Carbon for conservation

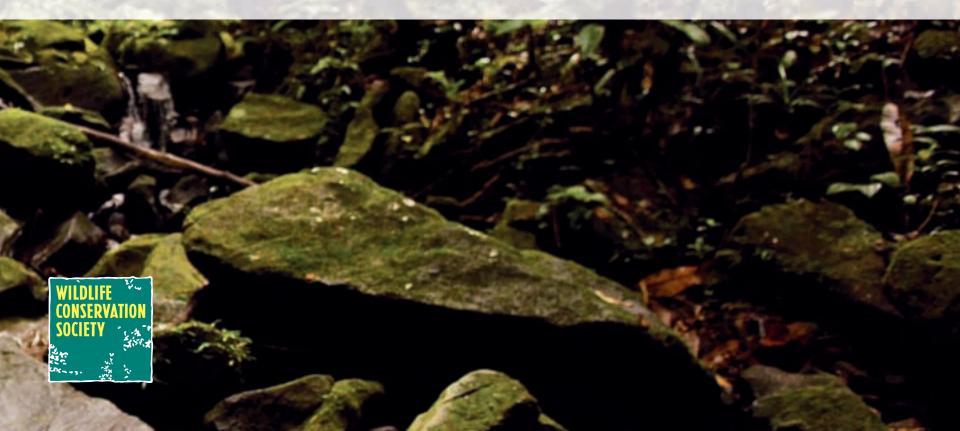
CLIMATE CHANGE, BIODIVERSITY CONSERVATION, & LOCAL LIVELIHOODS







THE WILDLIFE CONSERVATION SOCIETY saves wildlife and wild places worldwide. We do so through science, global conservation, education and the management of the world's largest system of urban wildlife parks, led by the flagship Bronx Zoo. Together these activities change attitudes towards nature and help people imagine wildlife and humans living in harmony. WCS is committed to this mission because it is essential to the integrity of life on Earth.





CARBON FOR CONSERVATION AROUND THE WORLD **Carbon for conservation** is WCS's commitment to help provide the incentives to people to protect their forest and wetland carbon in high-biodiversity landscapes. WCS's long-term presence and engagement with partners in these landscapes ensures that the economic benefits contribute to permanent CO_2 emission reductions, biodiversity conservation, and are fairly and equitably distributed among stakeholders.

Deforestation and forest degradation in the tropics account for 17 percent-20 percent of global greenhouse gas emissions, and most comes from developing countries. Tackling this forest loss is crucial for stabilizing greenhouse gas emissions and avoiding the worst effects of climate change. Reducing deforestation will stem the loss of biodiversity and ecosystem services upon which poorer populations depend. Well-developed national strategies to reduce deforestation can contribute multiple benefits: climate change mitigation, poverty reduction, and biodiversity conservation.

Many developing country governments lack capacity to design and implement effective national and sub-national reduced emissions from deforestation and degradation (REDD) strategies. Adequate capacity is crucial if governments are to participate effectively in climate change negotiations leading up to the United Nations conference of climate change in Copenhagen in December 2009, and initiate national policies under the World Bank's Forest Carbon Partnership Facility (FCPF) and the UN REDD initiative.

Many of the landscapes and sites that WCS is committed to protecting overlap with those areas with high carbon storage; they also face significant threats from deforestation. REDD has a number of advantages from other forms of abatement:

- Provides a cheaper and faster option than many other emissions reduction schemes
- Brings developing countries into the climate change framework
- Reduces impact of climate change on remaining forests by reducing their vulnerability to fire and drought
- Delivers direct financing to the cause of the problem by creating incentives for people to reduce deforestation

This short brochure outlines the scope of activities that WCS is pursuing with its government and local partners around the world. As our efforts in these eight landscapes indicate, we take an integrative approach to REDD based on local circumstances, focusing on three core activities: national REDD readiness, innovative research, and sub-national demonstration sties. REDD has enormous potential to reduce climate change, fund the conservation of forests and other carbon sinks as well as alleviate poverty in local populations. WCS is working around the globe to realize the promise of REDD and fulfill our mission of saving wildlife and wild places.

Makira Forest

MADAGASCAR

The protection of the Makira landscape ensures the long term protection of a biologically diverse landscape that represents 50 percent of Madagascar's endemic biodiversity and 1 percent of global biodiversity





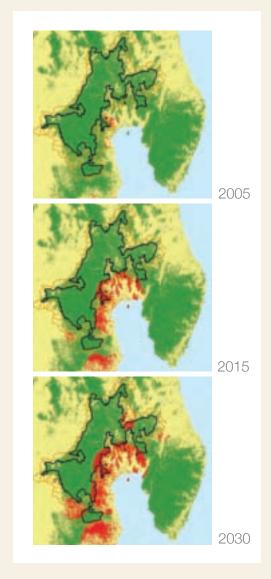


THE MADAGASCAR MINISTRY OF ENVIRONMENT, FOREST AND TOURISM in collaboration with the Wildlife Conservation Society have engaged in the long-term protection of the largest remaining contiguous forest in northeastern Madagascar. The 372,470 hectares of largely intact rainforest that comprise the Makira Protected Area are a biodiversity stronghold: 22 of the 71 currently identified lemur species and subspecies—found only in Madagascar—exist within the forests of Makira.

Further, the Makira forests serve as the principle resource base for a largely rural subsistence-based human population of greater than 150,000 individuals. Driven by subsistence need, these communities are putting continuous pressure on the forest resources primarily through slash-and-burn clearing of the forest for agriculture (tavy), and unsustainable extraction of non-timber forest resources. WCS estimates that 1,500 hectares of primary forest is converted each year to tavy; in the absence of a management system the Makira landscape would risk becoming deforested in 100 years.

To help safeguard this critically important forest system, the Government of Madagascar and WCS announced a joint agreement to market an estimated 9.5 million tons of carbon offsets over the next 30 years through the Makira REDD project.

To date, the project has marketed 140,000 tons of pre-verified emission reduction credits—all of which have been retired—and is currently finalizing the project design document (PDD), which will be validated under the Voluntary Carbon Standard (VCS) and Climate, Community and Biodiversity Alliance standards (CCB) in late 2009. With the Madagascar Government, WCS is structuring a forest carbon revenue distribution mechanism that will bring 50 percent of forest carbon revenue back to local communities: to date the project has directly engaged with more than 13,000 inhabitants across 30 villages. This project exemplifies our shared commitment to use carbon revenues to ensure biodiversity conservation, manage valuable ecosystem services, and bring net positive livelihood impacts through partnerships with local communities, the de facto land stewards.



PROJECTED DEFORESTATION IN MAKIRA

WCS modeled the projected emissions from deforestation in the Makira forest project area (in black) and the neighboring reference areas based on historical rates of deforestation and likely increase in those rates without the Makira project (in red). The project generates emissions reduction credits under REDD by protecting those forest areas that would have otherwise been cleared for agriculture or other development purposes.

Seima Protection Forest

CAMBODIA

Establishing a new carbon protection forest to safeguard Indochina's unique biodiversity in perpetuity





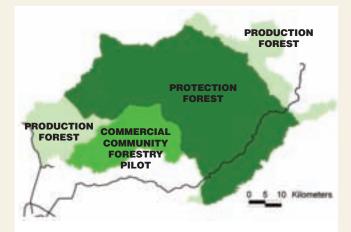


THE RECENTLY DECLARED SEIMA PROTECTION FOREST (SPF) is a former logging concession covering 303,400 hectares in eastern Cambodia. It is managed by the Cambodian Forestry Administration (FA). It has globally outstanding biodiversity values and is of crucial importance for the livelihoods of the local Bunong indigenous group. The Seima Biodiversity Conservation Project is a collaboration between WCS and the FA initiated in 2002. The project aims to establish effective management for the area, both to conserve and to restore the biodiversity values and to protect the livelihoods of local people.

A key threat to biodiversity and livelihoods is the clearance of forest and wetland habitats, much of which is driven by land speculation and in-migration. Income from carbon offset trading is the core of a sustainable financing strategy to ensure long-term support for reserve operating costs and provide financial incentives to local communities and government agencies to participate in conservation.

An independent study in 2008 indicated that such a project was highly feasible and suggested that net credits of at least 300,000 tCO₂/year could be achieved over the first five years. In October 2008, the FA formally agreed to work with WCS to implement the project across approximately 180,000 hectares in the core area of the site. As one of its first outcomes, the Cambodian government has already upgraded the legal protection for the area in recognition of its carbon sequestration potential and other environmental values. This provides the necessary legal foundation for developing the REDD project and demonstrates the additionality needed for carbon financing.

Project Design Documents are now being developed for certification under the Voluntary Carbon Standard and the Climate, Community and Biodiversity Alliance standards. It is anticipated that these will be submitted for validation by the end of 2009, and that credits may be available for sale soon after that. Work is also underway to develop a transparent mechanism for managing revenues and incentive systems for local communities.



SPF PROPOSED ZONES

The Seima Protection Forest (SPF) was formerly a logging concession. As part of the creation of the SPF in order to realize its carbon sequestration potential, the government created two new land designations: a large protection forest that forms the core of the REDD project and a 40,000 hectare community-based forest management pilot aimed at creating a sustainable forestry enterprise.

BIODIVERSITY AND SOCIAL VALUES

The landscape supports at least 45 Globally Threatened vertebrate species on the IUCN Red List, including at least four Critically Endangered bird species. The area is home to 25 different species of carnivore, and seven species of primates, including the world's largest known populations of yellowcheeked crested Gibbon and black-shanked douc langur (> 42,000). In addition, the SPF has regionally or globally important populations of Asian elephant and is within a Priority 1 Tiger Conservation Landscape.

There are many established local communities living in and around the forest, most of them from the Bunong indigenous minority group. Most of these villages are very poor and are heavily dependent upon the forest and surrounding habitat for their livelihoods.

Madidi-Tambopata Landscape

BOLIVIA/PERU

Bolivian indigenous communities reduce CO₂ emission for economic cultural and environmental benefits







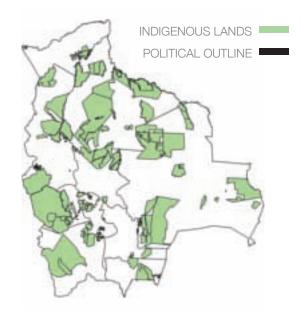
THE GREATER MADIDI-TAMBOPATA LANDSCAPE is one of the most species-rich regions of the world. This transboundary area of 11 million hectares includes a sweeping altitudinal range on the eastern flanks of the Andes. The habitats of spectacled bears, giant otters, jaguars, maned wolves, and Andean condors are partially protected by five national protected areas: Madidi, Apolobamba and Pilón Lajas in Bolivia, and Bahuaja -Sonene and Tambopata in Peru.

Indigenous communities control approximately 1.7 million hectares of forest in this region of Bolivia. Based on our long-term relationships with local indigenous groups, WCS is partnering with the Consejo Indigena del Pueblo Takana (CIPTA) and based on this experience, is exploring the possibility with the Consejo Regional T'simane-Moseten (CRTM), Lecos Apolo (CIPLA) and Lecos Larecaja (PILCOL) to develop REDD projects to reduce deforestation through the implementation of indigenous territorial plans. Community-owned and led REDD projects strengthen the permanence of the emission reductions and ensure that the resources will flow directly back to the indigenous communities for local economic investment and conservation.

Deforestation in the Greater Madidi–Tambopata Landscape occurs largely along the main roads. Current deforestation rates in the region are about 13,000 hectares per year. A projection of future deforestation rates between 2008 and 2015, provides a conservative estimate of 72,957 hectares of forest loss. The average carbon storage per hectare in the landscape is relatively high (183 tC/ha in the Amazonian lowlands and 140.5 tC/ha in the neighboring piedmont).

A 2009 third party assessment indicated that a WCS REDD project with indigenous communities was feasible based on achieving a 50 percent reduction in current deforestation rates, and would generate 22 million tons of emission reductions over an eight-year period in the Bolivian portion of the landscape.

WCS, CIPTA, CIPLA, PILCOL and CRTM together expect to complete the PDD in early 2010, and the verification using VCS and CCB protocols early in the second half of 2010.



INDIGENOUS LANDS IN BOLIVIA

Indigenous Territories represent approximately 30 percent of Bolivian territory. WCS provides technical support and capacity building for the national confederation of indigenous people of Bolivia (CIDOB) to participate in Government of Bolivia's REDD Technical Committee.



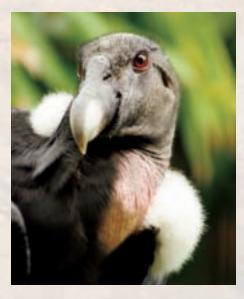
Karukinka

CHILE

Peat lands cover only 3 percent of the world's land area, but contain 550 Gt of carbon – equivalent to 30 percent of all global soil carbon and twice the carbon in all the world's forests



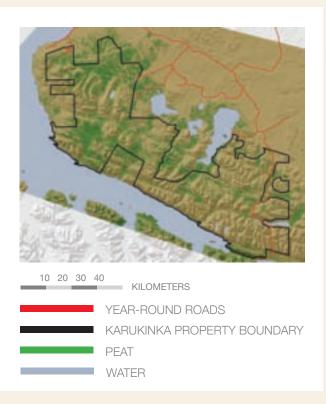




NEAR THE SOUTHERNMOST TIP OF CHILE, the Karukinka conservation area, owned by the Wildlife Conservation Society, encompasses approximately 300,000 hectares. Established in 2004 through a gift from Goldman Sachs, Karukinka contains several unique ecosystems, including the Southern Hemisphere's largest and best conserved southern beech forests, high mountain meadows, and the region's richest peat bog. Karukinka's 75,000 hectares of peat represents a significant sink of carbon, as well as a vast water reservoir for the island, contributing essential ecosystem services such as water provision and filtration for the benefits of both humans and wildlife. These ecosystems are irreplaceable pre-historic environmental archives that contain information on bio-climatic changes on our planet for centuries.

Prized for its use as ornamental horticulture and organic soil enrichment, Karukinka's precious peat is under significant threat. All of the peat lands of Karukinka are within 12 kilometers of year-round roads, the property boundary or the coastline, making them an easy target for commercial extraction. While most of the peat fields in the Magellan Region are protected and off limits to exploitation, those in Karukinka are highly vulnerable. Under Chilean law, even though WCS owns the Karukinka property, it does not own the mining rights. Outside companies may purchase these rights and extract the peat.

At an average depth more than 2.5 meters and a carbon content of 45-48 percent, WCS estimates that Karukinka peat contains more than 225 million tons of CO_2 . By re-designating Karukinka's land use, WCS plans to remove Karukinka peat from potential exploitation, ensuring that millions of tons of CO_2 will not be released into the atmosphere. WCS is currently assembling the project documentation to apply for VCS certification. Revenue from carbon sales is key to the WCS conservation strategy. Providing long-term, sustainable funding to conserve the peat lands of Karukinka through carbon offsets simultaneously addresses climate change, sequestering terrestrial carbon sinks, and contributing to local investments that will help reduce pressures on the protected area.



PEAT AND ACCESS TO ROADS IN KARUKINKA

WCS satellite image analysis of the area reveals that the 75,000 hectares of peat line the valleys of the western half of Karukinka. A year-round road crosses the property in its eastern portion and then circles its northern edge, providing access at multiple points. 100 percent of the Karukinka peat is within 12 km of roads, the property boundary or the coastline.



Maya BiosphereReserve

GUATEMALA

Reducing emissions by controlling deforestation in the heart of Mayan civilization







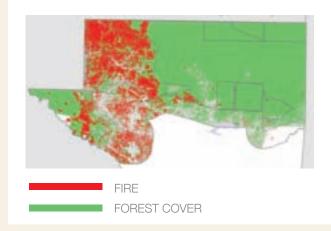
THE MAYA BIOSPHERE RESERVE (MBR) in the Department of Peten, located in northern Guatemala, is the most ecologically intact and archeologically important region of Guatemala and one of the most important conservation areas in the Western Hemisphere. It was created in 1990 to improve local livelihoods while conserving its biological and cultural heritage. The MBR's more than two million hectares represent 19 percent of Guatemala's land surface and contain 70 percent of the forested area in the country. Together with adjacent forest patches in Belize and Mexico, it is the biggest wild area in Mesoamerica.

The MBR is a stronghold for wide-ranging and iconic species—jaguar, puma, Baird's tapir, white-lipped peccary, scarlet macaw, and king vulture. Species endemic to the region fill the forest: the raucous Guatemalan black howler monkey, Morelet's crocodile, and the spectacular ocellated turkey. Millions of migratory birds from the U.S. and Canada, more than 80 species, depend on these forests during the northern winter.

WCS is collaborating with the Government of Guatemala to develop a REDD project with a focus in the Eastern Maya Biosphere Reserve, which covers 700,000 hectares and faces severe threats from deforestation. Since 2000, annual deforestation has averaged 15,000 hectares and rates appear to be increasing with the expansion of the agricultural frontier.

While WCS and its government partner, CONAP, are engaged in ongoing efforts to abate deforestation and wildfires through conservation incentives targeting local communities and governmental institutions, resource constraints limit WCS's ability to contain the threats. With revenue from the sale of emission reductions, WCS and its partners can finance the local investments and management support necessary to achieve reductions in deforestation.

Using a conservative target of a 50 percent reduction in deforestation, WCS estimates that the project will deliver emission reductions of 1.9 million tons of CO_2 over the next 10 years. Verification of these estimates will occur in late 2009, and a PDD will be completed for VCS and CCB validation in mid-2010.



INCREASING INCIDENCE OF FOREST FIRES IN THE MAYA BIOPSPHERE RESERVE

Despite the presence of two national parks, deforestation has increased dramatically since 2001 in the MBR landscape. Agriculture and cattle ranching are the main drivers. Graphs of yearly deforestation and maps of fire incidence demonstrate the extent of this threat. Fire is a cause of deforestation as well as a significant source of carbon emissions. As seen in 2004, a relatively modest fire year based on the El Niño cycle, large swaths of the MBR were burned (in red).



New Ireland and Manus Provinces

PAPUA NEW GUINEA

REDD and traditional land tenure







PAPUA NEW GUINEA IS A KEY TESTING GROUND FOR REDD. The country contains 25 million hectares of forest, about 20 percent of all remaining rainforest in Southeast Asia. PNG has an annual deforestation rate of 1.41 percent, which is more than 50 percent higher than the Amazon. Approximately a quarter of PNG's tropical rainforests have been lost since 1972 and more than 35 million hectares are estimated to be logged or cleared for agricultural development in the next few years. PNG is a similarly important place to learn about developing a communitydriven and ethical approach to REDD in a complex socio-cultural environment, where the income generated must demonstrably benefit forest-dependent people.

WCS is working in New Ireland and Manus Provinces in PNG to develop a strategy for REDD, working at the village scale with individual land-owning clans. While these provinces suffer the highest rates of deforestation and degradation in the country, WCS has long-term and established conservation projects that have built strong relationships with provincial governments, civil society, and local clans. With our partners, WCS is working to connect the multiple stakeholders across the necessary scales, from national to local, to implement REDD. At the village level, WCS facilitates four key steps to enable REDD's success: a) formalizing land mapping and 'registration' of tenure; b) facilitating villagers to identify the types of benefits they want from projects and how to deliver them; c) strengthening local social institutions to implement and monitor projects and to settle disputes over land tenure and benefit sharing; and d) facilitating development of local forest management rules that incorporate traditional ecological knowledge. At the provincial scale, WCS is working with partners to develop appropriate methods to account for the emissions reductions generated. Thus, by bringing all the stakeholders into a transparent process, WCS will establish a model for village-based REDD projects that increases community participation in REDD, spreads its potential benefits widely among forest-dependent communities, and can be replicated at culturally appropriate scales to bundle the resultant emission reductions into economically and administratively viable units.



BIODIVERSITY STRONGHOLD

Few areas of the globe can match Papua New Guinea (PNG) in terms of biodiversity. The country's rugged natural settings are home to a staggering array of wildlife, including more than 21,000 species of higher plants, 200 species of mammals, and 700 species of birds - an estimated 7 percent of all species on earth. Papua New Guinea's indigenous clans are linguistically just as diverse, with more than 800 languages spoken within the nation's borders. PNG's biological and cultural diversity is now threatened by deforestation and other resource extraction, and these numerous clans hold the key to conserving both the cultural and natural wealth of their country. These clans control 97 percent of the nation's territory through a system of traditional land tenure, with almost all decisions on land-use made at the family or clan level. Because approximately 85 percent of Papua New Guineans depend directly on wildlife for a significant proportion of their diet, conservation and sustainable use of these natural resources is critical for food security and sustaining livelihoods.

Southern Highlands

TANZANIA

Regional and national REDD planning







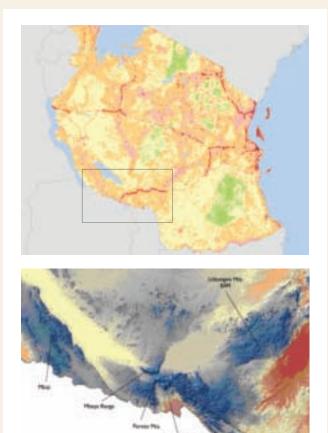
CARBON BASELINES ARE ESSENTIAL for the success of REDD. Without knowing how much carbon is stored in a country's forests, what the relative rates of deforestation are and how to monitor changes going forward, it will be difficult for countries to effectively lower their emissions and negotiate during the United Nations meetings on climate change that leads up to the conference in Copenhagen in December 2009 (CoP 15).

Despite the extraordinary biodiversity and ecosystem services provided by Tanzania's forests, there is currently no single authoritative land cover inventory that can assess land use and land use change. These forests are under significant threat. Current FAO statistics indicate that Tanzania has had Africa's highest national rates of deforestation over the last 15 years.

WCS is working with the Tanzanian government to estimate carbon emissions and sequestration due to changes in forested areas, focusing on the threatened montane forests of Tanzania's Southern Highlands. These forests indicate the potential gradient of national carbon emissions. In tandem, WCS will build upon current field work to implement a series of economic incentives that benefits local communities and fosters environmental education that addresses the drivers of local forest degradation.

These forests are important for conservation, with high levels of biodiversity and endemism, including two primate species recently discovered by WCS, the kipunji and the Rungwe galago. The extensive forest-grassland mosaic is also an important site for water conservation, supplying a multi-million dollar agricultural industry that supports 3 million people.

By December 2009, based on continued funding, WCS will have completed a preliminary analysis of the deforestation rate and the first baseline projections for the Southern Highlands forests. WCS will also demonstrate a pilot version of a web-based project management system in which maps of historical, current, and future land use can be visualized online and field survey data entered. This system will be a concrete example of how a national REDD accounting system could work.



MEASURING CARBON EMISSIONS AT A REGIONAL LEVEL

WCS's work in the Southern Highlands focuses on pilot sites at Mt Rungwe and Mbizi, where WCS is working to measure the historical carbon emissions/sequestration from forest cover change. Covering some 136.5 km², Mt Rungwe is Tanzania's wettest protected area receiving up to 3 meters per annum. Mbizi is often described as Tanzania's only cloud forest and protects a threatened and genetically-distinct population of red colobus monkeys clinging on to survival within its 37 km² boundaries. Building the knowledge base at these two sites and others will enable the creation of future emission baselines for the region and contribute to the development of a national reference scenario for Tanzania.

CAMEROON/DRC/CONGO/GABON

At 1.7 million square kilometers, the Congo Basin is the second largest block of tropical rainforest on Earth







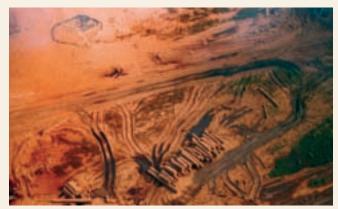
THE CONGO BASIN FOREST provides critical ecological services at local, national, and global scales, in particular by storing carbon, regulating the water cycle in one of the world's largest river basins, and harboring one of the most diverse and richest assemblages of plant and animal species in the world. Despite its wealth of natural resources, the region's inhabitants are among the poorest in the world. Here the livelihoods of the vast majority depend directly on the exploitation of natural resources. Thus, the sustainable management of central Africa's forests is critical for the region's future economic development and the survival of forest-dependent cultures and economies.

Deforestation rates are already high in many parts of Central Africa, and are expected to accelerate throughout the region, even in areas of historically low rates of forest loss, unless incentive mechanisms are designed and implemented that reward countries for managing their forests sustainably. Decades of forest loss and fragmentation due to logging, mining and other extractive uses are exacerbated by rapid road construction and a rise in demand for tropical timber (see sidebar).

WCS is taking an integrative approach to REDD based on the local circumstances in the four most forested Central African countries—Cameroon, the Democratic Republic of Congo (DRC), Gabon, and the Republic of Congo where we focus on three core activities: national REDD readiness, sub-national demonstration sites, and innovative research.

In the Republic of Congo, WCS is helping the government design its national REDD program by working directly with the national REDD coordinator to access the World Bank's Forest Carbon Partnership Facility (FCPF). In Cameroon and DRC, WCS works in five long-term landscapes to advance sub-national REDD demonstration site projects. We expect at least two of these landscapes to produce Project Design Documents (PDDs) by the end of 2010.





INNOVATIVE FIELD RESEARCH ON FOREST DEGRADATION

In Gabon, WCS is focusing on innovative field research on the impacts of logging on forest carbon. Three-quarters of the Congo Basin forests are allocated in permanent logging concessions, more than seven times as much as in protected areas. WCS's research in Congo and Gabon has shown that well-managed logging can extend the conservation estate outside protected areas, but that poorly-managed logging leads to empty forests, reduced diversity and unsustainable human livelihoods. WCS is working on the ground in all four countries to understand the best ways to integrate well-managed logging with REDD to enhance forests' roles as a carbon store and sink.



Going Forward

WCS HAS DEVELOPED LONG-TERM RELATIONSHIPS with the people and government agencies that are responsible for protecting forests covering approximately 140 million acres globally. WCS has built the capacity and experience to address the technical methods and issues associated with REDD, as well as the local knowledge and relationships needed to effectively reduce deforestation.

With sufficient resources, our portfolio of REDD projects has the potential to conserve tens—if not hundreds—of millions of tons of carbon within forests and wetlands in the next several years and convert those savings into sustainable funding mechanisms for the conservation of these and other critically important landscapes. In addition to the efforts highlighted here, national governments and communities in Ecuador, Peru, Brazil, Colombia, Malaysia, Laos, Indonesia, Zambia, Rwanda, and Uganda are calling upon us to help them evaluate demonstration sites and/or prepare for REDD. In light of global interest in protecting stocks of carbon at risk from deforestation and other land use changes, we expect that these requests will grow in the coming months and years.

We believe that working at both the sub-national and the national scale will have a multiplier effect on REDD and the inclusion of forest carbon from developing countries in the climate change mitigation process. Demonstrating how REDD projects can deliver on their promise will generate additional projects and support by local communities. Effective national REDD plans will similarly motivate the governments of other developing countries to invest the technical and political resources for their own national plan. And, placing value on forests as sustainable, functioning ecosystems should not only lead to a functioning market that rewards verifiable carbon emission reductions, but to a scalable mechanism that directly supports the effective stewardship of forests and biodiversity and the economic betterment of forest-dependent people.

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