



The Global Conservation Program

**Achievements and lessons learned from 10 years of support for
threats-based conservation at a landscape and seascape scale**

Conservation International

Biodiversity Corridor Planning and Implementation Program

**Final Closeout Report
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List of Acronyms

CEF	Forest Service Bureau
CFL	Local forest control team
CI	Conservation International
CIREF	Regional Forest Service (Circonscription Régionale de l'Environnement et des Forêts)
CNFEREF	National Center for Training and Research in Environment and Forestry
COAP	Protected Area Code
COBA	Community-Based Institution
COPIL	Steering Committee
CRD	Regional Development Committee
DPZ	German Primate Center (Deutsches Primatenzentrum)
DREF	Regional department in charge of the Environment
DWCT	Durrell Wildlife Conservation Trust
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
FY	Financial Year
GOB	Government of Brazil
GCF	Community transfer forest management contract
GCP	Global Conservation Program
GEF	Global Environmental Facility
GELOSE	Localized community transfer natural resource management contract
GIS	Geographic Information Systems
IBAMA	Brazilian environmental agency
KBA	Key Biodiversity Area
LR	Legal Reserves
MCA	Millennium Challenge Account
MCC	Millennium Challenge Corporation
MECIE	Environmental Impact Decree
MEF	Ministry in Charge of the Environment and Forests
MNP	Madagascar National Parks
MOMA	Monitoring and control protocols
MOU	Memorandum of Understanding
MRG	Menabe Research Group
NGO	Non-Governmental Organization
NODE	Conservation International's small grants program
ONE	National Environment Bureau
OPCI/POIC	Inter-municipal committee
PGES	Social and Environmental Management Plan
PPA	Permanent Protection Area
PPP	Public-private partnership
PRPSE	Regional Social and Environmental Development Plan
REPAMS	Association of Owners of Private Natural Heritage Reserves
RPPN	Private Natural Heritage Reserve
SAHA	Sahan'Asa Hampandrosoana ny Ambanivohitra (Swiss Development Program)
SHP	Small hydroelectric plant
UPB	Upper Paraguay Basin
USAID	United States Agency for International Development
WWF	World Wide Fund for Nature

Introduction

This report covers achievements and lessons learned of the USAID Biodiversity Corridor Planning and Implementation Program (Corridor) Cooperative Agreement in Madagascar and Brazil. Under the USAID Leader with Associates Global Conservation Program (GCP), CI has implemented biodiversity corridors in two priority areas: the Menabe Biodiversity Corridor in Madagascar, and the Cerrado/Pantanal region of southwestern Brazil. Please note that information regarding sites which only received funding during the first phase of the award was submitted at the end of that period.

Key Achievements, Impacts and Lessons Learned Attained with GCP Funding

A. Madagascar

1. Key Achievements

- 145,000 ha in area of biological significance under improved management;
- Forest fires reduced and controlled;
- Lake Bedo declared a RAMSAR site;
- Protected Area status for Menabe Antimena endorsed by government;
- Co-governance structure for Menabe Antimena set up and operational;
- Protected area managers established, and community and government entities' capacity strengthened;
- Scientific data and monitoring protocols for effective resource management and monitoring developed (identification of high biodiversity priority areas, factors/threats affecting distribution and causes of decline of endemic species);
- Management plans for sub-management units developed;
- Management plan for Menabe Antimena developed and integrated into regional planning;
- Community management plans for sub-management units updated and operational;
- Community natural resource and forest management transfer contracts operational and drafts prepared for government signature;
- Environmental customary law (Dina) operational and integrated into Regional Dina;
- Community-based ecological monitoring system developed and operational;
- Effective participatory protected area control and enforcement system in place (forest control committees set up, trained and operational, with procedure manuals);
- Tourism strategy and action plan developed;
- Multiyear forest restoration plan for Ambandira and Kirindy forests blocks developed and operational;
- Restoration of principle clearings in forest corridor completed;
- Community micro-development project developed (schools, agriculture tools); and
- Alternative livelihoods with high revenue generating potential developed (organic agriculture) and agriculture production diversified and improved (peanuts, vegetables).

2. Impacts

- Sustainable conservation of endemic and endangered species;

- Strengthened capacity of communities and local and regional actors to manage natural resources sustainably;
- Increased participation of local communities, government and NGOs in landscape protected area management, planning and decision making;
- Improved governance of natural resources;
- Increased technical capacity of the protected area managers and other stakeholders in protected area management, biodiversity monitoring, planning, and control and enforcement of natural resource regulations;
- Improved enforcement of conservation regulations;
- Reduced impacts of unsustainable economic activities by local communities and regional stakeholders;
- Increased general awareness by communities, government, and local stakeholders of the economic value of the Protected Area for local and regional development;
- Improved well-being of communities living in the landscape protected area;
- Increased understanding of the benefits of sustainable management of natural resources for long term development; and
- Behavior change in communities, government and local stakeholders towards more sustainable economic practices related to natural resource use.

3. Lessons Learned

- The political will of the national, regional and local government is essential to achieving the objectives of the program;
- A contingency plan should be in place to reduce risks during political crisis.
- Communities are capable of being partners in development and conservation if adequate support is provided;
- Participatory ecological monitoring helps create awareness on the importance of sustainable natural resource management by engaging local stakeholders in conservation, and helps reduce degradation of biodiversity;
- It is necessary to provide an array of incentives to offer benefits to communities to engage in conservation;
- Development and conservation require an estimated 20 years of technical and funding support from experts, NGOs and donors to ensure sustainability and create behavior change in local stakeholders; and
- The effectiveness of technical tasks carried out by communities depends on the level of literacy.

B. Brazil

1. Key Achievements

- Transferred the knowledge and lessons learned from implementing the Emas-Taquari Corridor to the new Jalapão-Western Bahia corridor in the northeastern part of the country;
- Supported creating almost 2,600 additional ha of protected areas in the Pantanal and improved management of approximately 46,000 ha of private reserves, as well as restoration of 200 ha of critically degraded areas;
- Created protected areas between Emas-Taquari corridor and the Jalapão-Western Bahia northeastern corridor, which guarantees and enhances connection and,

therefore, gene flow between central and coastal Brazil (i.e., between savannas and rainforest);

- Built partnerships with private sector companies Monsanto and Bunge, guaranteeing medium-term sustainability of corridor management structure;
- Aided partner Oréades to become sustainable. It now independently raises private and public funds from Perdigão, one of the largest Latin American food companies, to provide environmental compliance inspections of Perdigão suppliers' farms to private banks such as HSBC, Citibank and Itau, as well as from the Brazilian government;
- Produced and disseminated land-use maps of the corridors, which were incorporated into municipalities' development plans;
- Conducted socio-economic assessments of local municipalities, which were used to guide the development of sustainable economic activities; and
- Produced the CD "Fauna of Pantanal," which became a key regional environmental education tool in both urban and rural areas. It has been downloaded by over 1400 individuals.

2. Impacts

- Increased awareness of landowners and young people through environmental education;
- Increased capacity of governmental land planners;
- Increased capacity and autonomy of local NGO partners;
- Leveraged GCF funding for work with Oréades and Bunge around Emas Park. By 2009, 96 properties were involved in the project and 310,352 acres of legal private reserves had been created and secured;
- Management plans for Emas Park as well as State Park of Nascentes do Taquari were completed and are being implemented;
- New incentives were developed and GOB implemented some, such as the Green tax (ICMS Ecologico), which awards municipalities with greater protection;
- Supported the creation of two state parks and several private reserves totaling nearly 200,000 hectares (GCPI); and
- Local farmers worked with private sector companies Bunge and Monsanto in the Emas-Taquari Biodiversity Corridor and the Jalapão-Western Bahia Biodiversity Corridor to define land use scenarios that address the needs of soy producers and conserve key species. The planning process set specific area targets for soy production as well as habitat targets for key native species.

3. Lessons Learned

- The program was created to consolidate Cerrado-Pantanal Biodiversity Corridors (Emas-Taquari and Maracaju-Negro) and apply the lessons learned to implement the Jalapão-Western Bahia (northeast) biodiversity corridor. The main lesson learned is that replication of successful experiences relies on building the local capacity, and rate of success or speed in achieving that is highly dependent on local history and development;
- Working with public officials and municipalities is essential to program success and requires constant follow-up and involvement, especially when there is a new election and turnover of personnel. This requires a lot of time, funding and persistence. This was particularly the case in 2007, when IBAMA, the Brazilian environmental agency,

was divided in two entities and responsibility for environmental licensing processes and the management of protected areas was delegated to a new agency, The Chico Mendes Institute for Biodiversity Conservation. This change was not well received by staff. There were subsequent strikes and turnover, and internal negotiations about the new agencies' functions and responsibilities. CI had to modify the program to adjust for this change; and

- The effectiveness of the communication system is the basis of a good ownership and engagement of communities. Communication is an iterative process and requires a mid- to long-term strategy, which may be beyond a particular donor's program cycle. Therefore a program will benefit from a diverse funding pool with staggered end dates.

GCP Program Background

Under the USAID/Global Bureau Leader with Associates Global Conservation Program, CI implemented the Biodiversity Corridor Planning and Implementation Program in two priority areas: the Menabe Biodiversity Corridor in Madagascar (Figure 1), and the Cerrado/ Pantanal region of south-western Brazil (Figure 2). The purpose of these programs was to establish functioning biodiversity corridors over the life of the Agreement.

A. Madagascar

Since 2003, CI, in collaboration with FANAMBY, Durrell Wildlife Conservation Trust (DWCT), and other local partners, has spearheaded efforts in Madagascar to develop a geographic, institutional and policy landscape that will support conservation of the unique biodiversity found in the corridor and contribute to creating sustainable livelihood alternatives to reduce poverty.

DWCT has worked in the region for over ten years, monitoring the conditions of wildlife and running an education and awareness campaign to decrease bush meat hunting, wildlife trade, and illegal logging. DWCT works mainly on species of global significance (flagship species) (giant jumping rat, flat tailed tortoise, thin-striped Mongoose) in partnership with local communities integrating them into ecological monitoring. This has enhanced sustainable use of natural resources and control over abusive uses.

FANAMBY is a local NGO that has provided support to institutional building and community development since 2002. Its aim has been to promote and manage zones of high potential of endemic biodiversity without formal protection status within the Ambandira-Kirindy forest cluster, Lake Bedo and the mangroves along the coast between the Tsiribihina River in the North and the Morondava River in the South. FANAMBY has provided support to forest zoning and mobilizing and integrating communities in development planning.

FANAMBY and DWCT were chosen by CI as implementing partners for their successful experience in collaborative processes to address biodiversity concerns in the region. They work mostly with the National Waters and Forests Authority, the Center for Professional Forestry Training, the German Primate Center, Madagascar National Parks, local community groups and local NGOs, and mayors.

The GCP Madagascar was a pilot program for landscape protected areas, pioneer in Madagascar. The immediate threats faced in Menabe were wildlife poaching, logging, and

mining. To address this, the program took a “threats-based” approach to conserving the landscape. This approach seeks to identify priority threats to biodiversity and link them to specific conservation actions. Conservation activities adapted to the local context were designed to mitigate these threats and address the contextual barriers. Some illustrative activities include the following: community-based natural resources management; improved protected area management; integrated eco-regional land planning and management; partnering with the private sector, including environmentally sound tourism; strengthened policy and legal frameworks for natural resources and conservation management by communities and other environment managers; and community and government training and capacity-building in skill areas such as business development skills, land management and planning and ecological monitoring. GCP partners strengthen local capacity by employing local personnel, organizations, and facilities and by facilitating collaboration with USAID and other organizations engaged in related activities. In addition, the program had a strong research and communication outreach component, partnering with international and national research institutions, and students, and sharing knowledge with the variety of stakeholders involved in natural resource management and protection (communities, government, NGOs).

B. Brazil

This program was implemented in the Brazilian Cerrado Biome, which is considered the richest savanna in the world due to its high concentration of species. Since 2000, CI-Brazil has been promoting the concept of biodiversity corridors in two regions of the Cerrado in order to conserve biodiversity within and outside protected areas. CI-Brazil and local NGO partners, including Oréades and the Bioeste Institute, worked with the Bunge and Monsanto companies in the Emas-Taquari Biodiversity Corridor and the Jalapão-Western Bahia Biodiversity Corridor to engage local farmers in biodiversity conservation on private lands.

After identifying critical areas for the maintenance of populations of threatened and endemic species, CI engaged local farmers and ranches in establishing corridors that include a network of protected areas in a wider biodiversity-friendly landscape. CI undertook a participatory planning process in each corridor to define plausible land use scenarios that address the needs of soy producers and conserve key species.

CI has implemented biodiversity corridors in the Cerrado/Pantanal region of southwestern Brazil. The purpose of this program was to establish functioning biodiversity corridors. With a ten-year investment in the Brazil program, CI was able during the second five-year period to transition its programs to local maintenance within a formal corridor management system, and to replicate the corridor design and implementation methodology across the region. CI also transferred management of the Cerrado-Pantanal Corridor to local stakeholders, and conducted with them an outreach effort to launch a new biodiversity corridor effort within the agricultural frontier in northeastern Cerrado. The new corridor targets the largest complex of high biodiversity areas in the Cerrado, and provides the opportunity to engage local communities and small-scale farmers who still comprise most of the population.

Location, Global Importance and Key Threats to the Landscape

A. Madagascar

Madagascar is a global conservation priority due to its high level of endemism in plants and animals—the result of millions of years of geographic isolation. Many of the plants, reptiles,

birds and mammals belong to ancient endemic lineages unique to the island. For instance, Madagascar is home to 12,000-14,000 plant species, and more than 80% of known species are unique to Madagascar. Due to anthropogenic and natural pressures, these species and their natural habitats are under constant threat.

The Central Menabe ecosystem (also known as Menabe Antimena), which begins approximately 15 km north of Morondava on the west coast and continues northward, includes several forest areas (Kirindy, Ambadira, Ampataka and Andranomena), wetlands (Bedo) and mangroves. The forest areas, which are joined by a narrow corridor, are the last remaining refuge for at least four species endemic to Menabe (Giant Jumping Rat, Berthe's Mouse Lemur, Narrow-Striped Mongoose, and the Flat Tailed Tortoise); and the wetlands sustain a large number of water birds, including two endemic to Madagascar (*Anas bernieri*, *Ardea humbloti*). Over 25% of the forest's overall surface area has been lost in the last forty years, accelerating over the last ten years. This not only affects biodiversity, it also affects the livelihoods of local people who depend almost exclusively on forest resources and agriculture for survival. Natural resource degradation creates a poverty cycle that leads to further pressures.

In the region of Menabe the major threats to biodiversity are induced by human activities such as destructive agricultural practices from conversion of wetlands and forests for agriculture through slash and burn (tavy), illicit and selective logging, hunting and traps for bush meat trade (international animal market), collecting water bird eggs, salty fish production (local consumption), and mining. The region is also victim to frequent natural disasters (flooding and droughts) caused both by its geographical location in the Indian Ocean naturally exposed to cyclones, and also by increasing climatic variations as a result of increased temperatures.

In addition, there are a number of external factors based on the local institutional and socio-economic context that create threats to conservation. Such factors include widespread poverty and population growth, low institutional capacity of government environment managers, social disenfranchisement of local communities, and lack of ownership by governments over natural resources and understanding of their economic value for regional development. These factors combined lead to weak compliance and low enforcement of existing regulations and inefficient management. In addition, although the legal framework for decentralized natural resource management is set in place through CBNRM regulations, there has been a need to develop new regulations and laws to set up governance structures and management tools and plans for conservation of the broader landscape. Lastly, a central issue encountered by the project has been the lack of a sustainable financial mechanism available in the country in general and at the Menabe site in particular, to manage larger landscape Protected Areas.

B. Brazil

Brazil is a "megadiversity country," ranking first globally in richness of higher plants, freshwater fishes, and mammals, and in the top five for amphibians, reptiles, birds, and butterflies. The Cerrado biome covers approximately 200 million hectares, or one quarter of Brazil's land area. It is one of the world's 25 biodiversity hotspots. A vast landscape dominated by savanna vegetation and isolated within the South American continent, the Cerrado ranges from open grasslands through tree and scrub savannas, gallery forests, palm groves, dry forests, high altitude rocky grasslands and calcareous caves. The Cerrado is

especially important for plants: approximately 4,400 of its estimated 10,000 plant species occur nowhere else in the world. Nearly half of Brazilian birds are found in the Cerrado, as well as 35% of neotropical bees and 23% of neotropical termites. Recent surveys (within the last two years) identified populations of globally endangered species, e.g. the Brazilian merganser as well as plants and lizards. The Jalapão area of Northeastern Tocantins is the last frontier of intact Cerrado. Two federal parks and a state park recently created in the region total more than 1.5 million hectares. It is a mostly inaccessible scenic area with limited road access, and very sparsely populated.

The Pantanal is a large low-lying floodplain at the southwestern edge of the Cerrado highlands, in the heart of South America. Some 80% of its territory falls within Brazilian borders, the remainder being distributed between Bolivia and Paraguay. With an area 10 times larger than its “sister wetland,” the Okavango Delta in Botswana, the Pantanal covers 140,000 km², and is home to at least 3,500 species of plants, 300 fishes, 652 birds, 102 mammals, 177 reptiles, and 40 amphibians. One of the most impressive aspects of the Pantanal is its extremely high densities of wild populations of several large vertebrates, unsurpassed anywhere on the continent. Many endangered species, e.g., the giant river otter (*Pteronura brasiliensis*), jaguar (*Panthera onca palustris*), and hyacinth macaw (*Anodorhynchus hyacinthinus*) still thrive in the Pantanal. Finally, the region holds large stocks of important commercial species of freshwater fishes. These characteristics led to the naming of the Pantanal as a National Heritage Site in the 1998 Brazilian Constitution, including the region in the RAMSAR Convention on Wetlands of International Importance, and creating the third largest UNESCO Biosphere Reserve.

The major threat to terrestrial biodiversity is land conversion, driven by agribusiness in the Cerrado and intensive cattle ranching in the Pantanal. These produce habitat loss and fragmentation, as well as human-induced fires used in land clearing and pasture renewal.

Pantanal aquatic ecosystems are endangered by siltation and erosion from land conversion upstream in the Cerrado. Within the basin, the major threat is the “hidrovia” project of Brazil, Paraguay and Bolivia to channel the Paraguay River and improve transportation. Removing the natural barriers to drainage, this project could eliminate the flooding cycles over much of the Pantanal, wreaking catastrophic losses of biodiversity and economic fisheries resources. Overfishing and pollution are also increasing threats.

GCP Partner Historic and Current Roles in the Landscape

A. Madagascar

In 2002, the region of Central Menabe was declared a priority biodiversity site. CI took the lead in setting up the GCP project, selecting FANAMBY and DWCT as the project implementers in addition to the array of local managers from conservation sites existing prior to the project. This process was followed by the idea of creating a Protected Area under IUCN category V to reflect the multiplicity of actors and land uses of the different conservation sites and productive zones managed by communities. FANAMBY is the official manager of the Menabe-Antimena Protected Area with legal management authority.

The management schema is divided into specific management units that follow the forest zoning criteria and transversal themes pertaining to the management of the Protected Area. Each unit is managed by a Unit Manager, in partnership with FANAMBY, which is in

charge of developing and implementing site based management plans following the specificities of each unit and compatible with the overall Protected Area objectives.

Through GCP, CI also partnered with the following authorities and public institutions: the Regional Commission on Environment, Forestry and Biodiversity (a sub-commission of the Regional Development Committee (CRD)); regional service of the Environment, Water and Forests Ministry (DIREEF/CIREEF); inter-municipal committees (POICs); village leaders (fokontany presidents); Regional Forest Control Committees; the National Center for Training, Study and Research on Environment and Forestry (CNFEREF); and Madagascar National Parks (MNP).

Communities are the main partners of the program. Throughout the GCP local forest control committees have been trained and new ones set up to manage community transfer contracts (GCF, GELOSE) and carry out ecological monitoring and control enforcement of environment regulations. In addition, communities as a whole were integrated into productive activities (i.e. organic agriculture, tourism). Other partners include the Tropical Biology Association, the University of Antananarivo, WWF, and the Millennium Challenge Corporation (MCC).

B. Brazil

In 1988, Conservation International started its first field project in Brazil, and in 1990 it launched the Brazil program, with an office based in the city of Belo Horizonte, which is at the transition between Atlantic rainforest and the Cerrado biomes. In 1993, CI-Brazil established itself in the Pantanal, and in 1997 it started conservation activities around Emas National Park. Therefore, the history of CI-Brazil's activity in the corridors of the Cerrado-Pantanal goes back 15 years. The primary role of the Cerrado-Pantanal program has been to support creation and management of protected areas, to produce species inventories and to subsidize conservation of threatened species. Moreover, CI-Brazil also has a record of fostering and providing training in ecotourism, particularly in Pantanal. This set of actions has evolved into a landscape planning approach, strongly motivated by the fact that this region is the main agricultural frontier of Brazil, with a vocation to become one of the top food producers in the world. This evolution in CI-Brazil's approach took place through GCP support and, quite clearly, the first steps related to biodiversity conservation provided the necessary background for the land development and management achieved in the latter stages of this program.

GCP Partner Approach to Threats Based Conservation at a Landscape Scale

A. Madagascar

At its outset, this program was designed to target immediate threats to conservation, such as wildlife poaching, logging and unsustainable livelihood practices. CI approached this by identifying priority threats to biodiversity and linking them to specific conservation actions, such as control and enforcement of existing regulations. Strategies also integrated actions to address the underlying causes of the loss of biodiversity.

The program included three main objectives:

1. Increase capacity of communities to identify, protect and manage priority biodiversity areas;

2. Strengthen the institutional framework for corridor planning and management; and
3. Reduce the impact of unsustainable economic activities by promoting the development of sustainable livelihood options and their adoption by local populations.

During the first year of implementation a new national drive to expand the protected area surface of the country provided the project with strong institutional backing. The project was pioneer in prompting this paradigm shift towards landscape protection through actions undertaken by CI and its implementing partners prior to the project start and during its initial year. Existing research helped identify endemic species and provided understanding of ecological processes and species migration patterns. This provided the government with information to understand the importance of interconnecting the different forest blocks in the larger geographical extension. In 2003, the country committed to tripling its protected area surface, setting environment as a priority on the government's agenda. The project developed a comprehensive strategy to update environment legislation, develop new regulations, and set up novel governance systems and tools, to enable management of a landscape-based protected area and ensure its long term sustainability beyond the life of the project.

The landscape approach set up by the project is based on a holistic territorial vision in which the ecosystem is developed as one unique system providing services both to biological processes and to people through its economic resources. The territory is seen as a harmonized productive landscape that integrates productive zones and strict protection zones within the same forest corridor.

The territory was divided into different forest blocks under a variety of conservation statuses prior to the project. The project then developed a unique management plan that integrated the different unit plans. Units are managed by stakeholders: local government, technical government services, communities, research institutes and support NGOs. To reflect the diversity of stakeholders managing the different blocks, the project set up a co-management governance system. To enable managers to adjust to new management modalities and strengthen their roles and responsibilities within the new model, the project concentrated most of its work on capacity building. In addition, both research and benefits to communities remained central priorities.

To address a variety of institutional, socio-economic and political barriers, the project built on the experience of CI and its implementing partners, DWCT and FANAMBY. DWCT and other research institutions (DPZ, MRG) had experience working in the Menabe Region developing scientific knowledge on the ecological processes of the forests, as well as endemic species and habitats and their direct threats. This enabled CI and partners to inform government, donors and conservation organizations of the need to prioritize Menabe for conservation. In addition, DWCT also had experience integrating communities in technical tasks, such as ecological monitoring and natural resource management. FANAMBY has experience in stakeholder mobilization (community, government, private sector) to build landscape-type protected areas and working with communities to develop sustainable livelihoods in similar conservation sites elsewhere in Madagascar. Their experience provided an understanding of the socio-economic and political barriers common to rural regions in Madagascar that needed to be addressed by the project. Both DWCT and FANAMBY apply participatory approaches and work to create incentives and safeguards from conservation actions to provide benefits to communities and avoid unsustainable livelihood practices. CI

took the lead in combining the different expertise and managing the project flexibly through a trial and error approach, also enabling adaptation to the changing needs of the project.

Within the program framework, the overall Strategic Outcome was to “Improve Planning and Conservation of biodiversity in the Menabe Antimena Forest Corridor and develop the livelihoods of local communities.” Within that outcome were four objectives:

- Objective 1: The capacity of local communities and local and regional actors to manage use of resources is developed.
- Objective 2: The capacity of government, NGOs and other stakeholders to collaborate on corridor management in Menabe is developed.
- Objective 3: A participatory and effective corridor enforcement strategy is in place and operational.
- Objective 4: Sustainable livelihood options are developed and local populations and institutions understand the benefits of conservation and its value leading to a reduction in the impacts of unsustainable economic activities.

The framework addresses both the proximate threats to biodiversity and the underlying contextual barriers to sound management. The project developed strategies to do the following: improve the engagement of local stakeholders in conservation; implement activities in an extensive geographical landscape; develop and update existing regulations and policy frameworks (national, regional and local); create the local institutional capacity to plan and manage the broader landscape including improving the basic infrastructure; and establish effective control and enforcement mechanisms. In addition, the project has balanced the economic needs of local communities by developing a variety of alternative livelihoods and integrating the value of biodiversity into regional development.

In addition, by facilitating the identification of high biodiversity areas, factors affecting biodiversity distribution, and causes of threatened species decline, the project built science-based tools such as species protocols and guides and manuals needed for planning. The project’s participatory and inclusive methodology allowed taking into account local communities’ traditional rights over resources and empowered them to participate in management decisions related to their lands. Communities and local government participated in developing management plans for each unit and in the overall Protected Area management plan. The project also facilitated research on regional priorities and exchanges with academic institutions and other environment practitioners to build the local capacity and skills relevant to biodiversity conservation and protected area management.

Communities and environment managers were involved in technical tasks such as participatory ecological monitoring, set up to enable communities to control and track changes in the resources regulated by transfer contracts. The project trained communities in monitoring and control and recording infractions. Community control groups and mixed committees were set up to engage forest agents with communities to strengthen enforcement and compliance. All levels of government authorities were integrated either through direct control or through capacity building and monitoring and control workshops.

The project recognizes people’s dependency on nature for subsistence and the loss suffered from restricted access to land and resources. The project follows the principle that the establishment and management of the protected area must not be at the expense of the poor rural communities within the area. Consequently, steps were taken to compensate communities for opportunity costs by enhancing and developing a variety of livelihoods. The

project improved people's wellbeing by promoting productive activities such as farming, commercial plantations, community nurseries, handicrafts and tourism. This in turn served as an incentive for conservation and guaranteed the integration of environment and conservation in productive activities.

Direct tangible benefits were granted as incentives to conservation, through competitions set up between villages. These competitions were based on the 'best kept environment.' Prizes were provided in-kind (bicycles, farming tools) or cash. The prize amount depended on the level of disturbance to the village strict conservation area, the presence of endemic species recorded during the monitoring transects, and the surface area of each village's conservation area. Prizes were granted to all participating villages who are later assisted to reinvest in community micro-development projects. In addition, through CI's small grants program (NODE) community services were contracted for conservation tasks in exchange for a payment. This grant in turn also served to fund the ecological monitoring competitions. As part of the project's sustainability strategy, CI created links with the private sector by encouraging partnerships between communities and local economic operators (especially in tourism services), linking farmers to markets, developing niche markets such as organic products, and improving the quality standards of production. Given the importance of tourism in the area, partnering with the private sector has enabled communities and park managers to learn and develop better service standards and create job opportunities for local communities.

B. Brazil

This program had the overall goal of establishing biodiversity corridors within the Pantanal and adjacent Cerrado, in the south-central Brazil region. CI and partner organizations aimed to address threats to biodiversity in corridors through key strategic objectives. Under GCP I, they were as follows:

- 1) Build a biodiversity corridor planning and implementation support framework;
- 2) Create, strengthen and extend protected areas;
- 3) Reinforce core nuclei of protected areas; and
- 4) Establish biodiversity corridor of connected core nuclei.

Under GCP II, we built upon the accomplishments of the first five years with the following program objectives:

- 1) Foster alliances between southern and northern Cerrado organizations to design and begin implementation of a Biodiversity Corridor in the Cerrado's agricultural frontier;
- 2) Build local support for the Northeastern Corridor;
- 3) Facilitate and encourage efforts by Cerrado-Pantanal Corridor members to finish implementing the Emas nucleus of the Cerrado-Pantanal Corridor; and
- 4) Expand Cerrado-Pantanal Corridor protected areas in the Pantanal basin and consolidate ownership of the corridor management system to local partners and stakeholders.

CI has been present in the Pantanal since 1991 and the Cerrado since 1995. Along with other conservation organizations, considerable work had already been done in understanding the ecological functions of this area. Identification of priority areas based on species richness and representation of different ecological communities and species assemblages had been conducted by several organizations. The connectivity of Cerrado highlands and watersheds with the floodplains of the Pantanal had been established. In addition, a series of diagnostic

studies and action plans, including the Conservation Plan for the High Paraguay River Basin, the Agrarian Development Program for the State of Mato Grosso provided detailed information on the biodiversity of the largely unknown headwaters of this region.

The results of the government's 1998 Cerrado/Pantanal Conservation Priority setting workshop confirmed the considerable data that existed for a preliminary biodiversity corridor assessment. However, additional ecological data had to be collected (under GCP) in order to support the corridor planning and implementation support framework, including a monitoring and evaluation system. This step was also necessary to identify priority areas to connect proximate protected areas to form the core nuclei. Overall, it was a manageable problem.

CI realized that a key issue that required considerable focus was in corridor-wide threat assessments that focused on clarifying the financial incentives affecting land use. Specifically, we addressed cattle ranching, soybean production, and harvest of non-traditional commodities such as honey. Since government policies can be used to promote protection or improve practices, we also examined the effectiveness of policies that were currently or potentially applicable to this corridor. This data informed our strategy and detailed the activities necessary to achieve our goal. Although these were manageable problems, they required extensive efforts and an adaptive management approach.

A key aspect to all of our activities was local engagement and capacity building, which are essential for sustainability. We partnered with NGOs, government agencies, community planners and decision makers. This is best illustrated in our approach to replicate success in the southern part of the Cerrado and Pantanal in the northern part of the Cerrado. We transferred management of the Cerrado-Pantanal Corridor to local stakeholders, and conducted with them an outreach effort to launch a new biodiversity corridor effort within the agricultural frontier. The new corridor targets the largest complex of high biodiversity areas in the Cerrado, and provided the opportunity to engage local communities and small-scale farmers who still comprise most of the population. There was political support at the federal level for the corridor, and community desire to be involved in a regional conservation strategy that provides an alternative to land conversion into industrial agriculture. CI worked with these groups and with agribusiness enterprises to design private and community reserves that maintain connectivity between the mega-parks of the region.

We worked with the appropriate stakeholders to bring together experienced partners in corridor design and implementation to support the municipalities of Mateiros, São Félix, and Novo Acordo, the local community artisans association of Mumbuca, the Tocantins state secretariat of Planning, conservation NGO Pequi, IBAMA, and local farmers in designing a biodiversity corridor for the region.

Implementing Conservation at a Landscape or Regional Scale: Overcoming Challenges, Grasping Opportunities and Managing Adaptively

A. Madagascar

1. Overcoming Challenges and Grasping Opportunities

In Madagascar, landscape management is a novel approach. In order to create an effective and operational Landscape Protected Area, the project needed to address the immediate and

systemic threats to biodiversity conservation and the variety of contextual barriers that limited site based conservation.

The main political and institutional barriers are based on the low capacity of environment institutions and managers at the site level. Compliance and enforcement of environment regulations have been historically weak in this region. CBNRM was revamped by DWCT in the mid-1990s through the participatory ecological monitoring system that became an essential tool for landscape management. This system was developed within the frame of the GCF as a means to carry out monitoring and control tasks with those affected most by conservation (principle of subsidiarity). This fully integrated communities in management. The GCP project strengthened and increased outreach by providing resources to work at the landscape scale. Until then, resources for data collection were limited to a few targeted sites mainly adjacent to core conservation zones. The GCP helped reach other communities in more remote areas that were also impacting on species and habitats. Thanks to the project, the majority of communities within the landscape representing the areas under threat have updated or signed new GCP contracts and developed management plans and monitoring protocols. This helped unify management of the Protected Area, and collect a larger amount of data more accurately representing the ecosystem processes. This also reinforced recognition by other stakeholders (state and private land owners) of the land management rights of communities and strengthened their role as managers of the Protected Area.

The variety of stakeholders both public and private co-existing in the landscape has created a persistent challenge. The managers of the different forests blocks diverse management visions. Some of the management units have existed for many years and the managers have interests in conserving authority over resources. Feeling it may undermine their authority, they have resisted the new protected area and the landscape approach. Although management of the new Protected Area was endorsed to FANAMBY both the CNFEREF and MNP, managing the Kirindy and Andranomena Forests respectively, have retained management through different legislative means. The consequence has been the delay in setting up a fully operational management and business plan for the landscape as a whole.

Land issues are a problem when it comes to private ownership within the forest corridor. Private owners have been resistant to environment regulations (such as CBNRM); consequently, today this area is considered a free-take zone by local communities. Given the importance of this zone for connectivity of the ecosystem, this represents a high risk to landscape conservation. The project has initiated negotiations but without any solid agreement.

Actors sometimes have antagonizing visions and often vested interests in the management of natural resources. By setting up a shared management system through a protected area which integrates a wider variety of actors, some may be paying an unexpected opportunity cost. Many illicit activities are linked to non transparent management by public authorities. Activities that are unsustainable may produce high revenues directly benefitting a few local actors. The project has helped to reduce this risk factor by enabling all stakeholders to participate in planning and decision making and by combining actors in technical tasks such as monitoring and control. However, this will also depend on political backing at the local and national levels.

The project also needed to adapt and update national and regional regulations to set up a legal framework for landscape management. Conservation of landscapes is new to the

country. Policies and institutions for traditional protected areas did not reflect the larger spatial scale of landscapes. Landscape-type protected areas involve not only environment practitioners but also local people and State actors who work in development issues such as economic development, land issues, decentralization processes that needed to be integrated into management, and decision making structures. This means integrating an increased number of stakeholders in program activities. A legal framework reflecting this complex system did not exist until the project provided the basic tools and systems to inform policy makers. Initially the lack of a clear legal framework with defined roles and responsibilities for each stakeholder created confusion by the different actors. The governance structure developed by the project helped clarify each role.

The poor economic conditions of rural communities and their disenfranchisement has been another barrier to effective management common to rural Madagascar. The poverty situation and the population pressures commonly lead to unsustainable agricultural practises and over-extraction of forest products. Remote villages make it difficult for communities to access State services (rural extension, health, education), making it even more difficult for them to participate in decisions concerning natural resources. Although for over twenty years projects in Menabe had worked with communities, they mainly focused on sustainable forestry isolated in different forest blocks. This was disconnected from activities more directly concerned with conservation of natural resources in the surrounding region. When the project finished, no reliable follow-on system was put in place to provide ongoing technical support. The landscape approach enabled to raise awareness of the interrelation of the different conservation units and creates functional and operational links between the different sites. Population pressures continue to create threats to sustainability of the ecosystems; however, the project has considerably reduced the institutional barriers to community participation by mobilizing the majority of the communities in the landscape. This has created awareness and changed behaviour towards more sustainable environment practices. Today most of the villages in and around the core biodiversity-rich sites have developed management plans and transfer contracts and control and monitor compliance with environment regulations.

An obstacle was the lack of a sustainable financial mechanism that enables to maintain the Protected Area structure and the activities that help develop benefits for communities. This is a structural problem encountered by all Protected Areas in Madagascar, common both to landscape and traditional approaches. Although a variety of mechanisms and strategies have been tested by different projects no sustainable model exists and the dependency on project aid persists.

The GCP piloted an approach based on developing a business plan that would diversify the sources of funding and change the traditional public based approach to Protected Area maintenance to a partnership based approach that integrates the private sector. The purpose is to change the perception of the protected area by local stakeholders from an exclusive conservation site to a productive landscape. By outsourcing maintenance and services and partnering with private operators, communities can be trained, job opportunities created and services improved to meet international tourist standards. Additionally, the productive activities by communities within the landscape may also produce revenues that can be reinvested into maintenance. The project developed a draft business plan and is testing a local taxation mechanism. Some activities such as tourism and bio certified agriculture, currently produce substantial resources. This pilot attempt will require a significant amount of time and project support to ensure its progressive acceptance by local stakeholders and set up a permanent mechanism.

The design of the project integrated strategies to deal with the variety of barriers mentioned above. The strategic framework integrated both conservation and sustainable development, helping communities and local stakeholders understand their mutual dependency and the economic value of natural resources. Conservation actions were carried out simultaneously to activities focused on creating ownership. This enabled local stakeholders to understand the benefits of landscape protection and create acceptance and compliance over the projects new approach.

3. Managing Adaptively

The project was built on adaptive management principles and tools. Based on a research and action approach to implementation, the project team integrated best practices, and scientific findings while learning from practical implementation.

The project framework was structured around four expected objectives which reflect the strategies to achieve the overall outcome. A variety of activities were designed to address the threats to biodiversity conservation and the contextual barriers to implementation. Progress was tracked by field monitoring and documented in quarterly field reports. DWCT and FANAMBY are strong field based NGOs that can track progress on a monthly basis. The reporting requirements by CI were based on monitoring progress of benchmarked activities on an annual basis. Activities were tracked based on a performance scale (completed, on-track, delayed). An annual report analyses the progress and achievement and the setbacks and provides a full explanation of the issues encountered during implementation. This report also highlights the accomplishments of the year in form of success stories.

Quantitative baseline data on biodiversity and endemic species abundance was collected prior to project start up and then completed during the project by DWCT. The project collected additional information on the factors affecting distribution and the causes of decline of threatened species, in addition to adding base line data on new species. This information was tracked by DWCT in partnership with communities through monitoring protocols developed by the project. These protocols were shared with the project team and served as an input to unit management plans and the overall Protected Area management plan. In addition, the project made satellite imagery (ASTER) available, allowing analysis of the current state of the forest cover in the region.

Two lessons learned workshops were held with the internal management team during the project. Lessons and recommendations are documented in meeting notes. In addition, the project team participated in the USAID 2008 Madagascar Mission stocktaking process by writing and providing inputs to scientific articles on cross-cutting themes related to protected area creation, landscape project implementation and conservation and development. Articles are available on the USAID Madagascar website.

A solid communication system helped promote awareness in remote rural areas by sharing information on the activities carried out by the project to create the Protected Area. The recently opened Marofandilia Information Center reinforced this system. The project shared information with local stakeholders on a constant basis (communities and government authorities and environment managers) through consultations and validation processes. This enabled the team to reflect views and adapt plans, activities and strategies to changing needs and circumstances. Local authorities were provided with the assessment reports, monitoring

protocols, and environment management plans. The team promoted permanent dialogue with local government authorities (OPCI) and the regional environment services (CIREEF) both to ensure their active participation in the co-governance structure of the Protected Area and to adequately reflect regional needs in the project activities.

B. Brazil

1. Overcoming Challenges and Grasping Opportunities

In all three corridors within this program, the main challenge was to promote environment-friendly land use and exploration of natural resources in a way compatible with biodiversity conservation. The involvement of public agencies, land owners and urban population was an essential part of CI's strategy to establish commitments and develop actions that reduced human impact on biodiversity. Main threats were often a consequence of undervaluing and mismanaging natural resources, lack of planning and control of land occupation and use of natural areas, and lack of participation of local communities in the decisions to use and conserve these resources.

Thus, CI-Brazil's strategy to achieve results was based on four lines of action, as detailed below.

- *Building capacity of local stakeholders to act as multipliers and disseminators of conservation principles.* This was the main lesson learned from the first four years of this program. Building a network of institutions provides an important forum for decision making, sharing lessons learned and planning the next steps for the program; and this proved to be more effective than previous isolated conservation actions. During the first program phase, for example, the implementing team of the Cerrado-Pantanal Corridor Program consisted of Neotropica for Miranda-Bodoquena, Oikos for Maracaju-Negro, Oréades for Emas-Taquari, and CI as the main coordinator. In the second phase of GCP, the south-south capacity building between Oréades and Bioeste in the new corridor of Jalapão-Western Bahia Corridor was an excellent example of the multiplier effect of a long-term investment in capacity building. It not only increased the capacity of Bioeste but also helped Oréades solidify their skills and information through this mentorship approach.
- *Offer land use alternatives that were compatible with conservation, drawing on experiences and institutions already present in the region.* With Bunge and Monsanto's support, Oréades has worked effectively for the past several years to increase awareness among landowners about the importance of habitat restoration on private lands, including undertaking a participatory planning process in each corridor to define plausible land use scenarios that address the needs of soy producers and conserve key species. To be more environmentally sensitive, Perdigão buys its raw materials from about 40 landowners. Oréades is analyzing these farms to check their compliance with the forest code and water use restrictions.
- *Support creating a network of public-private protected areas able to maintain large and diverse environments, to serve as the regional source of biodiversity.* Privately held reserves complement the public system of conservation units and constitute a potentially powerful and flexible approach to biodiversity corridors. Therefore, CI supported the identification of such sites, working closely with interested private landowners, and also supported the application process. CI worked closely with such

organizations as the Association of Owners of Private Natural Heritage Reserves in the State of Mato Grosso do Sul (REPAMS), whose membership includes 70% of the private reserves. Further, CI supported the creation of a new Private Natural Heritage Reserve (RPPN) in the Upper Paraguay Basin (UPB), and supported the implementation and consolidation of existing RPPNs. This activity increased the area under legal protection in UPB and has improved management in several areas by means of the Pantanal's Private Reserve Incentive Program. The Program is developed by the Association of Owners of Private Natural Heritage Reserves in Mato Grosso do Sul state (REPAMS). CI-Brazil has helped the REPAMS build a permanent fund to support new actions and sustainability in associated private reserves.

- *Establish a transparent way to monitor changes in land use and biodiversity to help regional landscape planning and management.* CI's Information Technology team worked to unify the presentation of KBAS throughout Brazil, enabling public consultation and cross referencing with different levels of information, such as the demarcation of the corridors. Part of the data, specifically the occurrence of endemic plants, is already available at <http://www.plantasraras.org.br/localizar.php>. Further, CI built the capacity of partner Oréades to supply updated landcover maps, corridor base maps, and training in remote sensing and landscape mapping for the Cerrado nucleus of the corridor. Oréades is organizing eight years of activities and providing a synthesis of the corridor implementation process. This activity started at the end of FY08, due to delays in hiring a manager to work in Mineiros. Now, a partnership between Oréades and Fauna & Flora International provides the technical support to execute the activity. Meanwhile, CI biodiversity specialists compiled all available information on biodiversity in the Emas Taquari Corridor. This information will be shared broadly with key stakeholders to ensure that all are well-informed.

3. Managing Adaptively

Over the life of the grant, we have adapted our program activities to achieve our overall objectives and goal. In some cases, we had to adjust for unforeseen political events or to take advantage of unique opportunities. In addition to making adjustments as necessary throughout the year, evaluations in preparation for our annual reports and workplan development required us to determine if we were achieving our objectives and overall objectives. Our final suite of activities was based on scientific information; CI and local partners collected spatial data (especially from satellite images and related to land tenure), biodiversity data (mainly on species occurrence and ecological data), and socioeconomic data.

There were several externalities that required us to adapt our program. Political change was one of them. For example, in 2007, IBAMA was replaced by a new official agency, Instituto Chico Mendes, for management of Brazilian federal protected areas. There were related delays as this new agency became fully functional, and we had to adjust our timeline for all activities that required its involvement. Another externality was institutional changes within partner organizations. At one point, our northern corridor partner, Naturatins, underwent substantial changes with personnel cuts and corruption complaints. As a result, we focused additional efforts on another partner, Bioeste, in the region of Western Bahia, with excellent results. Our plan to extend the partnership with BUNGE to the Jalapão-Oeste da Bahia Corridor waited for an extension of our contract. Meanwhile, at the end of FY08 CI and

Monsanto started a partnership to work with the Legal Reserves and Permanent Protected Areas compliance project. This proved a very successful partnership and in the end greatly expanded our public-private partnerships.

Sustainability

A. Madagascar

Through its design and structure, the System of Protected Areas of Madagascar (SAPM) is set up to catalyze sustainability and create a net positive impact on the lives of local and regional populations. The strategy for the protected area as designed for the next phase (2008-2012) reflects these goals directly through its global aims: from sustainability and safeguards, to control, governance, and adaptive management.

The strategic objectives of the next phase build on the current system designed through the GCP. These five outputs are interdependent, and combined form CI-Madagascar's sustainability strategy: 1) Identify and implement processes to ensure sustainability; 2) Ensure the viability of biodiversity through control over illegal exploitation of natural resources and risk management; 3) Safeguard and improve the quality of life of local populations, and conserve biodiversity, through the sustainable use of natural resources within the protected area; 4) Protected area management is carried out following international principles of good governance and traditional governance norms; 5) An adaptive management plan is set up in collaboration with all stakeholders to regulate activities within the Protected Area in harmony with regional development policies.

The project also subscribes to transversal principles which strengthen the Protected Area in the long term, such as ownership and involvement by the local populations and regional authorities (fokontany, mayors, and regional and district officials); community participation; private sector involvement; changing behaviour towards conservation; and promoting autonomy in management and development.

In addition, it is necessary to secure certain attributes of the Protected Area to make it ecologically viable. This includes conserving the representation of unique species, as well as ensuring the natural surface of those habitats (species populations) is large enough to maintain the variety of species, and that these larger surfaces are more resilient to natural disasters and climate variations. These factors promote the site to government officials and donors and environment foundations that guarantee funding. These actions are secured through the interdependent goals of the project and through strong science and research-based monitoring to keep track of the state of biodiversity.

Sustainability also needs to be addressed directly through targeted strategies. The Menabe Antimena Protected Area management plan for the next phase specifically addresses funding mechanisms and safeguards as two distinct and central strategies of sustainability.

Financial sustainability is also critical. The SAPM lacks stable sources of government funding for operational sustainability. To develop funding mechanisms, NGOs or other protected area managers are implementing pilot programs in partnership with the government and the private sector to seek long-term funding to maintain the conservation sites. The Menabe Antimena strategy is based on multiple actions: mobilizing resources from international donors; diversifying funding sources to reduce dependence on project funds;

identifying long term financial partners; developing ecotourism; integrating the Protected Area into national and regional development; and partnering with the private sector. In addition, FANAMBY is piloting a local taxation mechanism through revenue from productive activities carried out in the Protected Area.

The GCP piloted a variety of activities aimed towards the goal of financial sustainability. Activities included setting up a business plan; reinforcing ecotourism by strengthening the capacity of service providers and community associations to manage tourist concessions; improving information access on the new tourist sites; integrating private tourism businesses in the Protected Area management plan; promoting links with local markets and tourism operators; and enhancing productive activities and niche markets. Despite these efforts, given the recent creation of the Protected Area and the lack of sustainable government funding, currently there is no autonomous financial mechanism. Menabe Antimena is still dependent on donor and NGO funding to maintain its current status and the achievements of the GCP.

As a final note on sustainability, *safeguards* are the means by which benefits are perceived by the local communities that suffer the opportunity costs of limitations or restriction on resource use as a result of the new Protected Area. The project has developed a double strategy to provide both short-term benefits through ecological monitoring competitions and community conservation contracts, and long-term sustainable benefits which enhance and develop sustainable livelihoods through agriculture, forestry, and tourism. These benefits are achieved by autonomous participation by communities and local government and other stakeholders in the process of management, including design, planning, monitoring and making decisions regarding natural resources. This develops ownership and understanding of the importance of the Protected Area and its resources. In addition, by integrating the Protected Area into the regional development plan, it is recognized as an economic asset by the variety of regional stakeholders.

B. Brazil

Since 2005, the funds raised for CI's Corridors have been increasing. We attribute this success to the consolidation of the idea of using a large-scale approach that allows the inclusion of other dimension besides biodiversity. The use of a corridor as a planning unit for conservation of biodiversity and integration with productive systems is very attractive to the private sector and also to the different levels of the Government. Thus, financial sustainability of the initiatives undertaken by this program was addressed mainly by building partnerships with the private sector, including the following:

- In 2007, CI-Brazil renewed its agreement with a private foundation for a four-year period. This grant is designed to implement conservation actions for the entire Cerrado and Pantanal. The biodiversity corridors of Maracaju-Negro, Emas-Taquari and Jalapão-Western Bahia will receive investments of \$3.34 million until 2011. CI is committed to passing 30% of the funds to local partners.
- Also in 2007, CI-Brazil, and its local partners, Oréades and Bunge Foundation, signed a memorandum of understanding aimed at implementing the Cerrado BioAlliance, an initiative dedicated to promote the engagement of private sector companies in the conservation of the Cerrado.
- In 2008, a proposal prepared by CI Brazil and Chico Mendes Institute to a multilateral agency for the Cerrado was approved, and was started in 2009 for a three-year period. The project is designed to support the expansion of the network of public protected areas and to implement the most important ones. This includes areas in all corridors

located in the Cerrado.

- CI-Brazil made an agreement with a private company to promote the restoration of degraded areas in the Jalapão-Western Bahia region. By engaging private land owners, the project will provide technical support and assistance for those land owners interested to promote the management of native areas located inside their properties. Institute Bioteste will be the main executor of the project, which will be implemented over five years.

Additionally, CI also supported carbon pilot projects in preparation for an anticipated expanding carbon trading market. Bunge and Monsanto became our partners in these initiatives and brought in significant resources to sustain the actions supported by GCP. Oréades, one of CI-Brazil's NGO partners, obtained financial support from food company Perdigão.

In 2009, CI and Oréades started a pilot project to use carbon credits in the environmental recovery actions. Eight areas were selected, including nearly 600 hectares, thus guaranteeing reforestation and subsequently carbon sequestration for 30 years. The documentation is being prepared for the validation and certification of the amounts of carbon to be sequestered. By the beginning of 2010, the credits will be available for trading. This is the first initiative of its kind in the region and the second in all of the Cerrado. It is expected that the credits generated will be sufficient to cover the costs of new projects, thus gradually increasing the area recovered.

Programmatic sustainability was approached by combining initiatives such as capacity building for partners (local governments and local NGOs), provision of management tools and data for planners, and creation of means for the legal protection and functioning of key biodiversity areas. CI's approach to building long-term public support is to focus on identifying regional economic alternatives to unsustainable land-use practices, to increase public understanding of how biodiversity conservation activities offer long-term benefits, and to actively engage the academic community in developing centers and mechanisms for information exchange.

Measures of Success

A. Madagascar

The primary measure of success was the degree to which project objectives were achieved, as described below. The overall development outcome was to conserve the biodiversity in the Menabe Antimena Forest Corridor while improving the livelihoods of local communities.

- **Objective 1: The capacity of local communities and local and regional actors to sustainably manage and use natural resources is developed.** This output focused on creating the institutional and regulating framework to enable sound management of the Menabe Antimena forest corridor. This set the ground for the current co-governance structure of the new Protected Area. Today, thanks to this project, the forest corridor has been declared a Protected Area IUCN category V and covers an extension of 145.000 ha of dry deciduous forests, mangroves and wetlands in the Region of Central Menabe.
 - The project has developed and updated planning and management tools and regulations and built the capacity of communities and local government to

- implement and enforce them. These tools were harmonized with regional and local development plans in close collaboration with regional authorities.
- The program has worked to integrate local participation by engaging actors from the outset in planning and management and consulting communities each step of the way. This developed a sense of ownership over the Protected Area. Some innovative methods carried out by DWCT such as raising awareness through festivals and competition based conservation and integrating villagers in technical tasks such as ecological monitoring, have created a sense of value and pride over the natural resources communities manage. These innovations have been highly successful.
- **Objective 2: The capacity of government, NGOs and other stakeholders to collaborate on corridor management in Menabe is developed.**
 - Today thanks to the project, substantial data exists on the major flagship species: giant jumping rat, flat tailed tortoise, Berthe's Mouse Lemur and thin-Striped Mongoose.
 - A system was developed to integrate communities into ecological monitoring based on competitions as a means to create direct incentives to engage communities in protecting resources. Community monitoring serves both as a scientific data collection system and control over compliance of environment regulations against illicit use of resources. This in turn provides information on the evolution of threats to natural habitats and species to inform unit managers. The programs' approach to monitoring was pioneer and is now used in other Protected Areas in Madagascar and other parts of the world.
 - **Objective 3: A participatory and effective corridor enforcement strategy is in place and operational.** In its initial stages, the project provided direct support to forest agents in monitoring, logistics and administrative tasks to enable them to apply national regulations locally. In later stages, the project helped the Region develop a long term control strategy. At the outset the project was effective in dismantling the illegal logging system.
 - The project also improved transparency by developing good collaboration between relevant actors: forest agents, law enforcement agents, rural police (gendarmerie), municipal authorities and CFL. By developing more participatory and regular surveillance, the project helped to ensure that information about infractions was widely known and acted upon.
 - By setting up a shared management system through a protected area which integrates a wider variety of actors, some may be paying an unexpected opportunity cost. Many illicit activities are linked to non transparent management by public authorities. This project has helped in this sense by combining actors in monitoring and control and full participation in planning and decision making. A permanent mechanism should be identified and set up to maintain this level of monitoring and enable mayors and park agents to perceive this benefit along with communities.
 - **Objective 4: Sustainable livelihood options and understanding of conservation benefits and value by local populations and institutions is developed and the impacts of unsustainable economic activities are reduced.** The project helped identify economic opportunities available to communities and promoted these activities through support to start up investments, links to markets, partnerships with

the private sector, technical training, provision of small equipment and infrastructure. The core economic activities identified and promoted by the project are tourism and organic agriculture in addition to other small scale activities such as the production of wood handicrafts, embroidery, non-timber forest products (honey), and reforestation through commercial nurseries.

- The project has helped communities to produce and market agriculture goods, mobilize development partners such as SAHA, FIDA, ACORDS and MCA and encourage public-private partnerships (PPP) to provide support to development projects that respond to the communities' needs in harmony with the management plan of the Protected Area.
- The project identified and helped develop value chains for organic agriculture products such as lentils and peanuts while helping to build the capacity of farmer associations to link these crops to markets. The NGO FANAMBY has developed an organic label, SAHANALA, which follows international standards and helped local farmers meet the requirements by improving their production techniques. These farmers have now obtained the SAHANALA label and are able to acquire international certification in the future. This will considerably add value to their produce.
- The project worked with MCA and SAHA for technical assistance to farmers. Business relationships between buyers and farmer associations were facilitated to ensure their long-term autonomy from the project. In addition to cash crops SAHA helped farmers diversify their production with vegetable crops, increasing their nutritional levels and food intake. Women's groups were particularly motivated and continue farming these products actively.

B. Brazil

The goals established for the Brazil sites were accomplished in both phases of GCP. During the first five years, the objectives were as follows:

- Objective 1: Lead participatory process to design and implement a Corridor-level plan;
- Objective 2: Work with key groups to establish and manage protected areas; and
- Objective 3: Build long-term social support and participation.

The major achievements included the creation of two state parks and several private reserves totaling nearly 200,000 hectares; a fire control and environmental education program; capacity built with local partners to generate data on wildlife monitoring and landscape level mapping; the implementation of a technical support program for creating private reserves; development of pilot programs on eco-beef, wildlife ranching and economic alternatives; conducting of a protected area survey, management workshops and training programs with state and federal authorities; and the collection of baseline biodiversity and economic data throughout the corridor to provide a design and monitoring system. These activities were the means to engage various stakeholders in corridor planning and implementation, including state and federal environmental agencies, partner NGOs, universities and research organizations, landowners and local economic interests, and state and local governments. We then built upon this foundation with GCP II.

In GCP-II our goal was to transition these programs to local maintenance within a formal corridor management system, and to replicate the corridor design and implementation

methodology across the region. We transferred management of the Cerrado-Pantanal Corridor to local stakeholders, and conducted with them an outreach effort to launch a new biodiversity corridor effort within the agricultural frontier in northeastern Cerrado. The new corridor targets the largest complex of high biodiversity areas in the Cerrado, and provides the opportunity to engage local communities and small-scale farmers who still comprise most of the population. There is political support at the federal level for the corridor, and community desire to be involved in a regional conservation strategy that provides an alternative to land conversion into industrial agriculture. CI worked with these groups and with agribusiness enterprises to design private and community reserves that maintain connectivity between the mega-parks of the region.

The first stage was building capacity in local partners to employ the methods and achieve results as obtained under GCP-I (biodiversity monitoring, education, fire control, and support for creation and management of protected areas). The second stage, in conjunction with the Cerrado-Pantanal corridor group, was to build the management structure and consultation processes necessary to operate the new Corridor.

The main evidence that the program achieved its overall goals (in GCPII) and enhanced the status of the conservation targets is that the corridor Jalapão-Western Bahia is largely consolidated. Emas-Taquari corridor and Maracaju-Negro corridor are now connected to Brazilian northeast through the set protected areas created or implemented in corridor Jalapão-Western Bahia. Moreover, relevant data, governance and capacity also increased in the region. For instance, 1) Environmental committees have been created for the municipality of Barreiras (BA) and for the Rio Negro basin; 2) Oréades organized the biodiversity regional data and together with CI defined the Key Biodiversity Areas (KBAs) in the Cerrado Pantanal corridor, and part of the data (that regarding to endemic plants) is available to the public at <http://www.plantasmraras.org.br/localizar.php>; and 3) environmental education activities and products were generated.

The partnership built with major private companies of the agribusiness sector (Monsanto and Bunge), and their involvement, exceeded our expectations. This additional support has been essential to the substantial success achieved here.

Nevertheless, some objectives were not fully achieved, and there were some operational problems along the project. For instance, the mosaic of protected areas in Jalapão-Western Bahia corridor was not yet acknowledged by Ministry of the Environment. However, there were concrete actions to integrate the protected areas, especially among the Jalapão State Park and the Ecological Station of Serra Geral in Tocantins. There is an integrated plan for these two reserves regarding control and prevention of fire in the region of Mateiros, where both protected areas are closer.

- **Objective 1: Alliances are fostered between southern and northern Cerrado organizations to design and begin implementation of a Biodiversity Corridor in the Cerrado's agricultural frontier.** During GCPII a plan for an exchange of knowledge and information was implemented among CI corridors. CI consolidated experiences with an exchange program between Emas-Taquari and Jalapão West Bahia to support more effective collaboration among corridors.
- **Objective 2: Local support is built for the Northeastern Corridor.** Local support for biodiversity corridors depends on three tasks: providing support to local

governments for protection of natural resources; engaging landowners to achieve better results in reconciling the impacts of economic activities with the need for conservation; and improving awareness of local communities by providing good quality information.

- Despite the progress described achieved with the formation of the mosaic of protected areas, other activities did not achieve success. The proposal to create a protected area in São Felix in Tocantins was discontinued, mainly due to the city's priority modifications. Simultaneously, the city was no longer interested in the proposal by 2009, and the environmental agency of Tocantins, Naturatins, underwent substantial crisis with personnel cuts, and thus a new PA was not created.
- **Objective 3: Efforts by Cerrado-Pantanal Corridor members are facilitated and encouraged toward the completion of the Emas nucleus of the Cerrado-Pantanal Corridor.**
 - The fifth monitoring of land use and vegetation cover of the Emas-Taquari biodiversity corridor was completed. This initiative directly involved students of forestry and agronomy, developing capacity for studies in remote sensing. The new results showed the expansion of sugar cane impacting food production and provoking deforestation. A national effort for zoning sugarcane production was launched, and now at least half of the Emas Taquari corridor is not allowed to produce sugarcane.
 - Oreades organized regional biodiversity data, and together with CI, defined the Key Biodiversity Areas (KBAs) in the Cerrado Pantanal corridor. CI worked to unify the presentation of KBAs throughout Brazil, enabling public consultation and cross-referencing, such as the demarcation of the corridors.
- **Objective 4: Cerrado-Pantanal corridor protected areas are expanded, and ownership of the corridor management system is consolidated.**
 - In May 2009, the Fazenda Rio Negro was officially recognized as a Ramsar site, becoming the second private area in the Pantanal to achieve this status and the first in the Maracaju-Negro Corridor. The management plan was dispatched to the state agency for the environment and is under revision.
 - Knowledge of Corridor threats was increased, and findings were disseminated. The mapping initiative planned by CI, WWF, Ecoa, Avina Foundation and businessman Roberto Klabin was completed and presents the most complete and updated assessment of the entire Pantanal complex.
 - To summarize the ten years of GCP work in the Pantanal, CI hired a company to compile all actions undertaken by the program. Data were organized as a digital publication to be distributed among the partners and stakeholders.

Value of the GCP Program

A. Madagascar

Work in the Region had been initiated by DWCT and FANAMBY prior to the start of the GCP. These initiatives were funded through a variety of scientific foundations, and donors. However, funds were not sufficient for the work required to cover the whole extension of the landscape. Although DWCT was working to address the immediate threats, the funding level available only allowed covering work with communities adjacent to the identified core

conservation areas with little or no outreach to more remote communities posing an equal threat. FANAMBY was working to develop similar landscape conservation sites elsewhere in Madagascar and was faced with similar funding problems.

The funds mobilized by CI through the GCP broadened each NGO's scope of work and addressed the threats comprehensively, throughout the larger landscape. Also, the GCP helped mobilize partnerships (such as those with MCA, SAHA, FIDA) to carry out complimentary work and leverage additional funds.

By combining efforts in one project, CI helped strengthen the work of these NGOs and consolidate efforts in one unique workplan funded by USAID.

B. Brazil

In addition to providing long-term financial support for conservation, the program also emphasized certain programmatic elements that are now mainstream and considered essential to effective conservation program development. They include working at the landscape scale, applying a threats-based approach, and partnerships (particularly with the private sector).

GCP's ten-year investment in our program was critical to meeting our long-term objectives and attracted additional funding from both the public and private sectors, which leveraged USAID's investment. As one example of private investment, CI has been working with Bunge, one of the world's largest agribusiness companies, since 2003 to develop solutions to conservation challenges in the Brazilian Cerrado. In Brazil, major agricultural development has resulted in the clearing of natural forests and grasslands to establish pastures, farms, and infrastructure. To help address this challenge a partnership between CI and Bunge has helped create a Private Reserve Network among local privately held farms to help link the Emas-Taquari and the Urucui-Mirador Biodiversity Corridors and create a protective buffer zone for Emas National Park. By 2009, 96 properties were involved in the project and 310,352 acres of legal private reserves had been created and secured. CI and Bunge have also collaborated to integrate conservation criteria into Bunge's supply chain systems and into regional development goals. Alberto Weisser, CEO and Chairman of the Board of Bunge Limited, stated that "Our work with Conservation International to preserve the health of critical ecosystems, integrate environmental best practices into supply chains, and engage farmers to comply with environmental laws in Brazil has been productive and informative. CI's pragmatic approach to environmental challenges is forward thinking, results oriented and innovative."

As another example of private investment, in 2008, CI signed a partnership with Monsanto that involves millions of dollars in five years as part of a global strategy to urge the agribusiness supply chain to adopt environmentally sustainable criteria. Both institutions recognize that agriculture sustainability depends on protecting nature, which ensures land owners continued quality water, stable climate, fertile soils, pollination services, including other environmental benefits. The Monsanto partnership came in good timing, to offer continuity and financial sustainability for the jalapão-western bahia corridor that was initially supported by USAID. During the first year of project implementation with Monsanto, the activities were to strengthen the local partner and to map and identify the most important environmental assets in the project's properties in the region to start working with the landowners in their environmental compliance. Overall, all actions performed by the project this first year of partnership serve as pillars for the next four years, during which, within the

scope of Monsanto, measures will be explored for the compliance of environmental laws in the field, in order to avoid deforestation and the extinction of species, and also to promote best practices by implementing Monsanto's Environmental Sustainability Policies that will permeate their internal and external actions.

On a final note, GCP's threats-based approach introduced a critical lens through which we had not fully analyzed our program. Although we were aware of the major threats to conservation in the Cerrado Pantanal, we focused on a science-based approach to PA design. Through GCP, CI's approach now combines global and regional biodiversity and services diagnostics with implementation that fulfills regional landuse planning needs and local natural resource supply.

Figure 1: Map of Menabe Project Area

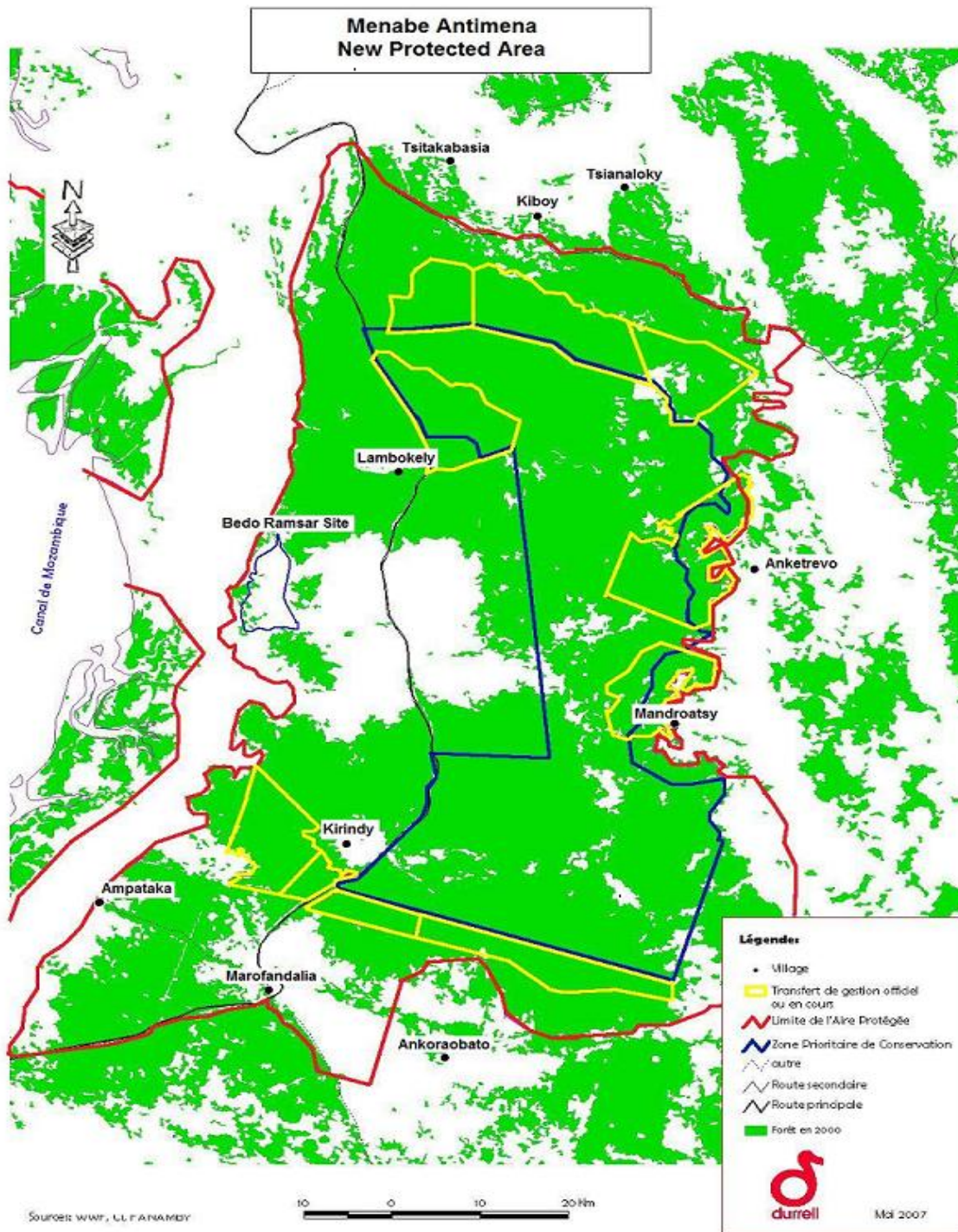


Figure 2: Map of Cerrado-Pantanal Site

