available for protected areas management will be provided from bilateral and multilateral donors to the governments of Peru and Bolivia, CEPF should adopt a strategic focus of providing support to NGOs, indigenous groups, and local communities so they can participate fully in the planning and management process. This support might be provided for protected area planning workshops that include these groups, or possibly for national and binational exchanges of protected area managers and the eventual inclusion of local participants in the actual management of protected areas. Finally, though there are significant funds earmarked for protected areas from the large lending agencies, the sheer

size and number of protected areas in the corridor means that these funds, while crucial, will probably only cover the most basic needs. CEPF, through careful coordination with donor agencies and other groups, will focus on identifying and supporting strategically important, yet unmet, management needs within the protected areas covered by the corridor.

3. Encourage Community-based Biodiversity Conservation and Natural Resource Management

There are hundreds of indigenous, mixed-race, and colonist communities in and around the Vilcabamba-Amboró Corridor. While some of these communities currently pose a threat to conservation efforts within the Corridor, they should be viewed as crucial partners in the long-term. To this end, CEPF should catalyze a series of initiatives to strengthen the social underpinnings necessary for community-based biodiversity conservation and natural resource management. These initiatives should focus not only on the problems of development, e.g., lack of education and health services and limited economic alternatives to environmentally damaging practices, but also on building community environmental awareness and capacity for resource management and conservation. As a precursor, CEPF anticipates the need for ethnographic analyses to be carried out on traditional knowledge, attitudes and environmental practices among rural populations. Support will also be available for a series of participatory workshops involving local communities and indigenous unions in defining action plans and establishing alliances.

It is evident that many donors, government agencies, and NGOs are interested in finding development alternatives for communities in environmentally fragile areas. These areas often overlap with coca production areas, so considerable resources are available to explore and implement alternatives. However, even with these resources, it is not possible to reach all the communities that pose a threat to biodiversity conservation. Therefore, CEPF should identify, based on the analyses and workshops mentioned above, project opportunities with communities that stand the best chance of being models for other communities. These projects should develop approaches that can be replicated elsewhere without a high level of intervention on the part of project implementers. The leveraging opportunity provided by such an approach is presently very significant within the Vilcabamba-Amboró corridor.

4. Strengthen Public Awareness and Environmental Education

Poor understanding of the Vilcabamba-Amboró Corridor's environmental importance among a broad range of "publics" is one of the chief problems facing this conservation initiative. CEPF will seek to identify projects that will build a constituency to support corridor implementation at many levels, ranging from donors and governmental decision-makers to local communities. A focused communications strategy and media campaign might include environmental radio shows/television spots, training of local media, video documentaries, teacher training and the development of environmental curricula.

5. Strengthen Environmental Policy and Legal Frameworks to Mitigate the Impacts of Extraction Industries, Transportation and Infrastructure Projects, and Large-scale Tourism

Mining, logging, road building, agricultural expansion, dam construction, hydrocarbon development and unregulated tourism pose some of the most significant threats to the integrity of the Vilcabamba-Amboró ecosystem. These activities are often driven by broader macroeconomic policies that often suffer from a lack of consideration of their environmental impacts and costs. Projects that seek to influence donors, policy makers, concessionaires, and others for the purpose of mitigating the effects of infrastructure and agricultural development

projects, extractive industries, and large-scale tourism provide a major strategic opportunity for CEPF. A diverse set of projects would include detailed threat assessments (including reviews of macroeconomic drivers and development), development of policies and legal recommendations, and stakeholder and other participatory processes.

The CEPF effort will draw on and complement the increasing interest of the international donor community in mitigating the impacts of extractive industries, especially oil and gas producers. The project being developed by the World Bank to boost the environmental management capacity of the hydrocarbon sector in Bolivia is a case in point.

6. Establish an Electronic Information Exchange and Coordinated Information and Data Gathering Mechanism

A moderate amount of information is available regarding the biological, economic, social and cultural characteristics of the Vilcabamba-Amboró ecosystem, as well as the threats posed by extractive industries, infrastructure projects and other forces. Nevertheless, there is a great need to refine this information and adapt it to the needs of organizations that play an active role the corridor framework. There is also a need to significantly increase the amount of information required for sound planning and management practices inside the corridor. Effective landscape-based planning requires ongoing monitoring and swift information exchange among decision-makers, communities, protected area managers, and other actors. Ongoing monitoring and information exchange is presently taking place only in the most rudimentary form. CEPF can fill a major and strategically important niche by supporting the development of monitoring frameworks and catalyzing the establishment of an integrated information system that provides links between the major "building blocks" (protected areas, indigenous reserves, etc.) of the corridor. To achieve this strategic focus, CEPF should support projects that seek to:

- conduct regional biological assessments to create comprehensive lists of vertebrate species, standardized vegetation types, associated plant species, and highest priority areas for biodiversity conservation;
- conduct multi-temporal analyses of changes in land use and land cover, much of which can be done with remotely sensed data (Landsat images, aerial photos, etc.);
- coordinate field research to obtain detailed information in areas of rapid change and in established field projects;
- establish new field research opportunities, particularly regarding the impacts of human activity on biodiversity;
- develop a unified database — organized by hotspot, corridor, project, and site — accessible by all CEPF participants and other targeted groups; and
- establish an electronic information exchange mechanism for CEPF participants and others within the ecosystem.

SUSTAINABILITY

The CEPF investment strategy will be funded over a period of three years and represents the beginning of a larger process to bring about sustainable biodiversity conservation within the region. It is therefore important to highlight the sustainability of the CEPF strategy beyond the initial three-year funding period. There are three key elements to the sustainability of these objectives; the first, already noted, is a tremendous current level of investment within the region by several multilateral and bilateral organizations, government agencies, and international and local NGOs. In order to build on this, CEPF plans to encourage sustainability by building local capacities, the second key element of sustainability. Much of the implementation of biodiversity conservation efforts is currently done by outside organizations and the focus of CEPF is to build

local capacities to take over much of this role and for these civil society groups to take the lead on conservation efforts. Capacity alone, however, may not be sufficient. Financial resources for biodiversity conservation will remain a critical issue for sustainability. For this, through cultivation of partnerships and alliances, CEPF hopes to leverage new funding for biodiversity conservation. This is the third element of sustainability. It is expected that quality results from CEPF projects will generate increased interest and confidence in the donor community leading to increased investment. The combination of local capacity and increased overall funding, together with current levels of investment in the region, should lead to greater biodiversity conservation impacts that can be sustained for a long time to come.

While the overall sustainability hypothesis is logical and sound, there will be much to learn from each individual CEPF grant project. Accordingly, all project proposals will include a section in which external risk factors and long-term sustainability issues will be addressed. Projects will be required to highlight key external factors that might reduce the benefits of their activities and discuss plans to mitigate these. Applicants will also explain how they see the objectives of their specific projects carrying forward after the initial CEPF funding period. All of this will be shared on the CEPF web site, allowing other project teams to learn from successful risk mitigation strategies and sustainability measures put in place by various projects. To continue this process after the initial project design phase, grantees will revisit these issues in each of their quarterly project performance reports. The purpose is not only to highlight risk and sustainability at the outset, but also to track these critical issues throughout the life of each project.

CONCLUSION

The Vilcabamba-Amboró corridor encompasses perhaps the most biologically diverse terrestrial habitat in the world. This corridor is also incredibly rich culturally, in some cases sheltering indigenous people who choose not to come into contact with modern society. The corridor is recognized as a rich environment by a wide range of constituents, donors, NGOs, and others, and considerable funding is starting to flow into this remarkable area to support large, landscape-scale conservation efforts. In large part this corridor is intact, has numerous large protected areas, and remains relatively sparsely populated compared to other parts of the Tropical Andes and Amazonia. These conditions are changing, however, as migrants from the over-populated and resource-depleted highlands of Bolivia and Peru move into the region. The extraction of oil, gold and timber, combined with colonization and deforestation for agriculture, is affecting much of the area. Conflicts in land tenure, with timber concessions and indigenous territories overlapping protected areas, also complicate conservation efforts.

Notwithstanding these threats, there is a window of opportunity to protect this corridor as a whole and to guarantee its future, both as a biological and cultural treasure house and as a source of livelihood for tens of thousands of people. The Vilcabamba-Amboró corridor does not yet exist formally: it only exists in an abstract form as a series of increasingly sophisticated maps, and thus needs to be established. The activities proposed herein — including biodiversity and threat assessments, and measures to strengthen protected areas — provide the fundamental framework to establish this corridor as a formally protected entity. By refining the focus of the groups working — and living — the corridor, by establishing a consensus for action among these groups, and by forging a series of strategic alliances, this framework will increase the impact of scarce conservation resources and help prevent duplication of efforts.

APPENDIX 1

Constituents in the Vilcabamba-Amboró Corridor

Sector	Peru	Bolivia
Government	<ul style="list-style-type: none"> • INRENA • PROFONAMPE • PROMPERU • Districts • IIAP • Municipalities • Sectoral Ministries • Agriculture • CTAR (Dep. Level.) • Secretariats • Sectoral Directorates • Plan COPESCO • SETAI 	<ul style="list-style-type: none"> • SERNAP • FUNDESNAP • Municipalities • Sectoral Ministries • Sustainable Development • Vice ministries • Sectoral Directorates
Binational Donors	<ul style="list-style-type: none"> • Finland • Canada • Holland - regional • Germany • USAID • England • Spain • Switzerland 	<ul style="list-style-type: none"> • Holland –regional level • Canada • Germany • USAID –Corridor level • England • Spain • Switzerland
Multilateral donors	<ul style="list-style-type: none"> • WB - regional • IDB • CAF • GEF • UNDP • ITTO – regional Tambopata/Madidi 	<ul style="list-style-type: none"> • World Bank • IDB • CAF • GEF • ITTO - regional
Private Sector	<ul style="list-style-type: none"> • Chambers of Tourism • Chambers of Commerce • Forestry companies • Mining companies • Oil and Gas companies • Beer companies • Tourism companies • IRG/BIOFOR 	<ul style="list-style-type: none"> • Chambers of Tourism • Chambers of Commerce • Forestry companies • Mining companies • Oil and Gas companies • Tourism companies
Academic Sector	<ul style="list-style-type: none"> • Universidad del Altiplano • Universidad de Madre de Dios • UNSNAC • ISP – Maldonado • IST – Maldonado 	<ul style="list-style-type: none"> • Universidad de San Andres • Universidad NUR • Colección Boliviana de fauna • Museum of Natural

Sector	Peru	Bolivia
	<ul style="list-style-type: none"> • Museum of National History 	History <ul style="list-style-type: none"> • Herbario Nac. de Bolivia • Universidad San Simon • Universidad de Gabriel Rene Moreno
National NGOs	<ul style="list-style-type: none"> • ProNaturaleza • Asociación Agricultura Ecologica – Madre de Dios • EORI – Madre de Dios • CESVI • ACPC - Apurimac • CEDIA - Apurimac • APECO – Manu • Racimos de Ungurahui 	<ul style="list-style-type: none"> • LIDEMA • AOPEB: Asociación de Productores Ecologicos de Bolivia • CEDEC • Agriculture Cooperatives • Indigenous Unions (CIDOB) • FAN • CIIDEBENI
International NGOs	<ul style="list-style-type: none"> • WWF • TNC • CARE • WCS • Greenforce • TREES • Smithsonian Institution • Chicago Field Museum 	<ul style="list-style-type: none"> • WWF • TNC • CARE • VSF • WCS • Smithsonian Institution • Chicago Field Museum
Civil Society	<ul style="list-style-type: none"> • Defensoría del Pueblo • FENAMAD • FADEMAD • COMARU • SECONAMA • EASHANINKA • ASECAM - Castañeros • APA • AEF – Asoc. de Extractores Forestales • CECOVASA –Coffee 	<ul style="list-style-type: none"> • CIPTA • CIMTA • Chiman Council • Community Civic Committees • Colonists Associations • Campesinos Union

APPENDIX 2

ABBREVIATIONS AND ACRONYMS

BR	Biosphere Reserve
CAF	Corporación Andina de Fomento
CAS	Country Assistance Strategy
CI	Conservation International
CONAM	National Environmental Council (Peru) <i>(Consejo Nacional del Medio Ambiente)</i>
GOB	Government of Bolivia
GOP	Government of Peru
DGB	Dirección General de Biodiversidad (Bolivia)
FONCODES	Fund for Social Compensation (Peru)
FUNDESANP	Protected Areas Trust Fund (Bolivia) <i>(Fundación para el Desarrollo del Sistema Nacional de Areas Protegidas)</i>
GTZ	Agency for Technical Cooperation (Germany) <i>(Gesellschaft fuer Technische Zusammenarbeit)</i>
HS	Historical Sanctuary
INMA	Integrated Natural Management Area
INRENA	National Institute of Natural Resources (Peru) <i>(Instituto Nacional de Recursos Naturales)</i>
ITTO	International Tropical Timber Organization
LCSES	Latin America and the Caribbean Environmentally and Socially Sustainable Development Group (World Bank)
NGOs	Non-Governmental Organizations
PASNAPH	Dutch Project to Support the Bolivian National System of Protected Areas <i>(Proyecto de Apoyo al Sistema Nacional de Areas Protegidas Holanda)</i>
PROFONANPE	National Trust for Protected Areas (Peru)
PROMUDEH	Ministry of Women and Human Development (Peru) <i>(Ministerio de Promoción de la Mujer y del Desarrollo Humano)</i>
RZ	Reserved Zone
SNAP	National System of Protected Areas (Bolivia) <i>(Sistema Nacional de Areas Protegidas)</i>
SERNAP	National Service of Protected Areas (Bolivia) <i>(Servicio Nacional de Areas Protegidas)</i>
SETAI	Technical Secretariat for Indigenous Affairs (Peru) <i>(Secretario Técnico de Asuntos Indigenas)</i>
SINANPE	National Protected Areas System (Peru) <i>(Sistema Nacional de Areas Naturales Protegidas)</i>
TCO	Indigenous Territory <i>(Territorio Comunitario de Origen)</i>
TNC	The Nature Conservancy
UNITAS	Union of Workers' and Social Action Institutions (Bolivia) <i>(La Union de Instituciones de Trabajo y Acción Social)</i>
VAIPO	Vice Ministry of Indigenous Affairs and Autochthonous Peoples (Bolivia) <i>(Vice Ministro de Asuntos Indigenas y Pueblos Originarios)</i>
WCS	Wildlife Conservation Society

WWF

World Wildlife Fund