BRAZIL
Parana Biodiversity Project (GEF)

Project Appraisal Document

Latin America and Caribbean Region
LCSER

Date: July 20, 2001
Team Leader: Michael G. Carroll
Country Manager/Director: Gobind T. Nankani
Sector Manager/Director: John Redwood
Project ID: P070552
Sector(s): VM - Natural Resources Management, VY - Other Environment
Theme(s): Environment; Rural Development
Focal Area: B - Biodiversity
Poverty Targeted Intervention: N

Program Financing Data

[ ] Loan [ ] Credit [X] Grant [ ] Guarantee [ ] Other:

For Loans/Credits/Others:
Amount (US$m):

Financing Plan (US$m): Source	Local	Foreign	Total
BORROWER/RECIPIENT	0.00	0.00	0.00
GLOBAL ENVIRONMENT FACILITY	8.00	0.00	8.00
LOCAL GOVTS. (PROV., DISTRICT, CITY) OF BORROWING COUNTRY	24.86	0.00	24.86
Total:	32.86	0.00	32.86

Borrower/Recipient: STATE OF PARANA
Responsible agency: SEPL/SEAB/IAP
Address: Government Center for Program Coordination (CCPG), Planning and General Coordination Secretary, State Government of Parana, Rua Marechal Hermes, 999 CEP: 80.530-914, Curitiba, Parana, Brazil
Contact Person: Ms. Yara Eisenbach
Tel: (55-41)-313-5290 Fax: (55-41)-313-5408 Email: yarabach@pr.gov.br

Estimated disbursements (Bank FY/US$m):

FY	2002	2003	2004	2005	2006			
Annual	1.00	4.34	1.57	0.79	0.30			
Cumulative	1.00	5.34	6.91	7.70	8.00			

Project implementation period: 4 Years: January, 2002-December 2006

OCS PAD Form: Rev. March, 2000

A. Project Development Objective

1. Project development objective: (see Annex 1)

The primary objectives of the Parana Biodiversity Project (PBP) include the following

- Achieve sustainable biodiversity conservation in two highly threatened ecoregions in the State of Parana with sufficiently exceptional biodiversity to be classified among the world's 25 "Hotspots": Brazilian Inland Atlantic Rainforest and Araucaria Forest
- Design and implement a model for achieving sustainable biodiversity in Parana that can be replicated throughout the State and especially in two additional ecoregions of special biodiversity importance, the Coastal Atlantic Forest and Savannahs/Steppes (*Campos Gerais* and *Cerrado*).

The model that will achieve these ends will (i) mainstream conservation among Government and civil society stakeholders, (ii) mitigate threats to biodiversity through ecoregion consolidation, (iii) reform and modernize monitoring and enforcement functions, and (iv) review and revise existing legislation, regulation, enforcement and incentive systems. It will also ensure compatibility between Parana's development, biodiversity and environmental objectives.

2. Key performance indicators: (see Annex 1)

The indices cited below will apply to the PBP's two target ecoregions

Overall Biodiversity Indices
- Maintenance of relative abundance of selected species in targeted protected and interstitital areas
- Consolidation/rehabilitation of UC natural environs
- Increase of connectivity (linking of protected areas, recuperation of Legal Reserves and microcatchments, incorporation of fragments, consolidation of interstitial areas) to constitute corridors of adequate size and quality to effectively maintain biodiversity

Education Component Indices
- Program Executors, Environmental Advisors, Teachers trained in biodiversity concepts and PBP programmatic material
- Interstitial farmers and others (19,600) trained in biodiversity conservation concepts and practices and presented with PBP alternative production system modules.

Biodiversity Conservation & Management Incentives Component Indices
- Establishment of a macro planning unit in IAP to develop strategic plans for ecoregion intervention
- Appropriate productive systems in 80% of targeted interstitial areas
- Targeted UCs with satisfactory operational Management Plans including interstitial areas
- Rehabilitation of 80% of Legal Reserves in priority interstitial areas

Environmental Monitoring and Enforcement Component Indices
- Establishment of a monitoring and evaluation unit in IAP and develpment of a comprehensive biodiversity data base and indicators
- Decentralization of fiscalization in targeted municipalities with concomitant increase in enforcement agencies and effectiveness
- Reduction in illegal clearing and in burning by 90% and 60% respectively for municipalities with and without decentralized fiscalization

- Annual evaluation in targeted municipalities of:
  (i) rehabilitated forested area and forest cover within targeted municipalities
  (ii) burning and illegal clearing
  (iii) abundance of selected species (indices and baseline data to be developed in year #1 of project)
- Institutional strengthening including
  (i) improved focusing and implementation of SISLEG and ICMS Ecologico incentive systems
  (ii) prohibition of detrimental road or infrastructure construction within targeted corridors and interstitial areas
  (iii) elimination of cutting of araucaria in Parana and harvesting of araucaria forest products through certification
  (iv) certification of heart of palm extraction
  (v) reform of licensing.

B. Strategic Context

1. Sector-related Country Assistance Strategy (CAS) goal supported by the project: (see Annex 1)
Document number: CAS: 20160-BR; Progress Report: 22116-BR **Date of latest CAS discussion:** CAS: May 24; Progress Report: May 1, 2001

In recognition of Brazil's preeminent position in biodiversity, environment has always figured prominently in Brazil CAS objectives. According to the most recent Country Assistance Strategy (*CAS*; document number: BR-RN 20160; CAS discussion: March 30, 2000) the Bank continues to support (i) protection and conservation of priority ecosystems, and (ii) more efficient use and sustainable management of natural resources. The May, 2001 Progress Report focuses heavily on fiscal reform and growth and poverty reduction. Nevertheless, considerable space is also devoted to the improved conditions for environmental interventions resulting from Government initiatives. The next CAS, scheduled for May 2001 is expected to present a strong environmental program.

1a. Global Operational strategy/Program objective addressed by the project:

The CAS specifically cites the PBP and several closely related pipeline operations which address and define environmental program objectives. These operations have in common (i) geographic targeting of critical biodiversity rich areas, (ii) creation of unbroken "corridors" which include interstitial areas to achieve biodiversity maintenance and improved management, (iii) institutional strengthening to ensure enforcement of appropriate laws, regulations, and adoption of incentive based programs, and (iv) stakeholder participation, (v) strengthening of monitoring and evaluation functions.

The PBP directly addresses each of these five points (see #3 below and Project Description). A second, related operation is the Rainforest Pilot Program's *Ecological Corridors Project* (approval expected in the first semester of FY02) also follows this strategic approach in establishing the Central Amazon Corridor in the state of Amazonas and the Central Atlantic Forest Corridor spanning the states of Bahia and Espirito Santo. A third operation scheduled for FY02, the GEF *Amazon Region Protected Areas Project* (*ARPA)*, will establish huge corridors, expanding the Amazon area under strict protection to 44 million hectares and strengthen the existing protected area system in the region. A fourth operation that is likely to follow this

approach is the pilot National Forestry project will be prepared in FY02-3, the first of possibly several larger loans or an APL focussing on forrestry management and conservation.

2. Main sector issues and Government strategy:

Both the Federal and Parana governments face similar issues that revolve around balancing development interests and conservation. Vested interests are a powerful influence --the fact that so little has been done to conserve the Atlantic and araucaria forests despite their very visible devastation bears witness to the strong vested lumber and development interests in Parana. A second problem is the inefficiency and lack of coordination between agencies that characterizes most public bodies charged with conservation. This has been exacerbated over the last 5-7 years by the financial crisis that has affected Federal and state governments. Parana was no exception and the tight budget constraints imposed by Federal debt renegotiations and legislation governing the size of Government payrolls resulted in a dearth of discretionary funding, a freeze on hiring and reduced resources for lower priority environmental initiatives.

Federal Government Strategic Initiatives. Despite this scenario, considerable progress has been made in reforming legislation and regulations bearing on environmental issues although implementation has often lagged. Since 1998, the Federal Government has created over 1.2 million hectares of strict conservation protected areas including four parks totaling about 50,000 ha. in the Mata Atlantica. Major institutional reforms include

- Approval of the National Protected Areas System Law (SNUC)
- Approval of a "Green Protocol" requiring banks and lending agencies to consider environmental criteria in project finance
- Preparation of an Agenda 21 for Brazil and for the Amazon
- Increase in the legal forest reserve requirement in the Amazon to 80% --in May, 2000 an ttempt to reduce it to 20% was soundly defeated
- Approval of a national water resources law (1997)
- Approval of an Environmental Crimes Law (1998)
- Approval of legislation allowing for forested lands to be considered to be "in productive use"
- Decentralization of environmental management to states and municipalities.

State of Parana Strategic Initiatives. The State of Paraná is an environmental leader in Brazil as evidenced by its groundbreaking work on the ICMS-Ecologico and SISLEG. The State launched the "Biodiversity Network Program" (*Programa da Rede de Biodiversidade*) in 1997 that is intended to mainstream environmental conservation throughout the State Government apparatus. Parana government has used it own funds to support project preparation and has since established a strong and well funded PBP project preparation unit in the Planning Secretary. It is committed to applying $10m of the Bank's *Parana 12 Meses* project to finance the ecoregion interstitial areas sub-component as part of the proposed project. Equally encouraging is its commitment to undertake significant environmental reforms including elimination of the cutting of *Araucaria,* certification of non-timber forest products, and to refine and step up implementation of the ICMS-*Ecologico* and SISLEG.

The Parana Government's current strategy is to use the PBP to 'operationalize' and orient the Biodiversity Network Program to better deal with environmental issues--to *mainstream* biodiversity conservation. The Network is a program to coordinate activities, introduce environmental considerations into public investment and budget allocation decisions, better target resources and impose a semblance of order and discipline on the multiplicity of agencies impacting upon Parana biodiversity. Its ultimate objective is to conserve and recuperate what remains of the State's natural resources. The program includes numerous public agencies and activities with environmental relevance including construction and water resource management. The Network's effort to mainstream environmental considerations in Government assures the collaboration of important secretariats and agencies throughout Parana including State, regional and municipal institutions concerned with sanitation, water supply, power generation, and agriculture. The Network also includes stakeholders: NGOs, universities, labor unions, fisherman and community associations, and small rural producer societies.

The Parana Government is also building upon a rich menu of environmental and related operations which it intends to integrate into the Network's mainstreaming effort. These include the following.

- *Parana Rural Poverty Alleviation and Natural Resources Management Project* (*Parana 12 Meses).* The World Bank approved the $175 million Parana Rural Poverty Alleviation and Natural Resources Management Project in June of 1996 and implementation commenced in December 1997. Referred to locally as *Parana 12 Meses*, the operation is intended to alleviate rural poverty through support to *agrovilas*, development of rural production opportunities and introduction of technologically advanced and environmentally sound land management practices. Project activities include recuperation and preservation of vital watersheds and forested areas. *Parana 12 Meses* is a statewide program that is able to operate in each of the State's four globally significant ecoregions. At present, the program does not explicitly target Conservation Units (UC) or their buffer zones and interstitial areas. With the PBP, an estimated $10m of the operation will be redirected to support interstitial activities in areas targeted by the PBP.
- *Parana Atlantic Rainforest Protection Project—Pro-Atlantica*. This complementary operation, sponsored by the government of Germany (KFW/GTZ) is active in portions of the Atlantic Forest where the project will likely not penetrate. Components work with SEMA/IAP and BPFlo (forestry police conducting inspection and control).
- *Municipal Forests.* This State project works in 307 municipalities and has produced around 120 million seedlings for reforestation, conservation and commercial raw material production. It also aims to strengthen municipal forest services. The program will be the main seedling supplier for PBP components addressing UC and interstitial are recuperation and management.
- *State Reforestation System—SERFLOR*. This State program aims at guaranteeing raw material supply to industry on a sustainable, environmentally benign manner. It is directed primarily to forest plantations for industry and helps to reduce the pressure on native forests.
- *Guaraquecaba APA Development Plan*. This state program is carried out by IAP with the collaboration of three NGOs: Wildlife Research and Environmental Education Society,
- SPVS and UNILIVRE (Environment Free University). It is directed at the Mata Atlantic

and will be complementary to the PBP.

- *Iguacu National Park Buffer Zone Municipalities*. This is a joint effort involving the Ministry of the Environment, IBAMA (a federal secretariat), and UNILIVRE to implant sustainable, environmentally benign development practices in interstitial zones contiguous to the Iguacu Park. This area is an important component of the PBP's inland Atlantic forest ecoregion hence will complement project activities.
- *Ecological ICMS (Value Added Tax) and SISLEG*. Parana is a leader in adapting the ICMS to support responsible conservation practices, especially those bearing upon UC management, forest cover and watershed/public water supply. Accordingly, municipalities that satisfy state criterion for good practice receive monetary payments from the ICMS set aside. SISLEG is a regulation that allows private landholders who have reduced their forest cover below the required 20% to compensate by purchasing and putting into protected status forested areas important micro-catchment and other areas in the same biome. PBP will look closely at modifying these two programs to increase the support for the four critical ecoregions.

3. Sector issues to be addressed by the project and strategic choices:

Main Sector Issue	***PBP and Government Strategy***
A. Mainstreaming Environmental/Biodiversity Conservation & Targeting Interventions	
Operationalize the Rede de Biodiversidade	The progress of Government's Rede de Biodiversidade program, involving all agencies connected to conservation, has been slow for three years owing to the lack of an operationalizing plan and political mobilization. It is unlikely that any major shift would occur without the support of the PBP which is piloting and implementing the plan in two critical ecoregions and will affect environmental programs throughout the State
Strengthen the environmental constituency	The PBP Education Component will target project executors at all levels, involve public, NGO, and private stakeholders in design and monitoring through the convocation of committees, and train farmers, teachers and opinion makers in the targeted Corridor areas. Constituency building will also be a part of UC action plans.
Strengthen environmental management and targeting of interventions including planning, data bases, and monitoring and evaluation functions	Under the PBP a Macro Planning and Strategy Unit will be established that will systematically use satellite imagery and other data to develop Corridor strategies. The Project will alsu support the establishment of a comprehensive data base with concrete biodiversity indicators that will be monitored throughout the project. This approach will serve as a prototype for organizing subsequent environmental interventions.
Improve EMATER's focus and work on biodiversity issues	Despite participation in *Parana 12 Meses*, EMATER is primarily a traditional rural extension service focussing attention on traditional agricultural output and technologies. Its primary target is grain producing areas and little attention is paid to protected or target ecoregion interstitial areas or to biodiversity conservation. PBP will

	reallocate loan resources to these areas--which would be unlikely to benefit from new public funding--and involve EMATER in adapting its approach to serve biodiversity conservation with the hope of mainstreaming biodiversity.
B. Addressing Interstitial Areas	
Address key interstitial requirements, especially the development of specialized biodiversity oriented microcatchment development initiatives	Without the PBP no serious effort or incremental resources would be directed towards Corridor interstitial areas. EMATER is developing and will help to propagate agricultural activities and technologies especially adapted to the targeted micro-regions. It will also take the lead, building upon its successful *Parana 12 Meses* experience, in organizing interstitial communities for this effort.
Strategically increase legal reserves	Since forest cover in Parana is only 8%, the expectation is that legal reserves are not being met in interstitial areas and that unless specifically targeted for action, proprietors will not increase reserves nor will critical microcatchment and other areas be rehabilitated in the Corridors. There is a firm commitment to use SISLEG and the ICMS Ecologico to address this problem under the auspices of the PBP.
C. Strengthening UC Management Capacity	
Systematically strengthen UC management capacity to conserve biodiversity	Management plans are few and, in many case obsolete. Few UCs are staffed or equipped to confront incursions or monitor and preserve biodiversity. The PBP will develop and implement prototype plans for the Corridors' UCs that will involve interstitial areas and provide training and equipment. This effort is essential to the success of PBP and to the modernization of UC management throughout the State.
Increase connectivity and reduce fragmentation	The map of protected and relatively untouched areas in Parana is a patchwork of fragments generally to small to assure biodiversity sustainability--hence the Corridor approach. Through PBP, Parana will identify critical fragments and microcatchments and develop plans using satellite imagery and mobilize SISLEG and the ICMS Ecologico on the ground to consolidate corridors and Government officials will also be mobilized to address opportunities involving privately held lands, including the setting up of privately owned protected areas. A parallel effort has been undertaken to identify large tracts in the hands of companies and wealthy individuals and to design ways to facilitate their incorporation into Corridors as protected areas.
Increase financial sustainability	Parana's financial difficulties are a serious limitation on public agencies' (and UC's) ability to undertake environmental improvements. The PBP will, in conjunction with the ARPA project (which has a major component dedicated to the question of 'fund raising') and other efforts underway in Parana, examine alternatives for putting environmental efforts on a sustainable financial basis.
D. Reforming Legislation, Regulation and Enforcement	
Promote biodiversity conservation through regulatory and enforcement	PBP is to be a catalyst in designing and implementing a number of important reforms including: -certification of araucaria and heart of palm

reform and improved incentives	-protection of legal reserve and microcatchments through mobilization of local IAP officials and magistrates and greater use of SISLEG -review of ICMS Ecologico to enhance its role in biodiversity conservation -studies of the current legislative/regulatory framework governing environmental matters with the objective of introducing necessary changes.
Upgrade the Parana's enforcement capacity through decentralization and capacity building	The lack of adequately trained and equipped personnel in sufficient number to enforce conservation regulations is a significant problem. IAP has indicated its intention to address this problem by decentralizing the fiscalization function to municipalities --some 50 of which have indicated a desire to assume these responsibilities. PBP will support this effort and provide training and equipment to municipal teams. IAP will also be decentralizing licensing with PBP support.

C. Project Description Summary

1. Project components (see Annex 2 for a detailed description and Annex 3 for a detailed cost breakdown):

A. Background and Component Targeting of Areas Rich in Biodiversity

Development Versus Environment

The occupation of Parana started in the 17th century, spurred by gold exploration in coastal areas and the Curitiba Plateau supported by subsistence agriculture. Two hundred years ago the state was little developed, predominately agrarian and rural, and *nearly 85% of Parana was forested*. However, the rapid expansion of agriculture and livestock plus migration to urban areas set in motion economic forces that quickly transformed this panorama. Colonization of Brazil's southern regions, one of the world's most important in terms of biodiversity, intensified during the 20th century. Especially over the last fifty years, the use of modern inputs in large-scale agriculture has had a devastating impact upon the forest cover. The construction of the Brazilian center-south railroad with its connections to the coastal regions was decisive in establishing the lumber industry. The coffee culture was established in the state in the first decade of the 20th century growing slowly for the next three decades. By 1940 Parana coffee represented 6% of the national production, but by 1962-3 it had increased to 63%.

The occupation of the western and southwestern regions of the state was accompanied by nomadic sawmill operations that responded to the increased demand for lumber. The *Araucaria* forests along with *Imbuya phoebe*, cedar, cinnamon and other noble trees suffered predatory exploitation, reaching a peak in 1939 with the exportation of 307,000 tons of lumber. Migration from surrounding states to a rapidly developing Parana exacerbated the trend and *by 1950 State forest cover had been reduced to 40%*. Only fifteen years later, in 1965, forest cover had declined to 24%. The advent of large scale, technologically modern farms dedicated to grain production plus cattle ranching gave rise to the consolidation of land holdings. Soybeans and

wheat cultivation had substantially replaced coffee by the 1970's. Today the State produces nearly 18 million tons of grains, representing 23% of Brazil's production.

Rapid economic growth in the 20th century acted as a magnet for migration. In 1940 Parana's population numbered only 1.2 million with over 900,000 living in rural areas (see table below). In the 1950-60s, annual population growth averaged 7.3%. By 1970 total and rural population stood at 6.9 and 4.4 million respectively. Today, a rural population of 2 million dedicated to agriculture and livestock still accounts for 34% of the state GDP or some$10 billion/year and helps to support large urban centers and highly sophisticated industries.

The result of two hundred years of development has been to *reduce forest cover to 8.5%* with serious loss of biodiversity in ecoregions of regional, national and international importance. In this respect, Parana is prototypical of the entire southern region where unconstrained natural resource exploitation has reached the point of seriously threatening the survival of entire ecoregions.

GEF Priorities, Operational Strategy and PBP Objectives

The objective of the Parana Biodiversity Project is to achieve sustainable biodiversity conservation in the State of Parana by reorganizing and focusing State envirnmental policy, linking public and private efforts and ensuring the compatibility between parana and development and environmental objectives. The project focuses on two ecoregions of the Brazilian Atlantic Forest dominion. The area is one of the world's 25 "hotspots"--highly threatened regions with exceptional biodiversity and endemism.

The Parana Biodiversity project specifically supports GEF's Operational Strategy by contributing to the long-term protection of globally important ecosystems, with particular focus on strengthening protected areas networks and scaling up successful biodiversity conservation initiatives. Specificially, this project supports Operational Program 3 (Forest Ecosystems) and 2 (Freshwater Ecosystems). The project would target three GEF priorities; *in situ* conservation of globally unique biodiversity; sustainable use of biodiversity; and local participation in the benefits of conservation activities. The project is fully consistent with Brazil's first report to the COP IV. The project is also fully consistent with the principles of the CBD by supporting all three levels of biodiversity (ecosystems, species, and genes). It also supports CPO Decisions I/8, II/8, II/9, III/9, III/10 and III/12, and the SBSTTA Recommendation 1/3. Brazil the Convention of Biological Diversity in 1992.

Overview of Parana Biodiversity and Targeted Ecoregions

Parana harbors significant, pristine tracts of four important ecoregions: Araucaria Forest, Brazilian Inland Atlantic Rainforest, Brazilian Coast Atlantic Rainforest, and Campos Gerais (savannah/steppe). All four are highly important for the planet's biodiversity conservation and threatened, according to Dinerstein, et. al. in *A Conservation Assessment of Terrestrial Eco-regions of LAC* (The World Bank and The World Wildlife Fund, Washington, 1995),

The four ecoregions' global importance is based upon their extraordinary biodiversity and the fact that they are threatened. They contain numerous animal species categorized as *critical, endangered, rare* or *vulnerable.* In the table bellow animals listed in the *Lista Vermelha de Animais Ameacados de Extincao do Estado do Parana* ("Red List of Parana State Animals Threatened with Extinction") include the following resident species which are threatened in Parana and considered globally at risk.

Threatened Species

Species	Parana	Globally
Mammals	21	2
Birds	117	13
Reptiles	12	6
Butterflies	17	1

Evidently, there are other elements of the Parana fauna which suffer significant impact from encroachments on their natural habitat including ichthyic, zooplankton, zoobenthos, micro and meso fauna among others. The situation of Parana flora is also disheartening. Today the estimate of State vegetal species is around 7,000. Of these, about 70% or almost 5,000, suffer from degraded habitats and are at risk of extinction. The list cited above categorizes 593 species as "critical" status and 95% of these are found in the two targeted ecoregions, the Inland Atlantic Forest and the Araucaria Forest and the two ecoregions that are expected to be eventual beneficiaries of the prototypes established by the PBP. The ecoregions are described below.

The *Araucaria Forest (Ecoregion 105—Mixed Ombrofila Forest)* is classified as "critical conservation status" and considered to be of high biological relevance at the global level and maximum conservation priority at the regional level. The most important surviving tracts exist in the Middle Iguacu Basin in the center-south of Parana. The *Araucaria* forest has been reduced to only 1.16% of its original area primarily owing to exploitation over the last 50 years. Continued commercial exploitation, extension of agriculture and seed overexploitation threaten *Araucaria* regeneration, causing genetic erosion and reducing its diversity. The remaining Parana forests cover 269,839 hectares, of which just 6,428 are included in protected areas, locally know as conservation units (UCs). The remaining habitats face severe threats.

The *Brazilian Inland Atlantic Rainforest (Ecoregion 55—Seasonal Semi-deciduous Forest*) is the last important tract of the meridional-occidental type (in the Parana River Basin) are located in the Iguacu National Park, complemented by the Iguazu National Park in Argentina. Ecoregion 55 is classified as "threatened" and considered of high biological relevance at the global level and maximum conservation priority at the regional level. This region includes environments highly important for biodiversity conservation, which is also the case for the Ilha Grande National Park and contiguous wetlands, located in the northwestern part of the State. However, the latter's setentrional-oriental type (Paranapanema River Basin) differs in structure and composition from the Parana River Basin and has been almost totally eradicated. Its few remaining vestiges are of vital importance for maintaining biodiversity. In the center-northern area of the Parana River Basin (Ilha Grande National Park) we can find a portion of Ecoregion 116 (Chaco Umido),

classified as “vulnerable status” and also of global biological relevance and regional importance. The situation of these inland Atlantic rainforests is critical as the ecosystem is practically isolated and confined to protected areas, as in the Iguacu and Iguazu National Parks, with little or no connection to smaller fragments. There are some important tracts on the margins of the Itaipu Lake in Paraguay (UCs include Mbaracayu, Lemoy, others) which conserve important primary ecosystem formations.

The PBP components will be directed at creating successful Corridor prototypes that will restore connectivity and create the conditions for maintenance and possible recuperation of biodiversity. It is expected that this experience will eventually be replicated in the other two critical Parana ecoregions, the *Campos Gerais* and *Brazilian Coast Atlantic Forest*. It is also expected that some PBP training, legal reforms and enforcement initiatives will benefit these two ecoregions whose global and regional importance is similar to that of the two PBP microregions.

The *Campos Gerais—Parana Cerrados (Ecoregion 114—Savannah/Steppe)* is classified as “vulnerable”, considered important at the global level and of maximum conservation priority at the regional level. This ecosystem is found in the Campos Gerais and Tibagi River Basin regions. The Parana Cerrados are the extreme southern limits of this ecosystem in Brazil and there are states where larger and more importance vestiges can be found and this is one reason that the Campos were less of a PBP priority. The *Brazilian Coast Atlantic Forest (Ecoregion #54—Mixed Ombrofila Forest)* or “Mata Atlantica” refers to all of the forest ecosystems of Brazil’s coastal states from Rio Grande to Rio grande do Norte. Originally, these forests covered more than 1.29 million km2 and represented 15% of Brazil’s entire land surface area spread over 17 states (ISA 1999, SOS 1998, MMA 1999). This represents one of the planet’s most threatened ecoregions. According to the *National Report to the Convention on Biological Diversity* and other studies, only 7.5-9% of the original area remains and the largest contiguous tract is in Parana. It is classified as “critical conservation status” and is considered of high biological relevance at the global level and maximum conservation priority at the regional level. In Stattersfield et. al., *Endemic Bird Areas of the World, Priorities for Biodiversity Conservation* (1998), the ecoregion is classified as one of the 25 areas of maximum priority for biodiversity conservation owing to its critical risk indices and rich biodiversity. The remaining areas are composed largely of secondary forest in different seral stages and it is assumed that the depletion of the forest has already resulted in significant loss of biodiversity, system stability and local species extinction. Parana has suffered a 35% loss of its original coastal forest due mainly to lumber, buffalo, and small and medium sized agriculture systems. It has not lost more due to the fact that it includes the mountainous Atlantic Ridge which has resisted development pressures. Also, there are already a number of conservation efforts underway in the Mata Atlantica which is one reason it was not included as a PBP priority.

Two Ecoregions and Three Ecological Corridors

The Parana Biodiversity Project will create two corridors in the Interior Atlantic Rainforest Ecoregion and a third Corridor in the Araucaria Ecoregion.
The Interior Atlantic Rainforest Ecoregion corridors are the following.

- *Corridor Caiua-Ilha Grande*. Located in the northeastern boarder of Parana, the Corridor generally follows the Rio Parana and has its extremities in the Caiua Ecological Stateion and the National Park of Ilha Grande. The Rio Parana contributes to making this one of the Ecoregions richest repositories of biodiversity. It includes an archipelago of more than 300 islands, varzeas, aluvial forests and areas that are transitional between forest and savannah. The main State Parks that will be targeted by PBP for Management Plans and modernization are the Caiua Ecological Station and the RB Sao Camilo. To consolidate the Corridor connectivity will be forged with 6 additional protected areas.
- *Corridor Iguacu-Parana.* Located in the southeastern corner of the State, This Corridor is under pressure from the agricultural frontier owing to the richness of its soils. It is important also because it makes possible the linking of the Iguacu National Park, the largest continuous area of of such forest, with a major initiative to recuperate areas, the "Poligonal Envolvente" in and around the lake formed by the Itaipu hydroelectric dam and contiguous parks and forested areas. Two protected areas, PE Rio Guarani and ARIE da Cabeca do Cachorro will be targeted by PBP for Plans and upgrade and connectivity will be forged with three other protected areas to consolidate the Corridor.

The *Araucaria Corridor* is found in the center-south of the State. It includes three PBP targeted UCs. Parana has the largest araucaria forests in Brazil and at one time represented 37% of the State's area. It is now less than 1% and is extremely fragmented which makes it very fragile. The area chosen for the Corridor represents among the most important surviving forests and those with the best chance of achieving sustainability through increasing connectivity and Corridor consolidation. The Corridor is described below.

The three Corridors taken together cover an area of about one million hectares, involve seven UCs, 280 interstitial microcatchments and 63 municipalities. The corridors comprise over 40% of the municipal land mass in their relevant ecoregions and have sizeable rural populations as is shown below.

Corridor	***Municipalities (#)***	***Corridor Area (000 (Ha)***	***Municipal Area (000 (Ha)***	***Corridor/ Municipal (%)***	***Urban Population (#)***	***Rural Population (#)***	***Total Population (#)***
Caiua-Ilha Grande	26	987	1.442	68	334,000	86,000	420,000
Iguacu-Parana	26	575	1,317	44	414,000	140,000	554,000
Araucaria	11	589	1,247	47	85,000	81,000	166,000

B. Summary of Costs by Project Components and Cost Share

The following table aggregates costs for the four year project by component and amount of Bank and counterpart funding. Detailed costing projections are available in project documents.

Components/Sub-Components	Total Cost ($000)		
	GEF	Parana	Total
I. ***Education and Capacity Building*** ● Capacity building for project executors ● Education and dissemination for project beneficiaries ● Promotional and capacity building materials	1,209	371	1,580
II. ***Biodiversity Management and Incentives*** ● Macro-planning for prioritization & Connectivity ● Activities in UCs and Contiguous Areas ● Interstitial Areas Programs, Connectivity, & Fragments	4,925	21,812	26,737
III. ***Control and protection*** ● Integrated fiscalization ● Protection of threatened species	1,159	1,331	2,490
IV. ***Project administration*** ● Project administration ● Strategic studies	707	1,344	2,050
Total	8,000	24,857	32,857

C. Parana Biodiversity Project Components

Component I: Education and Capacity Building

The objective of this component is to (ii) sensitize the population of Parana State to the importance of biodiversity conservation, mobilizing it to support the process of recuperating and maintaining the quality of the State's principal ecosystems, and (ii) prepare project executors, beneficiaires and stakeholders to take part in the Project.

Specific Objectives.

- Change attitudes and behaviors and broaden knowledge, skills and competencies required for biodiversity conservation among Project stakeholders and environmental agents.
- Build the requisite capacity among PBP executors to successfully carry out the project.
- Persuade rural populations to adopt agricultural and husbandry technologies that are environmentally benign, especially in targeted interstitial areas.
- Improve the efficiency, effectiveness and dedication of public officials directly or indirectly involved in activities impacting upon biodiversity conservation.
- Implement effective monitoring and evaluation systems.
- Involve civil society and especially NGOs within the State in project implementation.

Component Activities. There are three sub-components described below, namely

A. Capacity building among project executors
B. Dissemination of project concepts and practices among project beneficiaries

C. Educational and promotional materials

Summary of Activities and Cost. The total Component cost is $1.58 million with about $1.2 million coming in the first two years to prepare project executors and beneficiaries for implementation of other Project activities. Component and sub-component activities have been broken out and costed out in detail according to a chronogram of activities including: cost per subcomponent per year, GEF/counterpart contribution, cost per expenditure category per year, and cost per individual sub-component activities per year. These are available in project files in eight Portuguese language Project books elaborated by Government's Project Development Unit in the Secretary of Planning. The volumes are comprehensive and detailed, effectively describing the project and how it will be implemented.

Sub-component A: Capacity Building Among Project Executors

The training and dissemination activities contemplated under this sub-component are budgeted at $635,000 and include the following.

(i) *Management Capacity Building*. The objective of this course is to promote familiarity with biodiversity and project concepts among the roughly 30 members of the PCU and the Forum advising the PCU comprising officials representing organs involved in the project.
(ii) *Dissemination of Project Concepts*. These seminars are directed at some 820 regional and municipal level Forums comprising officials in agencies involved in the project, local justices, Municipal Council participants, municipal officials and civil society leaders.
(iii) *Basic Capacity Building*. There will be a basic biodiversity and environmental education course focusing on the characteristics of each corridor. The course will be given 17 times and the expectation is that some some 470 officials involved in project execution in the corridors will participate. Included in this target group are officials from EMATER, IAP, DEFIS, Parana 12 Meses, SUDERHSA, the Forestry Police, municipal officials, justices, and NGOs.
(iv) *Operational Capacity Building*. Twelve sessions are contemplated for some 360 officials representing the same institutions above who will be directly involved at the local level in project execution. This group evidently includes the EMATER officials who will serve as the Technical Environmental Advisers who will be responsible for managing project initiatives in intersitial areas. The course will focus on the Operations Manual and activities to be developed with Corridor communities.
(v) *Specific Capacity Building for Technical Environmental Advisors*. Twenty Advisors will be trained in the specific agroecological modules that will be offered to local communities in each of the three corridors. The course will be 120 hours and will focus on the new technologies and also on community mobilization techniques required to persuade local farmers and ranchers to adopt the environmentally benign technologies offered by PBP.
(vi) *Capacity Building for UC Employees*. Four different courses will be offered for managers and administrators (basic and specialized courses), and park guards and laborers (basic and specialized courses). The basic courses are 24 hours and the specialized are 40 hours. UC employees in the corridor UCs will be targeted.
(vii) *Specific Training for IAP Supervisors and Municipal Fiscalization Officials*. The decentralization of the fiscal functions to the 15 participating corridor municipalities will require

both training for IAP officials who must switch to a supervisory role, and also for the municipal officials who will be assuming their direct fiscalization responsibilities. This is a 5 day, 40 hour course targeting some 135 participants. While not a part of PBP, the decentralization of responsibilities will also include a period of close mentoring and supervision during which time IAP officials will be imparting their experience to municipal officials.

(viii) *Capacity Building for Environmental Secretary Justices*. The training of local justices will be essential to operationalize SISLEG and expand the ICMS Ecologico. Local IAP officials will be responsible for verifying legal reserve compliance of landowners whose holdings are especially important to assuring the integrity of corridors or who are candidates for participation in the SISLEG program. Working together with the justices (*promotores*), they will negotiate the critical interstitial actions that will assure connectivity and recuperation of siliar and other important areas and encourage the establishment of RPPNs (privately owned reserves). Hence the training of justices is vitally important to structuring and mobilizing this effort.

Sub-Component B: Dissemination of Project Concepts and Practices Among Project Beneficiaries

These courses are budgeted at $715,000 and are primarily for the targeted interstitial rural communities and other stakeholders who will participate in the agroecological modules and eventually adopt the new activities and technologies with assistance from PBP. The first three enumerated below are basic courses/activities designed to reach large numbers of economically active rural inhabitants. It should also be noted that NGOs will also be trained and deliver training The activities contemplated are enumerated below.

(i) *Project Dissemination Seminars.* Nearly 20,000 rural workers are projected to participate in these seminars over the first three project years. Some 654 four hour meetings are programmed with 30 participants each. These will be the PBP introductory meetings meant to build support and participation and propose the menu of agroecological modules based upon diagnostics of local needs and characteristics.

(ii) *Agroecological Modules and Alternative Technologies.* These courses are built around the actual demonstration projects/modules of which there will be twenty. Each course will be of 40 hours and involve twenty farmers/producers. The objective is to introduce the target population to the modules and persuade them to adopt the new activities and technologies offered with PBP support. Examples of modules are fish farming, organic agriculture, palmito production, ecotourism, medicinal plants, and flowers.

(iii) *Field Days.* These are the critical vehicles for acquainting potential interstitial rural workers with the results of the demonstration projects implemented in and around their communities. Each field day is a full 8-hour day for community groups of about 20 rural workers. There will be about 50 such field days in the 63 municipalities .

(iv) *Extension Courses for Other Municipalities*. These will also be 8-hour events, one in each corridor. The target audience will be some 30 rural workers from municipalities within the Ecoregion municipalities that do not have agroecological modules and are not directly involved in PBP planned activities. The intention of this activity is to upscale the PBP approach throughout the ecoregion.

(v) *Social Mobilization and Environmental Eduction*. The objective is to educate teachers and community leaders in the importance of biodiversity conservation and make the link to PBP activities, and especially the role of the corridor UCs which will be permanently involved in community mobilization. There will be 20 such courses and it is projected that 600 people will be trained in the corridors. Participants will also be expected to elaborate community dissemination programs. This will require agreement with municipalities and especially education secretaries regarding course development activities and also with local associations.

(vi) *Support for Education Project Implementation*. As a means of providing incentives for the Social Mobilization and Environmental Education programs developed by participants, prizes will be awarded for the best results. There is to be a prize awarded in each of the 63 participating municipalities in the 3 corridors.

Sub-Component C: Promotional and Capacity Building Materials

The menu of courses and activities outlined in the first two sub-components indicated above will require an array of project (Perations Manuals) and pedagogical materials and 'prizes'and giveaways, common in agricultural extension field days and courses of this nature. These are budgeted at $230,000.

Component II: Biodiversity Management and Incentives

The objective of this component is to work with direct stakeholders --UC officials and rural producers in interstitial areas--to assure the environmental integrity of the corridors and thereby safeguard their biodiversity.

Specific Objectives . Biodiversity conservation in targeted corridors will be achieved through five types of Component II interventions

- Improved administration of Conservation Units (UC) that are the geographic core of the ecological corridors
- Transition to environmentally benign production activities in interstitial areas
- Incorporation of fragments into the corridors through establishment of RPPN, protected areas or other means
- Connection of protected areas and fragments
- Recuperation of important UC and interstitial areas.

The last three of these will draw heavily upon activities in other PBP components, namely

- Operationalization of legal and regulatory protections of critical legal reserves and water courses through ICMS Ecologico, SISLEG, and enforcement of laws governing water courses/siliar areas and other exiting laws in interstitial areas (Component III, *Control and Protection*)
- Reform and efficient enforcement of laws and regulations governing biodiversity conservation including certification (*Project Administration & Strategic Studies, Control and Protection*)
- Strengthening of fiscalization and licensing through decentralization (*Control and Protection*)
- Dissemination of PBP and biodiversity conservation knowledge to project executors, beneficiaries and stakeholders and eventual mainstreaming to all Government agencies involved in activities impacting on the environment and civil society. (Component I: *Education and Capacity Building*).

Cost and Summary of Activities. This is by far the largest component, totalling $26.7 million. Comprehensive cost breakouts exist in project documents by sub-component, expenditure item, year, and GEF and counterpart contribution. The sequence of interrelated Component II activities that generate these expenditures is described below and in greater detail in Annex 2. Note also that the Component I Education and Training courses and dissemination activities have been carefully developed and scheduled to support Component II activities.

Summary & Sequencing of Component II Activities

(i) Making use of satellite imagery and maps and extant data bases, macro strategic planning will be undertaken to identify key Conservation Units and connectivity between these UCs and UCs/fragments, the first step in designing corridors.
(ii) Micro basins that contain the key UCs and fragments will be identified and macro plans for them developed taking into account degraded areas, legal reserves, commercial activities, preserved fragments and other parameters bearing upon the quality of the microbasin and its impact upon the corridors.
(iii) Microbasins and connections will be prioritized based upon their importance to the corridors,

(iv) Findings will be verified locally 'on the ground', micro basins, properties and connections will be evaluated and prioritized according to needs and characteristics, and plans will be developed for them. This information is used for identifying the need for Legal Reserve, SISLEG, ICMS Ecologico and other compliance and incentive type operations and to evaluate the feasibility of implanting new environmentally benign production systems.
(v) Producers/communities who will take part in the implementation of agroecological modules and demonstration projects will be identified and modules implemented.
(vi) Production systems building on demonstration plots' results and education/dissemination activities will be marketed and replicated and technical assistance and funds provided to facilitate their adoption on the basis of producer proposals.
(vii) Simultaneously, UC management plans that include interstitial area outreach will be elaborated and implemented.
(viii) Implementation of the interstitial micro-basin and property action plans, UC management plans and enforcement and incentive activities will proceed with Project technical assistance, funding and supervision.

Sub-Component A: Macro-Planning for Prioritization and Connectivity

This small sub-component is primarily for the acquisition of GPS plus hardware and software to equip the central Macro-Strategic Planning Unit. The costs borne by GEF will amount to around $280,000 with the Government providing about $200,000 over four years for staffing and consultants. The work done in this unit will be vital for global planning of corridors as it will identify and prioritize connections, degraded areas, and critical micro-basins in the interstitial areas surrounding corridors.

Sub-Component B: Activities in UCs and Contiguous Areas
The general objectives of this $2.4 million sub-component include:

- Developing and implementing management processes in the UCs to support biodiversity conservation within the UC and in contiguous areas
- Equipping UCs for effectively carrying out of their biodiversity conservation responsibilities including small infrastructure projects and equipment
- Training UC officials to carry out these activities (Education & Capacity Building Component)
- Establishing processes and procedures to refine and implement a State UC Management System
- Elaborating strategic plans for connectivity between UCs and fragments
- Generating information required to implement connectivity making use of ICMS Ecologico, SISLEG and other laws and regulations (Control and Protection Component)

The critical UCs for corridor consolidation have already been identified. Targeted UCs are indicated below.

Ecoregion	***Conservation Unit****	***Area (Ha)***	***Municipalities #***
Ombrofila Mista/Araucaria	PE das Araucarias	1,052	2
	RF do Pinhao	197	1
	EE Rio dos Touros	1,228	1
	PN do Iguacu	185,262	5
Interior Atlantic Rainforest	ARIE da Cabeca do Cachorro	61	1
	EE do Caiua	1,427	1
	PE Rio Guarani	2.235	1
	RB Sao Camilo	385	1
	APA das Ilhas e Varzeas do Rio Parana	274,900	12
Total		466,747	

*PE-Parque Estadual, PN-Parque Nacional, APA-Area de Preservacao Ambiental, RB-Reserva Biológica, RF-Reserva Forestal, EE-Estacao Ecológica,

Planning and Management Activities. Each UC will develop, with the assistance of consultants, a comprehensive Management Plan that identifies the activities to be undertaken. IAP already has a model Management Plan that is participatory and will advance the objectives of involving interstitial stakeholders and consolidating connections. Local Management Support Groups will be formed from public and private stakeholders, including NGOs and associations, to assist UC management. Activities that may be included under the rubric of management activities include title regularization, research, and monitoring of biodiversity.

Equipment, Maintenance and Small Infrastructure Activities. About half of the UC budget will be devoted to equiping UCs to be able to function more effectively. Expenditures will be verified in the management plans and could include, *inter alia*, maintenance, recuperation of degraded areas, construction of guard houses, visitor centers, research centers, fencing signage, and trails. Vehicles and other basic equipment will also be procured.

Public Use. UCs will be required, with consultant support, to examine public access and ecotourism potential and requisite activities and infrastructure needs and include the development and dissemination of promotional materials and other marketing activities.

Interstitial Community Relations. The UC plans will also identify what is required to work in a constructive way with populations living in areas contiguous to the UCs. Education and outreach will be used especially to address problems such as fire control, recuperation of degraded areas, alternatives to agrotoxics, and other threats to the integrity of the UC. These activities will be promoted through UC sponsored campaigns.

Training. This will be carried out through the Education Component and will include critical skills such as promoting connectivity, management information systems, connecting fragments, and development of community conservation activities and programs.

Sub-Component C: Interstitial Areas Programs, Connectivity, and Fragments

This is the single largest component, costing nearly $27 million. It is where the macro-strategic plans get implemented. Consequently it addresses the need to

- plan and connect, through micro basin management, protected areas
- plan and connect protected areas and and fragments
- ensure the adoption of environmentally benign productive systems throughout interstitial areas.

In order to achieve these ends, the Project will

- mobilize authorities responsible for enforcing existing reserve requirements in targeted areas, activate SISLEG and promote RPPNs
- develop and test new, environmentally benign productive systems through implementation of agrecological modules
- persuade rural producers to convert traditional production systems to new ones in order to reduce the interstitial damage done by agriculture and cattle.

C-1 : Agroecological Modules Development

Except where legal reserve and other laws can be enforced, the intersititial program depends upon (i) the proving of superior, alternative economic activities and production methodologies through demonstration projects and dissemination of results, (ii) offering of appropriate incentives to rural producers to convert to new production systems through technical assistance and financing. Considerable progress has been made in diagnosing biodiversity threats in the target ecoregions and identifying the most appropriate alternative production systems. The development and

implementation of these modules will cost roughly $3.4 million including the costs of setting them up and the costs of maintaining EMATER staff--the Environmental Advisors--to run them and replicate them thereafter.

Preliminary Diagnostic and Agroecological Module Proposals. The three corridors have been evaluated on a preliminary basis and the alternative production systems have been identified. There will be 40 modules implemented in the first two years with upscaling taking place during each year of the four year operation. Twenty-one production specific systems will be featured in these modules drawn from eight generic categories found to be important for the corridors

- general environmental 'sanitation'/conservation activities in all micro basins
- forestry management
- organic agriculture
- new crops--medicinal, aromatic, condiments
- arts & crafts and ecotourism
- grain production
- dairy, meat and fish production
- fruit cultivation

The average cost of each module is about $102,000 including investment and recurrent costs, ranging from $23,000 for medicinal plants to $177,000 for organic coffee. More detail is available in Annex 2 and project documents.

Implementation—EMATER's Technical Environmental Advisors. The activities described above will be undertaken by municipal based EMATER extension officials—EMATER maintains at least one in each municipality. EMATER also is experienced in the sort of work envisioned for PBP owing to its similarities with *Parana 12 Meses*. At present there are 167 EMATER officials in municipalities included in the three corridors that could be involved in PBP. The Project contemplates using 63 of these in the first two years of operation, increasing to 74 in years 3 and 4 at a total cost to the the Project of $1.6 million. The time allotment and cost represents roughly 30% of the full-time cost of the officials.

C-2: Agroecological Module Upscaling

The micro basin planning and implementation of the new production systems proven in the Modules is the single largest PBP activity, stretching over the four years of the project and costing roughly $21 million. It is the activity that will implement Corridor connectivity and the conversion of production systems in interstitial areas. Some 280 micro basins will likely be targeted involving an area of 840,000 ha and a population of 19,600 rural producers. Most of the funding comes from the Government's counterpart including the Parana 12 Meses resources for module development and upscaling/conversion to new production systems. The principle activities will include

(i) Micro planning including the prioritization and action plans for connections, microbasins and properties in each of the three corridors

(ii) Development of a micro basin cadastre of relevant information and including systematic and detailed evaluation of environmental problems that will feed into Global and Annual

Operational Plans for each one.

(iii) Establishment of local Biodiversity Technical Committees to disseminate the PBP, prioritize local connections, approve Annual Operation Plans, serve as forums for debate, help resolve conflicts, and generally oversee local PBP activities.

(iv) Upscaling of modules to implement conversion to new production systems throughout interstitial areas with special emphasis on connectivity and degraded areas contiguous to protected areas.

Component III: Control and Protection

This component is budgeted at $2.05 million and is comprised of two sub-components, "Integrated Fiscalization" and "Protection of Endangered Species". The first addresses reforms in licensing and fiscalization activities. The second concentrates on developing of monitoring and evaluation capacity and indices and research into endangered species.

Specific Objectives. The specific objectives contemplated in this component include

- Establishing parameters for monitoring and evaluating the quality of biodiversity conservation
- Develop and refine norms for licensing--that will be decentralized to regions-- of activities with potential for environmental impacts
- Strengthen fiscalization efforts which will be decentralized to municipalities in the corridors, requiring changing of IAP roles, elaboration of protocols, procedures and standards, and intensive training of IAP and municipal officials
- Protect targeted endangered species in order
- Conduct research to identify endangered species in order to be able to develop appropriate programs
- Monitor selected species as one means of guaranteeing their survival
- Developing programs to heighten the awareness of society in general regarding the need to protect biodiversity.

Component and Cost Summary. Detailed presentations of activities by year, GEF/counterpart, year and expenditure categories are available plus chronograms of activities by steps. The table below summarizes Component costs.

Component Activities. The component comprises two sub-components and five principal activities

Sub-Component	Activities
A. Integrated Fiscalization	-Central Monitoring Unit -Regional Monitoring -Decentralized Fiscalization
B. Endangered Species Protection	-Wildlife Management Center -Endangered Species Protection Activities

Sub-Component A: Integrated Fiscalization

Central Environmental Monitoring Unit. The unit is an essential part of the PBP and of the macro-strategic planning process and monitoring and evaluation. It will be housed in IAP and will be responsible for general supervision and control of PBP biodiversity performance and the elaboration of reports, maps, benchmarks and parameters for licensing and fiscalization. The general approach to be followed in macro-strategic planning was outlined in Component II. The Unit will work intensively with satellite images to support field work and provide precise M&E. Regarding macrostrategic planning, the unit will use the images to do the initial diagnostic and prioritization of connectivity and micro basins that will orient all of the subsequent regional and field work culminating in Global and Annual Operations Plans at the property/microbasin/corridor levels. The Unit will also incorporate existing data bases, notably the System of Forest Recuperation (SERFLOR) and the SISLEG data base. Central Monitoring Unit expenses total $95,000 in acquisition of satellite imagery, a GPS system, software and hardware.

Regional Licensing. The most difficult licensing activity involves the technical analysis of the request and this is an activity that should be organized geographically along regional lines to assure closer proximity to locations involved. One of the reforms undertaken by IAP is to regionalize this activity and at the same time, link it to the Central Monitoring Unit. Licensing should also be in closer proximity to the fiscalization function which is being decentralized to a number of corridor municipalities with the IAP regional offices assuming a supervisory role. Expenses for this activity, covering nine regional IAP offices, is $165,000 and the principal expenditures will be vehicles, GPS, hardware and software for each of the offices.

Decentralized Fiscalization. One of the most serious, chronic problems confronting state and Federal agencies charged with environmental protection is the lack of adequately trained staff to discharge fiscalizastion/enforcement responsibilities. Parana is no exception. In IAP's nine regional offices there are 48 *fiscais* or an average 0.38 officials/municipal. Evidently, this number is far too low to mount the sort of control and enforcement required. Seven municipalities within the corridors have requested/agreed to assume fiscalization responsibilities and provide *fiscais.* Another 8 municipalities are contemplated for a second phase. If successful, this initiative could serve as an important prototype for other states wrestling with problems of staffing. It will also require establishing operational agreements, training and equipping municipal officials, establishing norms and institutional regulations so that technical, legal and administrative responsibilities can be effectively handed over to municipalities. The decentralization activity will cost an estimated $203,000 for 15 municipalities. The municipal packages will cost about $15,000 each in terms of a vehicle and computer/GPS equipment.

Recurrent Expenses. The municipalities will be reimbursed from the roughly R$3.5 million (roughly $1.4m) in environmental fines it currently assesses. It is expected that with the advent of municipal *fiscais* environmental fines will decline as enforcement becomes more rigorous. However, in this eventuality it is expected that increased revenues from the ICMS Ecologico, which will also undergo review as part of the PBP project, will compensate municipalities for diminishing funding from fines.

Sub-Component B—Endangered Species Protection.

This sub-component is intended to protect species of interest, whether threatened, migratory, or for which information is lacking as a support to biodiversity management.

Specific Objective.

- Monitor selected species to support preservation
- Manage and treat species apprehended through fiscalization

- Develop knowledge and data regarding these species about which relatively little is known
- Promote local, national or even international meetings regarding protection proposals.

Fauna Surveillance. These activities will be developed in the field by the selected corridor UCs and IAP regional staff. Species have been selected and fall into five categories having to do with inadequate information and support to other species specific projects. There are 24 species selected for monitoring and evaluation plus migratory species from three locations. This work will be done by local four teams that will include the municipal *fiscais*. Three of the teams will work on the two Interior Atlantic Forest corridors and the third will with with Araucaria.

Wildlife Management Center. The Centers are intended to receive and manage selected species of interest for protection, provide veterinary services as needed, undertake breeding programs, dispose of individuals that cannot be reintroduced to the wild., interface with other stakeholder institutions, create and maintain data bases and support research on the species.

IV. Project Administration

Component IV comprises two sub-components, Project Administration and Strategic Studies.

Sub-Componente A: Project Administration

The basic project organization and schematic is represented below.

Level	***Hierarchy***	***Organization/Description***
Central	Contracts Project	State of Parana
	Responsible Secretary	State Secretary of Planning & General Coordination
	Project Executor	Center for the General Coordination of Government Programs (CGCC)
	Project	Project Management Unit (headed by a General

	Management Unit (PMU)	Manager) whose responsibilities include • Coordination and negotiation of programs between Federal, State and Bank authorities •Coordination of programs involving all State units • Establishment of general guidelines and implementation priorities priorities
	Advisory Body	Advisory Committee comprising involved organizations: SEMA (IAP, SUDERHSA), SEAB (EMATER, DEFIS, UGP *Parana 12 Meses*), SESP (BPFlo), SEED
	PMU Secretariat	Project Advisory Nucleus (NAP) responsible for project administration, financial and accounting control, technical operational support
	Technical Manager	Technical Management team with responsibilities for each Project component
Regional/ Ecoregion/ Corridors	Corridor Managers	• Araucaria Corridor, Technical and Operational Management • Iguacu-Parana, Technical and Operational Management • Caiua-Ilha Grande, Technical and Operational Management
	Advisory Body	Regional Committees comprised of regional representatives of participating public agencies and important environmental NGOs
	Advisory Body	Regional Project Forums comprising participating public agency participants and major stakeholders from civil society, municipal representatives, NGOs to facilitate implementation and discuss issues.
Municipal	Municipal Management	Technical Enviromental Advisor—EMATER—responsible for project execution and reporting at the municipal level having to do with the carrying out directly of Component II and coordination of Components I and III.
	Advisory Body	Technical Biodiversity Councils –in conjunction with *Parana 12 Meses* Municipal Councils

Sub-Component B: Strategic Studies

In addition to Project Administration, the UGP will be responsible for the formulation of term of reference, organization and procurement of study executors, monitoring of progress and validation of results. The five major studies to be done are described below.

1. Identification and consolidation of legislative aspects and norms regarding environment legislation at different levels of government (Year 1). This study will have three distinct components

- Research of legislation at Federal, State and municipal levels ($52,000)
- Development of a legislative manual and cd-rom to disseminate findings ($16,000)
- Consolidation of legislation through proposals for reforms to strengthen biodiversity protection ($32,000).

2. Environmental Certification ($152,000- Years 1 through 3). This study looks at the definition of models and processes appropriate fo certification of specific products with special attention being given to palmito and araucaria. The main activities will be (i) the characterization of certification systems, (ii) definition of benchmarks, (iii) development of norms of environmental certification of palmito and araucaria, and (iv) definition and development of proposals for norms, incentives and institutional organization and processes to support certification.

3. Identification and Characterization of Priority Areas for Conservation ($28,000—Year 1). This study has as its objective the mapping of fragments in the ecoregions targeted by the project which will lead to eventual recommendations of guidelines and criterion for the establishment of links to the most important ones and identification of which ones should be targeted for conservation and how this should be done. Specifically int includes fragment identification, mapping, characterization, and elaboration of 'thematic'maps plus a final report summarizing findings.

4. Cost-Benefit of Environmental Interventions ($33,000—Years 1-4). This methodology is scarce in Parana. It is also important for supporting the benefits of biodiversity conservation. The objectives of this study are to determine technically the relevant evaluation indicators, the cost-benefit methodology of biodiversity conservation, disseminate the techniques used, estimate the economic contribution of SISLEG interventions and siliar, agrotoxic control and other interventions impacting on water quality.

5. Perfection of ICMS Ecologico ($63,000—Years 1-2). There are three components activities that are (i) studies of ICMS Ecologico indicators re biodiversity and water sources (*mananciais*), rural land tax (ITR) and RPPN formation incentives, (ii) proposals to perfect the ICMS Ecologico, and (iii) reformulation and actualization of software to accommodate changes and improvements.

Component	Sector	Indicative Costs (US$M)	% of Total	Bank financing (US$M)	% of Bank financing	GEF financing (US$M)	% of GEF financing
I. Educational & capacity building		634.90	1.9	0.00	0.0	536.50	6.7
(i) Capacity building for project executors							
ii) Education & dissemination for PBP beneficiaries/stakeholders	Other Environment	714.90	2.2	0.00	0.0	441.90	5.5
(iii) Promotional & capacity building materials	Other Environment	230.40	0.7	0.00	0.0	230.40	2.9
II. Biodiversity management & incentives	Environmental Institutions	23367.00	71.1	0.00	0.0	1619.20	20.2
(i) Interstitial areas programs, connectivity and fragments							
(ii) Macro-planning and Activities in Conservation Units & interstitial areas	Environmental Institutions	3369.90	10.3	0.00	0.0	3305.80	41.3
III. Control and protection			0.0		0.0		0.0
(i) Integrated fiscalization (eforcement, monitoring, licensing)	Environmental Institutions	1240.50	3.8	0.00	0.0	463.20	5.8
(ii) Protection of threatened species	Other Environment	1249.00	3.8	0.00	0.0	696.20	8.7
IV. Project Administration & Studies			0.0	0.00	0.0		0.0
(i) Project administration	Environmental Institutions	1673.60	5.1	0.00	0.0	330.00	4.1
(ii) Strategic studies	Environmental Institutions	376.80	1.1	0.00	0.0	376.80	4.7
			0.0	0.0	0.0	0.00	0.0
Total Project Costs		32857.00	100.0	0.00	0.0	8000.00	100.0
Total Financing Required		32857.00	100.0	0.00	0.0	8000.00	100.0

2. Key policy and institutional reforms supported by the project:

The following reforms are supported by PBP initiatives.

I. Institutional reforms

- Establishment of a Macro Planning and Strategy Unit within IAP
- Refinement/improved targeting for biodiversity conservation of the ICMS Ecologico
- Mobilization of SISLEG across agencies to consolidate Corridors' interstitial areas
- Decentralization of the fiscalization function in cooperating Corridor municipalities
- Decentralization of licensing to regional level
- Design, implementation and mainstreaming of UC Management Plans
- Dissemination of consolidated biodiversity and environmental conservation legislation in user friendly manual and diskette forms to public agencies at the state and municipal levels

- Mainstreaming of biodiversity conservation in targeted microregions especially regarding infrastructure investments and budget allocations.

II. Policy reforms
- Certification of forest products starting with heart of palm and araucaria
- Consolidation and reform of the legal framework governing biodiversity and the environment.
- Mainstreaming of biodiversity conservation in targeted microregions especially regarding infrastructure investments and budget allocations.

3. Benefits and target population:

Environmental benefits
- Consolidation of adequately dimensioned and safeguarded Corridors to assure biodiversity maintenance in two microregions (Interior Atlantic Forest, Araucaria Forest) internationally recognized as unique and important repositories of biodiversity that are severely threatened by anthropomorphic encroachment.

- Establishment of biodiversity management models that will serve as prototypes for organizing conservation activities throughout the State and especially in two additional microregions of critical importance (Coastal Atlantic Rain Forest and Savannah/Campos Gerais).

Target population
- Farmers and other economic stakeholders in Corridors' interstitial areas who will be offered training and technical assistance to convert to superior, environmentally benign agricultural activities and technologies.
- Municipal governments, local NGOs, opinion makers, and teachers who will be given the opportunity to receive training, participate in PBP design and supervision, and, in the case of municipalities, assume responsibility for and obtain resources to implement biodiversity conservation programs including fiscalization.
- Parana State Government officials across a number of secretaries and agencies who are in some way involved in or accountable for environmental conservation. This will happen through mainstreaming of conservation including education, closer coordination of Government initiatives and better targeting of resources.

4. Institutional and implementation arrangements:

Center for Coordination of Government Programs (CCPG).
The Project Coordinating Unit (PCU) will be located in the Secretary of Planning and Administration and is part of the CCPG -which is also responsible for project elaboration. The PCU will be responsible for PBP implementation including the functions of planning and coordination of project components, inter-governmental agency and civil society support, and administration, finance and accounting. The CCPG is currently charged with overseeing all multi-lateral investment and grant programs, developing and coordinating multi-sector projects and providing technical, financial and legal assistance for State project implementation. It is a prestigious, efficient and well-staffed organization overseeing operations supported by the World Bank, IDB, Bank Kreditsanstalt fur Wiederaufbau (KfW), and the Overseas Economic Cooperation Fund (OECF). The CCPG is thoroughly familiar with Bank procurement, financial control and project supervision procedures. PCU staffing would comprise a manager and two technical staff members. Additional staffing would include consultants to assist with management

systems, logistics, monitoring and evaluation, and other technical services.

The State of Parana is successfully implementing the *Parana 12 Meses* and other Bank and multilateral operations making use of a management model that ensures participation of stakeholders--government and non-government--and ownership at the State, regional and municipal levels through decentralization of implementation responsibilities. The Parana Biodiversity Project will make use of a similar structure for project implementation. The key elements are described below and portrayed in the organizational chart in Annex 2-Component 4.

State Level Management: PCU, Advisory Body, Advisory Nucleus, Technical Management

The PCU will be supported by an *Advisory Committee* comprising representatives of the principal secretariats and agencies involved in environmental management and participating in the PBP. Membership includes IAP and SUDERHSA of the Environment Secretary, EMATER and DEFIS from the Agriculture Secretary, the Forestry Police from SESP, and a representative of the Education Secretary. The Committee, in its advisory capacity, ensures coordination of its subordinate regional and local staff, advises on regional and municipal proposals and related activities and consults on legislative and institutional reform proposals.

The PCU includes an *Advisory Nucleus* which performs the function of administrative secretariat, assuming responsibility for general project planning and administration, financial and accounting control, and operational support. It is responsible for project support in the areas of contracting, development of budgets and operational plans, M&E and reporting on implementation, payments and ensuring that these functions are performed smoothly across State, regional and municipal levels.

A *Technical Management Unit (TMU),* led by a high level operations specialist, would be responsible for the implementation of each of the four project components: (i) Education & Institutional Strengthening, (ii) Biodiversity Conservation & Incentives Management, (iii) Environmental Monitoring and Enforcement, and (iv) Project Administration. The components are represented in the TMU by separate units. The TMU is responsible for the overall component coordination and supervision and for providing technical assistance as needed.

Regional Level Management: Ecoregion Manager, Regional Project Management Committees and Forums

Each of the ecoregions will have an *Ecoregion Manager* who will be the link between PCU, regional and local bodies. The manager will be responsible for the ecoregion, vetting the priorities, work programs, and budgets produced by PBP municipal staff, overseeing implementation and providing technical assistance as needed. The Manager will be supported by a *Regional Project Management Committee*, taking advantage of existing regional organizations maintained by each of the state secretaries participating in the Advisory Committee. The Committee would pass on information from the State level secretariats, review program priorities, oversee project implementation and provide liaison and support for Municipal Commissions and activities. The SEMA/IAP regional representative presides over the Committee. *Regional Forums* involving public and private sector entities will also be convoked from time to time by the Committee to inform stakeholders of progress and elicit their views.

Municipal Level Management: EMATER, Local Branches of State Agencies, Project Management Committees and Forums

Local PBP implementation would be organized along municipal lines in accordance with the organization structure of the participating State agencies and because the municipalities are the appropriate implementation counterparts. EMATER is the most decentralized of the State agencies with the largest local presence. It is also the executor of *Parana 12 Meses* and hence responsible for the interstitial programs. The local EMATER representative, the *Environmental Adviser*, will run the project at the municipal level and chair the local *Project Management Committee*. The other Committee members would include representatives of DEFIS, IAP, SUDERHSA, NGOs, and municipal counterpart agencies. The Committee would oversee and report on implementation activities being carried out in the field and liaise with the regional and State organizations on issues germane to project execution. *Municipal Forums* may also be convoked by the Committee from time to time to inform stakeholders of progress and seek their views.

D. Project Rationale

1. Project alternatives considered and reasons for rejection:

The main alternatives considered were operations that would
(i) defend biodiversity by mounting a comprehensive, state-wide campaign to mainstream concepts, rationalize programs and address institutional problems,
(ii) focus on particular problems--threatened species (eg. araucaria) and conservation units upgrade--rather than a more integrated approach based upon important ecoregions and including interstitial areas
(iii) an operation that would stress UC consolidation and interstitial interventions but with relatively little in the way of institutional and policy reforms
(iv) a corridors approach including interstitial programs in especially high biodiversity ecoregions with supporting institutional and policy reforms.

The fourth alternative won out as it afforded much greater protection for Parana's "hot spots", allowed the project to develop and test a prototype corridors approach that had been successful elsewhere, and best addressed the problem of sustainability through policy and institutional reforms. The existence of the Parana 12 Meses operation also assured that a robust interstitial program would be included. Once this decision was taken it was then necessary to decide which of Parana's four critical ecoregions would be addressed--the Coastal Atlantic rain forest, the Campos Gerais/savannahs, Interior Atlantic Rain Forest, and Araucaria forests. Technical discussion ensued and a number of criterion were established against which alternatives ranging from large corridors in all four ecoregions to the smaller corridors. The criterion included

- feasibility of administering programs given Parana's technical and administrative capacity and available resources
- threat to biodiversity and feasibility of mounting successful remedial programs
- importance of biodiversity in each locale
- importance of species, the biotic community, ecossystems and habitats, and endemism
- presence of protected areas and feasibility of connectivity
- existence of other programs addressing biodiversity issues.

The importance of each microregion and the threat to biodiversity argued for at least two ecoregions.

Operational feasibility argued for fewer than four and opinioned coalesced around two microregions. The Coastal Atlantic Rain Forest was considered to be less of a priority because of its extensiveness, lesser threat, and the fact that programs already existed within the ecoregion. The Campos Gerais was also rated less highly because it is representative of an ecosystem that is more abundant elsewhere in Brazil and because of the relative technical difficulty of monitoring and surveillance, especially making use of satellite imagery. In the end, the decision was taken to proceed with two ecoregions, Araucaria and Internal Atlantic Rain Forest, establish successful prototype operations, and rely upon future operations to address the other ecoregions. Once this decision was made, it was a relatively easy decision to identify three corridors based upon the presence of protected areas and connectivity opportunities.

2. Major related projects financed by the Bank and/or other development agencies (completed, ongoing and planned).

Sector Issue	Project	Latest Supervision (PSR) Ratings (Bank-financed projects only)	
		Implementation Progress (IP)	Development Objective (DO)
Bank-financed			
Implement zoning with buffer zones, environmental and park management in Western Amazon region	Brazil--Rondonia Natural Resources Management Project (PLANAFLORO)	S	S
	Brazil--Natural Resources Management Project (PRODEAGRO)	U	U
Support state level legislative and regulatory reform and strengthen environmental agencies throughout Brazil including licensing and coastal environment management	Brazil--National Environment Project II	HS	S
Consolidate community support for and introduce environmentally superior alternative land management and production systems	Brazil--Parana Rural Poverty Alleviation and Natural Resources Management Project	S	S
GEF Financed			
(i) Bring 10% of Amazon under strict protection regime, upgrade biodiversity M&E, and improve UC and interstitial management and finances	Brazil--Amazon Region Protected Areas Project (under preparation)		
(ii) Develop biodiversity strategies for key biomes in Brazil/ promote partnerships among government, NGOs, and private sector to promote biodiversity conservation	Brazil-- #2 Biodiversity Fund Projects (FUNBIO/PROBIO)	S	S
Rainforest Pilot Program Financed			

(i) Create ecological corridors in the Atlantic and Amazonian forests, incorporating fragments, upgrading protected area/UC and interstitial area management, improving monitoring and evaluation of biodivesity, and building corridor support	Ecological Corridors Project (Negotiations pending)		
(ii) Promote sustainable natural resource management conservation by local communities in the Amazon & Atlantic forests	Demonstration Projects (PD/A)	S	S
(iii) Complete the legalization and assisting in the protection of indigenous lands in the Amazon	Indigenous Lands Project (PPTAL)	S	S
(iv) Develop & test approaches to management of extractive reserves in the Amazon	Extractive Reserves Project (RESEX)	S	S
(v) Strengthen policy analysis, regulatory, zoning, monitoring, enforcement and implementation capacity of state environmental agencies in the Amazon	Natural Resources Project (SPRN)	S	S
(vi) Promote sustainable use of the natural resources of the amazon floodplains	Floodplain Natural Resources Management Project (PROVARZEA)	S	S
Other development agencies			
Protect Atlantic Rainforest in the states of Sao Paulo, Minas Gerais, Rio de Janeiro, Santa Catarania, Rio Grande do Sul (preparation)	German Development Bank (KfW)		
Modernize management of protected areas --Atlantic Forest of MG State	German Technical Cooperation Agency (GTZ)		
Modernize park management including mapping, data base, forestry police, eco-tourism--primarily Atlantic Forest	Parana Atlantic Rainforest Protection Project --Pro-Atlantica (KFW/GTZ)		
Implement alternative, environmentally benign development practices in interstitial zones contiguous to the Iguacu Park--Atlantic Forest	Iguacu National Park Buffer Zone Municiplaities--Ministry of Environment/IBAMA and UNILIVRE		
Elaborate and implement a management plan for a large protected area--Atlantic Forest	Guaraquecaba APA Development Plan--IAP plus 3 NGOs		

IP/DO Ratings: HS (Highly Satisfactory), S (Satisfactory), U (Unsatisfactory), HU (Highly Unsatisfactory)

3. Lessons learned and reflected in the project design:

Developing a strategic approach and policy framework. Given funds constraint, political sensitivities and the need to focus conservation efforts on critical, high biodiversity ecoregions there is a need for a strategic approach to planning buttressed by a supportive policy framework. Prioritization of areas and and the mobilization of resources, including enforcement (eg. decentralization, Legal Reserves, SISLEG) and incentive structures (eg. ICM Ecologico, decentralization of fiscalization) to consolidate Corridors is an essential starting point. GEF's PROBIO has been especially important in supporting the identification of priority, high biodiversity areas throughout Brazil.which have been incorporated into ARPA, the Ecological Corridors operations.

Consolidating UCs, interstitial areas and incorporating fragments to form ecoregions sufficiently large to support biodiversity. Fragmentation of protected areas and inattention to interstitial areas and microcatchments must be addressed, especially in threatened areas outside the Amazon where parks tend to be much larger. The many GEF and RFPP operations address these issues and the Parana Rural Poverty and Natural Resource Management has specialized in microcatchment rehabilitation which will be critical to consolidating the two Parana Corridors.

Strengthening conservation units. Consolidated, well managed protected areas are at the center of Bank, RFPP, GEF, KfW and other interventions designed to support conservation. The 1990 National Environmental Project (NEP) targeted 32 conservation units with mixed success. Major lessons learned from this and other operations are that success factors include (i) decentralizing responsibilities to local levels is important (ii) participation in design and implementation by interested stakeholders, particularly in local communities and among NGOs and the private sector, (iii) development of a strategic policy framework and approach for biodiversity conservation, (iv) focus on a few areas, (v) link institutional development to infrastructure and equipment so that ID will not lag behind.

Decentralizing responsibility. A 1994 Bank study, *Decentralization and Biodiversity Conservation,* found that decentralization is important but not a panacea and requires long-term commitment to strengthening local institutional capacity. The study and subsequent experience in Bank projects point to the following prerequisites for realizing the benefits of decentralization, (i) local participation and dissemination of project information regarding sensitive issues like land management and tenure, (ii) providing NGOs and local government units resources to enhance skills and opportunities to work together on project design and implementation to increase cooperation and accountability, (iii) subsidies or investments where necessary to compensate for loss of livelihood or welfare, (iv) countering powerful local or central intereests with appropriate enforcement tempered by education and public relations, (v) providing for ecoregion executives and stakeholder forums to ensure the authority to take decisions, mediate conflicts, and procure help from central and other authorities., (vi) ensuring enabling policies, laws, incentives and institutions to provide a clear support framework.

Engaging stakeholders. A 1994 GEF report emphasized the importance of facilitating "direct" biodiversity conservation activities by communities or conservation stakeholders dependent upon conservation for their livelihoods and quality of life. Specifically, the report found that (i) more attention needs to be given local people, recognizing their expertise and views, (ii) more meaningful involvement of NGOs throught the project cycle is needed to ensure quality, avoid problems and create networks, (iii) more creative cooperation is needed among implementing agencies and other global organizations working in the area. Stakeholder participation and sensitivity to beneficiary views are now an essential part of Bank operational design and especially in environmental projects where stakeholders' livelihoods are often affected and alternative, environmentally benign production systems must be adopted.

4. Indications of borrower and recipient commitment and ownership:

The Government of Parana approached the World Bank nearly two years ago to obtain support for a GEF environmental grant to consolidate their approach to environmental management. Elections late next year mean that there is a narrow window of opportunity for processing and launching this operation and that is motivating the Parana Government which is concerned about its environmental legacy. Other strong indications of borrower commitment and ownership include the following points.

- Parana has created a top project unit in the Ministry of Planning's prestigious CCPG and has maintained it for eighteen months during which time three comprehensive iterations were produced to comply with GEF instructions.
- The Project Unit has produced an excellent and detailed project document that could serve as a prototype for subsequent Corridor projects.
- Parana, which is a leader in state environmental matters, has agreed to refine and mobilize its ICMS Ecologico and SISLEG initiatives, enforce Legal Reserves, undertake araucaria and heart of palm certification and decentralization of the fiscalization function to municipalities. It will also review Federal, State and municipal environmental legislation. These are all important and, in some cases, leading edge initiatives in Brazil and will be important in subsequent operations. They also involve difficult management and political/vested interest challenges.
- Parana has agreed to reallocate up to $10 million from the Bank's *Parana Rural Poverty* loan for counterpart funding
- During project design discussions it was made clear that PBP is to be the catalyst that orients and mobilizes the Government's ambitious 1997 *Biodiversity Network Program* that sets the stage for coordination of environmental efforts throughout the government.

5. Value added of Bank and Global support in this project:

Without the Bank's involvement it is doubtful that any new environmental project would be undertaken and the Government's ambitious *Biodiversity Network Program* initiative would have very little impact upon environmental management. In addition to serving as a catalysts to help mobilize and reorient the Government's environmental programs, Bank participation in the PBP is adding value in the following ways.

- The Bank serves as an "independent broker" among competing agencies, stakeholders and interests which is especially important in a multi-sector operation.
- The Bank has successfully pressed for the inclusion of significant institutional and regulatory reforms cited above.
- The Bank has, in a parallel effort, supported a collaborative effort by Government, NGOs, and the private sector to identify important land holdings of large corporations and develop a proposals as to how they might be incorporated into protected areas.
- Bank experience with Brazilian, Latin American and global environmental reform including Corridor consolidation and UC management has helped to orient work on these components. Bank knowledge of Brazilian initiatives, including the RFPP program and GEF ARPA work provide important input to project design.
- The interstitial area management component draws upon the Bank's Parana Rural Poverty loan resources and experience and the loan's Task Manager is also co-TM for the PBP project which strengthens this critical initiative. Other PBP staff include a nationally recognized environmental

specialist who is co-TM for the ARPA and Ecological Corridors project ensuring close collaboration and synergy through design and implementation.

- The Bank's role as GEF executor faciliatates Parana's access to the program's grant resources.

E. Summary Project Analysis (Detailed assessments are in the project file, see Annex 3)

1. Economic (see Annex 3):

○ Cost benefit NPV=US$ million; ERR = % (see Annex 3)
○ Cost effectiveness
● Incremental Cost
○ Other (specify)

The Incremental Cost analysis is detailed in Annex 3.

2. Financial (see Annex 3):

NPV=US$ million; FRR = % (see Annex 3)

[Not required]

Fiscal Impact:

The fiscal burden of a new project is mitigated by the fact that GEF is providing grant finance and Parana counterpart will be derived from reallocation of existing, budgeted Government resources including porceeds from the Parana Rural Poverty loan.

3. Technical:

The most demanding technical issues and PBP approach are enumerated below.

Component 1: Education and Capacity Building

There are numerous beneficiaries and training courses included under this component. Government technical and training specialists (the design of this component was assisted by the Government's in-house training unit) are competent to design and deliver the required courses and, in the case of EMATER, have ample experience in designing and implementing similar extension programs gained under the *Parana Rural Poverty* loan.

Component 2: Biodiversity Management and Incentives

This is the single largest and most complex component. The principle technical challenges and PBP approach are described below.

- *Develop strategic Corridor management plans prioritizing areas and interventions.* A central macro planning unit will be set up in IAP. Working with satellite imagery it will develop Corridor maps that identify critical areas for intervention: rehabilitation of park areas and microcatchments and other interstitial areas, identification of fragments and larger, relatively conserved private holdings that can potentially be brought under a protected regime. It will also assess the relative anthropomorphic threat. Based upon this information, a Corridor management plan specifying and prioritizing interventions will be developed for each corridor. This work is already underway and should be a problem.
- *Verify on the ground interstitial land proprietorship and legal reserve compliance; enforcement/operationalization of SISLEG.* The Corridor management plans produced by the Central Planning Unit will be provided to the Ecoregion Manager who will convoke municipal IAP staff whose job it will be to verify land proprietorship and assess legal reserves and the feasibility of targeted

interventions. This is arduous manual work and records are often incomplete. IAP officials will then interface with local magistrates to achieve the desired intervention whether it be rehabilitation of micro-catchments and legal reserves or negotiation of solutions through SISLEG. IAP officials have ample experience in this sort of work which is labor intensive but technically feasible.

- *Develop and implement of alternative cropping modules for interstitial areas*. Some twenty modules appropriate for the two targeted ecoregions are under development. EMATER, which does similar work for the *Parana Rural Poverty* project has ample experience in developing modules, mobilizing communities, and undertaking the dissemination and technical assistance required to successfully implement alternative production systems.
- *Develop and implement comprehensive conservation unit management plans.* There are numerous examples of good practice in Brazil and elsewhere that can be drawn upon to guide Government and UC officials. The plans should include interstitial and park management, community outreach and financial sustainability. Plans will be validated by IAP technicians and implementation will be closely monitored.
- *Revise environmental legislation and regulations and institute reforms.* Again, Parana is a leader in environmental management in Brazil and its PBP efforts may constitute a prototype for other states and projects. The state is capable of evaluating and developing reforms for the State and municipal environmental legislation including the ICMS Ecologico, SISLEG, legal reserve enforcement, decentralization of the fiscalization function and certification of forest products including araucaria and heart of palm. Implementation will be more difficult but here the problems are not technical but rather trained manpower and vested interests.

Component 3: Control and Protection

Developing, maintaining, and using a comprehensive environmental data base that integrates PBP indicators and information requirements, extant data bases, and develops new information required for biodiversity monitoring is a major and essential undertaking for sustainable and professional monitoring and evaluation. The Government of Parana recognizes the need for such a data base and has proposed, under the grant, to establish a unit in IAP that would centralize all relevant biodiversity and conservation information, undertake mapping and evaluation, and provide input into prioritization exercises covering corridors. Given IAP capabilities this undertaking is feasible and should present no serious technical problems.

Component 4: Project Administration and Studies

There should be no serious technical problems.

4. Institutional:

4.1 Executing agencies:

The Government Center for Program Coordination (CCPG) within the Secretary of Planning and General Coordination of the Parana State Government will execute the project. As described in detail under point #4 of Section C, *Project Description Summary*, the CCPG has a long history of managing Bank projects and is considered highly competent in this field.

4.2 Project management:

(See *Project Description Summary* and *Annex 2-Component 4* for project management details).

The Project Coordinating Unit (PCU) will be located in the CCG and will involve the same

excellent technicians currently designing the project. The PCU will have an Advisory Nucleus for day-to-day project administration and a Technical Management Unit to oversee each of the Project Components. An Advisory Committee comprising representatives of the principal secretariats and agencies involved in the project will oversee implementation, provide a sounding Board for the PCU, and assure efficient liaison of their subordinate regional and municipal units.

Following the successful organization structures used in other Parana projects, Regional organizations will be established with an Ecoregion Manager for each Corridor who will liaise with the PCU and vet/supervise municipal implementation work programs. Regional Management Committees will be established involving the same participants that make up the the State level Advisory Committe. Regional stakeholder forums will be held from time to time to disseminate information and receive feedback.

Project management and execution on the ground will be managed by an Environmental Advisor who will be the ranking EMATER officer in the participating municipality. EMATER is the most decentralized of the State agencies and has considerable experience in project management of the sort envirsioned by PBP owing to its executor role in *Parana Rural Poverty Alleviation* whose funds will be financing the interstitial program. IAP officials will also be very active at the local level. Similar to what exists at the other levels, a Project Management Committee comprising participating secretary/agency officials at the local levels will be established to ensure smooth implementation. Municipal stakeholder forums will be convened from time to time to exchange information and receive feedback on implementation.

This project structure replicates what has successfully been used by Paran Rural Poverty Alleviation and other projects managed by the CCG and given the high quality of the technicians and the experience of CCPG, IAP and EMATER officials no project management problems are expected.

4.3 Procurement issues:

The project executor, CCPG, is thoroughly grounded in World Bank procurement practices and procedures by virtue of managing many Bank operations. A large part of the project involves EMATER operations in interstitial areas where Parana will be drawing upon experience gained in *Parana Rural Poverty Alleviation*. There are no difficult consultant or equipment or any other contracts forseen. Hence the project procurement is expected to present no problems.

4.4 Financial management issues:

Parana was one of the first Brazilian states to pilot LACI and the CCPG is very experienced in Bank financial management procedures. One possibility is that the successful Parana Rural Poverty Alleviation financial management system will be adapted to manage PBP. The project is simple and no financial management problems are expected.

5. Environmental: Environmental Category: C (Not Required)

5.1 Summarize the steps undertaken for environmental assessment and EMP preparation (including consultation and disclosure) and the significant issues and their treatment emerging from this analysis.

The main goal of this project is to increase biodiversity conservation in highly threatened ecosystems. Most of the project's activities address capacity building and are intended to mainstream biodiversity

conservation within the Parana Government and public agencies whose activities impact upon the environment. It is also intended orient Government environmental expenditures, including several on-going projects, to ensure bidoversity conservation objectives are met. There are no significant infrastucture investments in the targeted protected and interstitial areas. The only construction activities contemplated are small outlays for access roads, guard houses, visitor centers, fencing, trails and other small projects intended to upgrade Conservation Units' ability to carry out their enhanced mandate. Overall, project objectives and activities are environmentally benign. Innovative activities intended to strengthen biodiversity conservation will be undertaken within and around public and private protected areas.

5.2 What are the main features of the EMP and are they adequate?

N/A

5.3 For Category A and B projects, timeline and status of EA:

Date of receipt of final draft: N/A

5.4 How have stakeholders been consulted at the stage of (a) environmental screening and (b) draft EA report on the environmental impacts and proposed environment management plan? Describe mechanisms of consultation that were used and which groups were consulted?

Over the past 18 months of project preparation, the project unit has maintained close contact with all of the main public secretariats and agencies that will participate in the project. IAP and the Agriculture Secretariat (EMATER) have especially been involved in designing the project and the Government's Training Unit has been responsible for supporting design of the Education Component.

At the regional and local level, meetings of NGOs and potential beneficiaries have been convened in the target ecoregions to ascertain views on project design and especially as it pertains to interstitial area alternative production systems. It is important to note that the Government is offering alternative systems to farmers and others who will ultimately decide whether the new crops and techologies are worth adopting. There is no coersion of potential beneficiaries.

Regarding the main institutional and regulatory changes being contemplated the following points should be made

- Decentralization of the fiscalization function can be done only at the request of municipalities
- Enforcement of legal reserve and microcatchment preservation requirements involves approval of no new laws or regulations. It will be implemented in interstitial areas and targeted at interventions critical for biodiversity maintenance. The operalization of SISLEG mitigates somewhat the command and control aspect of enforcement, permitting a 'negotiation' process that optimizes legal enforcement. Similarly, better targeting of the ICMS Ecologico should provide municipalities with greater incentives to help consolidate Corridors.
- Prohibition of cutting of threatened araucaria is a long overdue step, albeit one that is still contentious owing to vested lumber interests. The Government is ready to take this step in light of the devastation that has been wrought on the few remaining forested areas and negotiations are proceding regarding the opening of other areas to compensate lumber interests for losses suffered.
- The introduction of certification to address illegal harvesting of heart of palm (and possibly other products in the future) will affect relatively few people. The certification process will keep harvesters from invading and depredating private property and protected areas. Programs to establish commercially viable substitute crops such a popunha are also being developed in parallel and will be offered in interstitial areas.

5.5 What mechanisms have been established to monitor and evaluate the impact of the project on the environment? Do the indicators reflect the objectives and results of the EMP?

Component #3, *Environmental Monitoring and Enforcement*, envisions the creation of a central unit in IAP charged with developing a comprehensive biodiversity/conservation data base comprising PBP indicators and information generated through continual evaluation of satellite imagery and on the ground surveys of targeted species plus other extant data bases. The unit will generate the requisite data for evaluating Corridors, PBP indicators, and eventually conservation data for the entire state. It will also be involved in setting priorities for PBP targeting which should support the effort to meet project objectives.

6. Social:

6.1 Summarize key social issues relevant to the project objectives, and specify the project's social development outcomes.

The primary social outcome has to do with the success of the alternative production systems proposed by the Project for farmers and others in key interstitial areas. "Success" means that large numbers of targeted beneficiaries convert to the alternative systems with the result that their income and quality of life improves.

6.2 Participatory Approach: How are key stakeholders participating in the project?

A sizeable and well articulated project dissemination and agricultural extension program has been developed that will target interstitial communities. Agricultural modules are being designed by EMATER that evaluate current cropping patterns and technologies, soil quality, environmental impact and develop crop/techology alternatives that will be offered to agriculturalists with technical assistance and financial support to induce them to convert to the new production systems. Hence the participation of interstitial communities is virtually assured and their willingness to adopt new systems will be an essential barometer of project success.

6.3 How does the project involve consultations or collaboration with NGOs or other civil society organizations?

A major Parana NGO, Sociedade de Pesquisa em Vida Selvagem (SPVS), has been involved as a participant and later as an informal consultant during the project design process. Through SPVS and others, NGO concerns regarding Government management of the environment and regulatory issues have been taken into account, especially in designing the institutional reforms contemplated by the project. The Government hosted two meetings of the environmental umbrella organization (UNIAP) with representation of environmental NGOs from all over the state to discuss the project and make recommendations. It is also expected that NGOs will be involved in project implementation by (i) participating in regional and municipal Project Committees, (ii) participating in regional and municipal forums, (iii) providing training as part of the Education Component--especially UNILIVRE, a leading environmental NGO, and (iv) being included in the UC Management Plans and resultant outreach activities.

6.4 What institutional arrangements have been provided to ensure the project achieves its social development outcomes?

EMATER has been designated as the local executor of PBP, especially as relates to the interstitial program. It will draw upon *Parana Rural Poverty Alleviation* experience in community organization and extension campaigns to change production systems. EMATER is the best institution to ensure interstitial agriculturalists and others undertand PBP and take advantage of offerings.

6.5 How will the project monitor performance in terms of social development outcomes?

Conversion to alternative production systems will be monitored closely in interstitial areas--as

well as the rehabilitation of interstitial and protected area biodiversity that should result from this and other efforts. To overcome the inertia associated with traditional cropping methodologies a farmer converting to alternative production systems must be assured of the favorable balance of costs and benefits. Hence, this measure is a satisfactory proxy for welfare improvement.

7. Safeguard Policies:

7.1 Do any of the following safeguard policies apply to the project?

Policy	Applicability
Environmental Assessment (OP 4.01, BP 4.01, GP 4.01)	○ Yes ● No
Natural habitats (OP 4.04, BP 4.04, GP 4.04)	○ Yes ● No
Forestry (OP 4.36, GP 4.36)	○ Yes ● No
Pest Management (OP 4.09)	○ Yes ● No
Cultural Property (OPN 11.03)	○ Yes ● No
Indigenous Peoples (OD 4.20)	○ Yes ● No
Involuntary Resettlement (OD 4.30)	○ Yes ● No
Safety of Dams (OP 4.37, BP 4.37)	○ Yes ● No
Projects in International Waters (OP 7.50, BP 7.50, GP 7.50)	○ Yes ● No
Projects in Disputed Areas (OP 7.60, BP 7.60, GP 7.60)	○ Yes ● No

7.2 Describe provisions made by the project to ensure compliance with applicable safeguard policies.

Not applicable.

F. Sustainability and Risks

1. Sustainability:

Project sustainability is addressed in the following ways.

Corridor Consolidation. Corridor strategic plans with prioritized interventions will be established during the project period as regards such parameters as quality of park area and species counts. Also, the quality of contiguous interstitial areas and microcatchments will be addressed through (i) SISLEG, the enforcement of Legal Reserve requirements, (ii) ICMS Ecologico, and (iii) UC outreach which will be an integral part of the new management plans. A unit will be established in IAP to (iv) evaluate Corridors and prioritize interventions and a second to (v) monitor and evaluate the impact of these interventions on biodiversity and Corridor consolidation. It is expected that both of the units will become permanent pillars of IAP and their regular reports and prioritization of interventions will continue to orient biodiversity conservation following project closing. Furthermore, mobilization of SISLEG/legal reserve enforcement efforts and the ICMS Ecologico are expected to be permanent.

UC Upgrade. The core UCs targeted for management plans and equipment/infrastructure upgrade will establish prototypes for UC management. The management plans will draw upon best practice in Brazil and elsewhere and should serve as the blue print for a more professional and comprehensive management of UCs that includes such areas as interstitial management/outreach and financial sustainability.

Institutional Reforms. The regulatory refinements and reforms contemplated by the project--SISLEG, ICMS-Ecologico, licensing, decentralization of fiscalization, and araucaria and heart of palm certification will be permanent. It is expected that the PBP supported review of the legal framework will also contribute to permanent reforms.

Mainstreaming Biodiversity Conservation. It is expected that EMATER involvement on a large scale in PBP will help to mainstream biodiversity and conservation concerns and approaches in this important body. Also, PBP should pump life into the Government's *Biodiversity Network Program* and orient its activities including promoting closer coordination ("mainstreaming") among agencies whose activities impinge upon protected areas and corridors.

2. Critical Risks (reflecting the failure of critical assumptions found in the fourth column of Annex 1):

Risk	Risk Rating	Risk Mitigation Measure
From Outputs to Objective		
(i) Gubernatorial elections next year will dilute support for PBP project/objectives	M	Speedy grant processing will leave one year of implementation to establish organizational sustainability and show results.
(ii) Vested interests will undercut support for main institutional reforms: decentralization of fiscalization and licensing, certification of araucaria and hearts of palm, mobilization of SISLEG and legal reserve enforcement	M	Initiatives are advancing (except for heart of palm certification which requires a study) and have sufficient public and private support to be instituted early in the project as planned.
(iii) Closing of "Parana Rural Poverty Alleviation" loan will undercut financing for interstitial program	M	A one year extension is nearly assured and two years will be requested which should be sufficient to achieve project goals.
(iv) Continued fiscal problems will result in budgetary retrenchment that will undercut PBP	M	There has been no hiring for several years and agencies are already lean owing in part to the State's financial situation and Federal legislation restricting Government expenditures. Counterpart funding comes from "Parana Rural Poverty Alleviation" and reallocation of existing budgetary outlays. IAP fees have recently been increased making the agency nearly self sufficient. Revenue generation studies will be undertaken by corridor UCs.
From Components to Outputs		
I. Education Component (i) Critical interstitial campaign with numerous dissemination efforts and wide variety of courses will not be successfully implemented	M	EMATER has been selected to manage this effort. It is a respected extension service that has successfully implemented the similar "Rural Poverty Alleviation" loan and has ample extension experience.
II. Biodiversity Management Component (i) Critical interstitial management campaign will face implementation problems	M	EMATER will be sub-contracted to run PBP locally and the expectation is that EMATER Environmental Advisors will be nearly full-time dedicated to it. Performance will be closely supervised by the Ecoregion Managers.
(ii) Corridor consolidation/increasing	M	Mapping and identification of priority

connectivity will prove difficult given highly fragmented protected areas		interventions will be done by a special unit set up for that purpose. Mobilizing IAP officials and local magistrates to identify and 'negotiate' with proprietors is labor intensive and politically sensitive but Parana has done this successfully before and the Government is committed.
(iii) Alternative production systems will not be adopted by interstitial cultivators	H	EMATER has been successful in getting farmers to adopt environmentally benign technologies on larger, more commercially viable farms and the expectation is that they will be successful in the ecoregions as well. The adoption of new crops is always difficult but a well planned and funded campaign is being structured to address this issue.
(iv) UC staffing and resourcing will continue inadequate to turn around Corridor UCs	M	PBP covers seven UCs in the targeted Corridors and will provide intensive training, technical assistance, equipment and minor infrastructure. Management plans will be carefully scrutinized and implementation will be monitored closely.
III. Biodiversity Monitoring and Enforcement (i) Development of adequate indicators that for threatened species that can and will be monitored systematically will prove difficult	M	A special unit will be created in IAP to implement monitoring and evaluation. Species counting and environmental quality evaluation will be subcontracted to competent groups where IAP officials cannot easily operate
(ii) Enforcement will continue indadequate	H	Certification will be subcontracted to a specialized private firm. Decentralization of fiscalization will increase the numbers and improve location of fiscal agents. PBP will provide training and equipment. Monitoring and evaluation will be rigorous.
Overall Risk Rating	M	The professionalism and commitment of Government officials will overcome implementation risks.

Risk Rating - H (High Risk), S (Substantial Risk), M (Modest Risk), N(Negligible or Low Risk)

3. Possible Controversial Aspects:

Institutional reforms and enforcement will continue controversial among some stakeholders including:

- Prohibition of cutting of araucaria--and attendant risk that this will put more pressure on forests in neighboring states
- Certification of heart of palm
- Enforcement of legal reserve requirements which have been largely ignored in Parana.

A continuing, serious issue is the road cutting through the Iguacu Falls Park in the Iguacu-Parana Corridor. The road was illegally built and operated and became a political battleground with the Governor and IBAMA officials (it is a Federal park) unwilling to confront the road's defenders. The Project does not intend to become involved in this issue directly owing to it being highly politicized, controversial and the remoteness of and find an alternative solution.

G. Main Grant Conditions

1. Effectiveness Condition

General Conditions of Effectiveness

- Formal establishment of appropriately staffed and resourced Project Coordinating Unit
- Protocol between all participating Secretaries and agencies
- Appointment of Ecoregion Managers
- Formal contracting of EMATER for PBP execution and appointment of local Environmental Advisors
- Protocol establishing the advisory committee at the State level
- Formal commitment to hold the first meetings of the State, regional, and municipal advisory committees and Regional and Municipal forums within six months of effectiveness
- Formal agreement (*convenio*) between the State Government and at least half of the municipalities targeted by the project committing to municipal participation and designating appropriate representatives and teams to implement the project.
- Protocol creating the central Macro Planning Unit and the Central Monitoring Unit in IAP with appropriate mandate and resources and evidence of access to required satellite imagery
- Satisfactory Procurement Plan covering the first twelve months of PBP operations validated by the World Bank
- Satisfactory Financial Management arrangements validated by the World Bank
- Satisfactory Operations Manual

Conditions of Effectiveness Specific to the *Control and Protection Component*

- Protocol with 7 municipalities agreeing to decentralization of fiscalization functions
- Decree mandating the decentralization of licensing procedures to the regional level
- Formal agreement with an institution(s) to set up the Wildlife Management Center for the care of birds and animals.

2. Other [classify according to covenant types used in the Legal Agreements.]

- For rural producers to become eligible to receive PBP technical and financial assistance, they must agree to (i) comply with technical recommendations regarding envrionmental practices and production systems, (ii) participate with own resources to complement project budget proposals validated by PBP Advisors, (iii) participate in relevant Project training, and (iv) agree to audit of support received.

H. Readiness for Implementation

☐ 1. a) The engineering design documents for the first year's activities are complete and ready for the start of project implementation.
☒ 1. b) Not applicable.

☐ 2. The procurement documents for the first year's activities are complete and ready for the start of project implementation.
☐ 3. The Project Implementation Plan has been appraised and found to be realistic and of satisfactory quality.
☐ 4. The following items are lacking and are discussed under loan conditions (Section G):

Regarding procurement, the project documents developed by the Government are extensive and detailed, including eight volumes that have gone through several iterations. They include cost tables by component by year, corridor and type of expenditure and constitute an excellent basis for the preparation of a detailed procurement plan. Additional comfort is derived from the fact that the CCGC has a long experience with managing procurement for Bank operations. Likewise, these same documents, owing to their detail, constitute a project implementation plan. A final plan will be defined during appraisal but is expected to differ very little from what is contained in the current documents.

I. Compliance with Bank Policies

☐ 1. This project complies with all applicable Bank policies.
☐ 2. The following exceptions to Bank policies are recommended for approval. The project complies with all other applicable Bank policies.

Michael G. Carroll	John Redwood	Gobind T. Nankani
Team Leader	**Sector Manager/Director**	**Country Manager/Director**

Annex 1: Project Design Summary

BRAZIL: Parana Biodiversity Project (GEF)

Hierarchy of Objectives	Key Performance Indicators	Monitoring & Evaluation	Critical Assumptions
Sector-related CAS Goal:	**Sector Indicators:**	**Sector/ country reports:**	**(from Goal to Bank Mission)**
Achieve Biodiversity conservation in two priority ecoregions-Brazilian Inland Atlantic Forest and Araucaria Forest	Selected species and environmental quality indicators to be developed in year one of project	A new Monitoring & Evaluation Unit will be established in IAP and will generate periodic supervision reports making use of satellite imagery and on the ground surveys	Parana political and financial support for the Project will continue strong despite elections next year.
Mainstream biodiversity conservation in Parana State	• Prohibition of public and private investments/activities damaging to Corridors	Supervision reports	Parana commitment to each of these goals is not derailed by vested interests
	• Approval and implementation of institutional reforms (see Component #3 Hierarchy of Objectives below)	Supervision reports	
GEF Operational Program:			
Conserve biodiversity in globally important forest and freshwater ecosystems (Operational Programs 3) prioritizing	[*SEE ANNEX 2 FOR THE FULL ARRAY OF INDICATORS PROPOSED FOR MONITORING BY THE GOVERNMENT*]		
(i) in situ conservation of globally unique biodiversity	Selected species and environmental quality indicators to be developed in year one of project	Monitoring & Evaluation Unit will generate periodic supervision reports	Continuing political and financial support for the Project
(ii) sustainable use of biodiversity	Adoption of alternative production systems in 40% of targeted Corridor interstitial areas or roughly 336,000 ha (to be confirmed in year one of project)	Local survey and reporting will be carried out by PBP Environmental Advisor (EMATER) in each participating municipality	Interstitial program is carried out efficiently and benefits of conversion are clear to potential beneficiaries
(iii) local participation in the benefits of conservation activities	Number of participants involved in PBP interstitial are dissemination/training programs (19,600 producers) and adopting alternative production systems	idem	idem
Global Objective:	**Outcome / Impact Indicators:**	**Project reports:**	**(from Objective to Goal)**

Hierarchy of Objectives	Key Performance Indicators	Monitoring & Evaluation	Critical Assumptions
Output from each Component:	**Output Indicators:**	**Project reports:**	**(from Outputs to Objective)**
Component 1: Education & Institutional Strengthening	(# Events/# Trained/Subject)		
Project Dissemination/Training	-Completion of training program including courses see Annex 2) for: ● Project Management ● Basic Concepts ● Basic Training ● EMATER Environmental Advisors ● Rural Producers--Basic Concepts, Agr. Modules ● UC Staff ● IAP-Municipal Inspectors ● Local Justices Training	Reporting of events will be part of PCU core responsibilities. These will be validated in Supervision Reports	Government capable of organizing and delivering projects; PBP and cultivation alternatives of sufficient interest to rural producers
	-Training of 19,600 corridors' rural producers in PBP project/concepts		idem
	-Adoption of alternative production systems in 40% of targeted Corridor interstitial areas or roughly 336,000 ha (to be confirmed in year one of project)		idem
Component 2: Biodiversity Conservation and Management Incentives	-Creation of a Central Macro Planning Unit in IAP and development of strategic intervention plans for two Corridors	Protocol, supervision reports and Bank validation of plans	Continuing Government/IAP support of PBP and its approach to planning
	-7 prototype Bank validated UC Management Plans including interstitial area programs under implementation	Supervision Reports	Government support of quality, comprehensive Management Plan model and adequately prepared UC officials to draft these plans.
	-Appropriate productive systems in priority interstitial areas: 40% of targeted microbasins or roughly 336,000 ha (to be confirmed in year 1)	Supervision reports	EMATER develops alternative production systems attractive to interstitial communities
	-20,000 ha of native species forest planted annually	Supervision reports	Government will support enforcement efforts/SISLEG,

			mobilizing IAP and local magistrates
Component 3: Environmental Monitoring and Enforcement	15 municipalities with effective decentralized systems of fiscalization	Supervision reports	Incentives for assumption and effective carrying out of responsibilities sufficient for municipalities
	Protection of threatened species	Illegal burning reduced in priority municipalities and interstitial areas (benchmarks to be confirmed in year 1). Satellite imagery will corroborate on-the-ground monitoring.	Efficient Government enforcement capability; Government enforcement/ SISLEG efforts and better targeted ICMS-Ecologico will reduce clearing
		Maintenance of abundance of targeted species within corridors (benchmarks to be confirmed in year 1).	Efficient Government enforcement capability
	-Implementation of institutional/legislative reforms: ● certification of araucaria and heart of palm ● decentralization of fiscalization ● decentralization of licensing ● mobilization of local officials to enforce Legal Reserves/SISLEG ● revised targeting of ICMS Ecologico to support biodiversity conservation ● review and modernization of environmental legislative framework ● reallocation of budget resources to benefit biodiversity conservation	Supervision reports; official legislation/decrees/regulations	Continued Government support of reform commitments made
	Development and use of comprehensive biodiversity data base	Supervision and verification in Central Macro Strategic Unit in IAP	Continued Government support of project concept, approach and funding.
Project Components / Sub-components:	**Inputs: (budget for each component)**	**Project reports:**	**(from Components to Outputs)**
Component 1: Educational & Institutional	GEF/Total Budget ($Thousands)	Supervision reports	Government continuing support of PBP programs and

Strengthening	1,209/1,580		reforms; efficient EMATER training and dissemination campaigns; alternative production systems attractive to interstitial inhabitants; appropriate training and resourcing for UC upgrade
Sub-components (i) Capacity building for project executors	537/635		
(ii) Education/dissemination for project beneficiaries	442/715		
(iii) Training materials/ dissemination	230/230		
Component 2: Biodiversity Management & Incentives	4,925/26,737	Supervision reports and verification of Government legislation, decrees, regulations; satellite imagery and on the ground surveillance	idem above plus Government support and effective enforce-ment of Legal Reserves/ SISLEG/ICMS Ecologico
Sub-components (i) Activities in Conservation Units & interstititial areas	1,619/23,367		
(ii) Use of strategic enforcement instruments & incentives/agr modules & technical assistance	3,305/3,370		
Component 3: Control & Protection	1,159/2,490		
Sub-components (i) Integrated fiscalization--decentralized licensing/ enforcement	463/1,241	Supervision reports	Continued State and municipal support of decentralization and in effectively carrying out fiscalization mandate
(ii) Protection of threatened species	231/1,249	Field teams will benchmark in year one and make annual counts	General success of PBP approach
Component 4: Project Administration	707/2,050		
Sub-components (i) Project administration	330/1,674	Supervision reports; successful carrying out of Project according to chronograms	Continued State support and coordination among array of State and municipal agencies
(ii) Strategic studies	377/377	TORs and final reports will be validated by Bank specialists	Continued State support of reforms despite vested interests

Annex 2: Detailed Project Description
BRAZIL: Parana Biodiversity Project (GEF)

Conservacao e Protecao da Biodiversidade no Estado do Parana ("Parana Biodiversidade")

Project Objective.

The primary objective is the sustainable conservation of Parana's surviving biodiversity focusing on critical ecoregions. PBP will assist the Government to attain this objective by helping to reorient public and private environmental efforts through a program of coordinated reforms in policy, organization, resourcing, and approach.

Strategic Approach

The PBP approach is to build "ecological corridors" in critical biodiversity areas by connecting and upgrading protected and interstitial areas critical for corridor consolidation and protection of biodiversity.

Corridors are areas distinguished by

(i) an area sufficiently large and 'connected' to allow maintenance of existing biodiversity,
(ii) protection/recuperation of environmental resources through appropriate legal and regulatory frameworks and efficient enforcement,
(iii) interstitial programs to address anthropomorphic threats--especially traditional productive systems--to corridor integrity and ensure connectivity,
(iv) systematic monitoring and evaluation, and
(v) a strengthened and growing constituency supporting conservation objectives through targeted education and dissemination programs.

Ecological corridors are comprised of

- UCs of a variety of types--including public (Federal, State, municipal), private (RPPN)--and a variety of uses (permitting controlled commercial use to total prohibition of any but research activities)
- Fragments of preserved areas which are under private ownership
- "Stepping stones" that are small preserved or recuperated interstitial areas sufficiently close to one another to permit species to move freely between larger conservation units or fragments, thereby assuring biological connectivity
- Interstitial legal reserves (by law, 20% of privately held lands) and water courses and contiguous "siliar" areas essential for connectivity (also protected by existing legislation).
- Other interstitial areas under environmentally benign forms of exploitation.

Connectivity is critical for biodiversity because it (i) assures areas sufficiently large to protect endangered species and allow for 'dispersion routes' for species recolonization, (ii) increases the possibility of water resource management including flood and sediment control and sustainability of aquatic communities and fish species, (iii) makes possible increased productivity by providing windbreaks for agriculture and pasture and controlling soil erosion, preventing desertification, and (iv) provides dispersion routes for species in isolated, preserved fragments.

There are ***four critical ecoregions*** in Parana that are considered planetary "hot spots". In addition to the Interior Atlantic and Araucaria Forests which are addressed by the PBP, there are the Coastal Atlantic Forest and the Campos-Cerrados (savanna). The two ecoregions targeted by the PBP were chosen based upon a careful selection procedure that looked at

(i) global, regional and local importance of biodiversity,
(ii) the number and size of protected areas within the potential corridor,
(iii) the degree of connectivity and proximity of protected areas,
(iv) the richness of the species found in the area,
(v) biodiversity,
(vi) biotic communities (??),
(vii) diversity of ecosystems and habitats,
(viii) endemism.

These same criterion were used to identify, within each ecoregion, the three corridors.

The largest planning and administrative unit in the targeted ecoregion is the ***Corridor***. The basic corridor planning unit is the ***micro-basin***, an area of roughly 3,000 ha. comprising a drainage area and generally with one or more water-courses. The smallest operational unit within the micro-basin is the ***private holding***. The PBP works with micro-basins and private holdings to consolidate three corridors.

PBP assists the Government of Parana to establish and consolidate, on a permanent and sustainable basis, ***three ecological corridors in two ecoregions***. The area of the 63 municipalities (of a total of 366 in Parana) in the PBP Ecoregions cover four million hectares of the State's total of twenty million. The actual are of the three corridors is 2.15 million hectares.

(i) Caiua-Ilha Grande Corridor in Ecoregion 55 comprising Interior Atlantic Forest. The Corridor touches on 26 municipalities with a combined area of 1,442,000 ha and a population of 420,000. The Corridor area is 987,000 ha. or roughly 68% of the total.

(ii) Iguacu-Parana Corridor, also in Ecoregion 55, also touches on 26 municipalities with a total area of 1,317,000 ha. and a population of 554,000. The Corridor covers 575,000 ha or 44% of the total.

(iii) Araucaria Forest Corridor in Ecoregion 105 comprising Araucaria Forests includes eleven municipalities with an area of 1,247,000 ha. and a population of 166,000. The Corridor includes 589,000 ha or 47% of the total.

Corridor	***Municipalities (#)***	***Corridor Area (000 Ha)***	***Municipal Area (000 Ha)***	***Corridor/ Municipal (%)***	***Urban Population (#)***	***Rural Population (#)***	***Total Population (#)***
Caiua-Ilha Grande	26	987	1.442	68	334,000	86,000	420,000
Iguacu-Parana	26	575	1,317	44	414,000	140,000	554,000
Araucaria	11	589	1,247	47	85,000	81,000	166,000

PBP works through ***four main components*** to create sustainable corridors capable of preserving critical biodiversity. Components and sub-components are presented in the table below along with detailed costs.

Component and Cost Summary
($000)

Components/Sub-Components	***Year***				***Totals***		
	1	***2***	***3***	***4***	***GEF***	***Parana***	***Total***
I. Education and Capacity Building	***751***	***382***	***301***	***146***	***1,209***	***371***	***1,508***
Capacity building for project executors	327	91	121	96	537	98	635
Education and dissemination for project beneficiairies	305	242	141	27	442	273	715
Promotional and capacity building materials	119	49	40	23	230		230
II. Biodiversity Management and Incentives	***7,439***	***11,270***	***7,336***	***692***	***4,925***	***21,812***	***26,737***
Macro-planning for prioritization & connectivity plus.....	1,239	1,239	446	446	3,306		3,306
Activities in UCs and Contiguous Areas							
Interstitial areas programs, connectivity & fragments	6,199	10,031	6,890	247	1,619	21,812	23,431
III. Control and Protection	***1,080***	***542***	***434***	***434***	***1,159***	***1.331***	***2,490***
Integrated fiscalization	523	311	203	203	463	777	1,241
Protection of threatened species	556	231	231	231	696	553	1,249
IV. Project Administration	***707***	***519***	***451***	***374***	***707***	***1,344***	***2,050***
Project administration	440	437	428	368	330	1,344	1,674
Strategic studies	267	82	22	6	377		377
Totals	***9,977***	***12,714***	***8,522***	***1,646***	***8,000***	***24,857***	***32,857***

Descriptions of the four PBP components are presented below followed by the array of outcome and output indicators proposed for monitoring and evaluation by the Government follow.

By Component:

Project Component 1 - US$1.58 million

Component I: Education and Capacity Building

Objective. The objective is to sensitize the population of Parana State to the importance of biodiversity conservation and train project executors, beneficiaries and stakeholders to participate in the Project. Hence, the Component is essential to mobilizing support recuperating and safeguarding the quality of the State's principal ecosystems.

Specific Objecives.

- Change attitudes and behaviors and broaden knowledge, skills and competencies required for biodiversity conservation among stakeholders and environmental agents.
- Build the requisite capacity among PBP executors to successfully carry out the project.
- Persuade rural populations to adopt agricultural and husbandry technologies that are environmentally benign, especially in targeted interstitial areas.
- Improve the efficiency, effectiveness and dedication of public officials directly or indirectly involved in activities impacting upon biodiversity conservation.
- Implement effective biodiversity monitoring and evaluation systems.
- Involve civil society and especially NGOs within the State in project implementation.

Component Activities. There are three sub-components described below, namely

A. Capacity building among project executors
B. Dissemination of project concepts and practices among project beneficiaries
C. Educational and promotional materials

Summary of Activities and Cost. The Component and sub-component activities have been broken out and costed out in detail according to a chronogram of activities including: cost per subcomponent per year, GEF and counterpart contribution, cost per expenditure category per year, and cost per individual sub-component activities per year. These are available in project files in eight Portuguese language Project books elaborated by Government's Project Development Unit in the Secretary of Planning. *The quality of this work is excellent*. The cost table below summarizes how funds will be spent over time. Brief descriptions of sub-component activities follow.

Education Component Cost Summary

Sub-Component/Activities		Budget ($Thousands)				
		Year 1	Year 2	Year 3	Year 4	Total
A. Capacity Building Among Project Executors		**327**	**91**	**121**	**96**	**635**
i.	Management Capacity Building	12				12
ii.	Dissemination of Project Concepts	39			39	78
iii.	Basic Capacity Building	119	42	42	42	240
iv.	Operational Capacity	40	14	22	15	92
v.	Specific Capacity Building for Technical Environmental Advisors	28				28
vi.	Capacity Building for UC Employees					
vii.	Specific Training for IAP Supervisors and Municipal Fiscalization Officials	54 25	 25	26 25		80 75
viii.	Capacity Building for environmental Secretary Justices	12	9	5		26
B. Dissemination of Project Concepts and Practices Among Project Beneficiaries		**305**	**242**	**141**	**27**	**715**
i.	Project Dissemination Meetings	62	122	88		272
ii.	Agroecological modules	86	49	21		156
iii.	Field Days		11	18	18	46
iv.	Extension Courses for Other Municipalities			4		4
v.	Social Mobilization and Environmental Education	97				97
vi.	Support for Education Project Implementation –Prizes	42	40			82
vii.	NGO Participation	19	19	9	9	57
C. Promotional and Capacity Building Materials		**119**	**49**	**40**	**23**	**230**
TOTAL		**751**	**383**	**301**	**146**	**1,580**

Sub-component A: Capacity Building Among Project Executors

The courses and beneficiaries contemplated under this sub-component include the following.

(i) Management Capacity Building. The objective of this course is to promote familiarity with biodiversity and project concepts among the roughly 30 members of the PCU and the Forum advising the PCU comprising officials representing organs involved in the project.
(ii) Dissemination of Project Concepts. These seminars are directed at some 820 regional and municipal level Forums comprising officials in agencies involved in the project, local justices, Municipal Council participants, municipal officials and civil society leaders.
(iii) Basic Capacity Building. There will be a basic biodiversity and environmental education course focusing on the characteristics of each corridor. The course will be given 17 times and the expectation is that some 470 officials involved in project execution in the corridors will participate. Included in this target group are officials from EMATER, IAP, DEFIS, Parana 12

Meses, SUDERHSA, the Forestry Police, municipal officials, justices, and NGOs.

(iv) Operational Capacity Building. Twelve sessions are contemplated for some 360 officials representing the same institutions above who will be directly involved at the local level in project execution. This group evidently includes the EMATER officials who will serve as the Technical Environmental Advisers who will be responsible for managing project initiatives in intersitial areas. The course will focus on the Operations Manual and activities to be developed with Corridor communities.

(v) Specific Capacity Building for Technical Environmental Advisors. Twenty Advisors will be trained in the specific agroecological modules that will be offered to local communities in each of the three corridors. The course will be 120 hours and will focus on the new technologies and also on community mobilization techniques required to persuade local farmers and ranchers to adopt the environmentally benign technologies offered by PBP.

(vi) Capacity Building for UC Employees. Four different courses will be offered for managers and administrators (basic and specialized courses), and park guards and laborers (basic and specialized courses). The basic courses are 24 hours and the specialized are 40 hours. UC employees in the seven corridor UCs will be targeted.

(vii) Specific Training for IAP Supervisors and Municipal Fiscalization Officials. The decentralization of the fiscal functions to the 15 participating corridor municipalities will require both traing for IAP officials who must switch to a supervisory role, and also for the municipal officials who will be assuming their direct fiscalization responsibilities. This is a 5 day, 40 hour course targeting some 135 participants. While not a part of PBP, the decentralization of responsibilities will also include a period of close mentoring and supervision during which time IAP officials will be imparting their experience to municipal officials.

(viii) Capacity Building for Environmental Secretary Justices. The training of local justices will be essential to operationalize SISLEG and expand the ICMS Ecologico. Local IAP officials will be responsible for verifying legal reserve compliance of landowners whose holdings are especially important to assuring the integrity of corridors or who are candidates for participation in the SISLEG program. Working together with the justices (*promotores*), they will negotiate the critical interstitial actions that will assure connectivity and recuperation of siliar and other important areas and encourage the establishment of RPPNs (privately owned reserves). Hence the training of justices is vitally important to structuring and mobilizing this effort.

Sub-Component B: Dissemination of Project Concepts and Practices Among Project Beneficiaries

These courses are primarily for the targeted interstitial rural communities and other stakeholders who will participate in the agroecological modules and eventually adopt the new activities and technologies with assistance from PBP. There are three basic courses/activities designed to cover large numbers of economically active rural inhabitants. It should also be noted that NGOs will also be trained and deliver training The activities contemplated are enumerated below.

(i) Project Dissemination Seminars. Nearly 20,000 rural workers are projected to participate in these seminars over the first three project years. Some 654 four hour meetings are programmed with 30 participants each. These will be the PBP introductory meetings meant to

build support and participation and propose the menu of agroecological modules based upon diagnostics of local needs and characteristics.

(ii) Agroecological Modules and Alternative Technologies. These courses are built around the actual demonstration projects/modules of which there will be twenty. Each course will be of 40 hours and involve twenty farmers/producers. The objective is to introduce the target population to the modules and persuade them to adopt the new activities and technologies offered with PBP support. Examples of modules are fish farming, organic agriculture, palmito production, ecotourism, medicinal plants, and flowers.

(iii) Field Days. These are the critical vehicles for acquainting potential interstitial rural workers with the results of the demonstration projects implemented in and around their communities. Each field day is a full 8-hour day for community groups of about 20 rural workers. There will be about 50 such field days in the 63 municipalities .

(iv) Extension Courses for Other Municipalities. These will also be 8-hour events, one in each corridor. The target audience will be some 30 rural workers from municipalities within the Ecoregion municipalities that do not have agroecological modules and are not directly involved in PBP planned activities. The intention of this activity is to upscale the PBP approach throughout the ecoregion.

(v) Social Mobilization and Environmental Eduction. The objective is to educate teachers and community leaders in the importance of biodiversity conservation and make the link to PBP activities, and especially the role of the corridor UCs which will be permanently involved in community mobilization. There will be 20 such courses and it is projected that 600 people will be trained in the corridors. Participants will also be expected to elaborate community dissemination programs. This will require agreement with municipalities and especially education secretaries regarding course development activities and also with local associations.

(vi) Support for Education Project Implementation. As a means of providing incentives for the Social Mobilization and Environmental Education programs developed by participants, prizes will be awarded for the best results. There is to be a prize awarded in each of the 63 participating municipalities in the 3 corridors.

Sub-Component C: Promotional and Capacity Building Materials

The menu of courses and activities outlined in the first two sub-components indicated above will require an array of pedagogical materials and 'prizes'and giveaways, common in agricultural extension field days and courses of this nature. Among the main items to be developed and handed out will be

- 690 Operations Manuals
- 2000 copies each of biodiversity booklets in 8 different editions of 100 pages
- 3 slide collections to be used for presentations
- 5 videos on 5 relevant PBP themes
- Folders including information on relevant areas including Project concept, agroecological modules, ICMS Ecologico, SISLEG with copies ranging from 10-25,000 copies of each.
- 11 folders, each with a different theme, for agroecological modules training activities
- Other items include 6,000 hats, 25,000 calendars, 3,500 posters, 15,000 games.

Project Component 2 - US$26.70 million

Component II: Biodiversity Management and Incentives

Objective. The objective of this component is to work with direct stakeholders --UC officials and rural producers in interstitial areas--to consolidate and assure the environmental integrity of the corridors and thereby safeguard their biodiversity on a sustainable basis.

Specific Objectives. Biodiversity conservation in targeted corridors will be achieved through five types of Component II interventions

- Improved administration of Conservation Units (UC) that are the geographic core of the ecological corridors
- Transition to environmentally benign production activities in interstitial areas
- Incorporation of fragments into the corridors through establishment of RPPN, protected areas or other means
- Connection of protected areas and fragments
- Recuperation of important UC and interstitial areas.

The last three of these will draw heavily upon activities in other PBP components, namely

- Operationalization of legal and regulatory protections of critical legal reserves and water courses through ICMS Ecologico, SISLEG, and enforcement of laws governing water courses/siliar areas and other exiting laws in interstitial areas (Component III, *Control and Protection*)
- Reform and efficient enforcement of laws and regulations governing biodiversity conservation including certification (*Project Administration & Strategic Studies, Control and Protection*)
- Strengthening of fiscalization and licensing through decentralization (*Control and Protection*)
- Dissemination of PBP and biodiversity conservation knowledge to project executors, beneficiaries and stakeholders and eventual mainstreaming to all Government agencies involved in activities impacting on the environment and to civil society. (Component I: *Education and Capacity Building*).

Cost and Summary of Activities. This is by far the largest component, totalling $26.7 million. Comprehensive cost breakouts exist in project documents by sub-component, expenditure item, year, and GEF and counterpart contribution. The sequence of interrelated Component II activities and cost and chronograms are presented below. Note also that the Component I Education and Training courses and dissemination activities have been carefully developed and scheduled to support Component II activities. A summary of the main activities to be undertaken in Component II and how they will be sequenced is presented in (a) below followed by a chronogram (b) and cost summary (c).

a. Summary & Sequencing of Component II Activities

(i) Making use of satellite imagery and maps and extant data bases, macro strategic planning will be undertaken to identify key Conservation Units and connectivity between these UCs and UCs/fragments, the first step in designing corridors.

(ii) Micro basins that contain the key UCs and fragments will be identified and macro plans for them developed taking into account degraded areas, legal reserves, commercial activities,

preserved fragments and other parameters bearing upon the quality of the microbasin and its impact upon the corridors.
(iii) Microbasins and connections will be prioritized based upon their importance to the corridors.
(iv) Findings will be verified locally 'on the ground' and micro basins, properties and connections will be evaluated and prioritized according to needs and characteristics, and plans will be developed for them. This information will be used for identifying the need for Legal Reserve, SISLEG, ICMS Ecologico and other compliance and incentive type interventions and to evaluate the feasibility of implanting new environmentally benign production systems.
(v) Producers/communities who will take part in the implementation of agroecological modules will be identified and modules implemented.
(vi) Production systems building on demonstration plots' results will be marketed and replicated with the assistance of Component I education/dissemination activities. Technical assistance and funds will be provided to facilitate conversion to new technologies on the basis of producer proposals.
(vii) Simultaneously, UC management plans that include interstitial area outreach will be elaborated and implemented.
(viii) Implementation will proceed with Project technical assistance, funding and supervision.

b. Chronogram of Major Activities

Component Activities	***Year 1***				***Year 2***				***Year 3***				***Year 4***			
	1	***2***	***3***	***4***	***1***	***2***	***3***	***4***	***1***	***2***	***3***	***4***	***1***	***2***	***3***	***4***
Prioritize UCs	x															
Implement UC activities		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Macro strategic planning of connectivity for priority corridors	x	x	x	x												
Macrostrategic prioritization of interstitial microbasins and connections	x	x	x	x												
Training of Technical Environmental Advisors and Producers		x	x	x												
Diagnosis & planning for properties			x	x												
Diagnostic & action plan for properties in priority microbasins/connections				x	x	x	x	x	x	x	x	x	x	x	x	x
Selection of producers for implementation of agroecological modules and demonstration projects			x	x	x											
Training of Advisors and producers in module implementation			x	x	x	x	x	x								
Implementation of modules				x	x	x	x	x								
Intensive training surrounding modules for producers							x	x	x	x	x	x	x	x	x	x
Development of action plans including modules/reserves in microbasins and properties				x	x	x	x	x	x	x	x	x	x	x	x	x
Execution of actions programmed in microbasins and properties				x	x	x	x	x	x	x	x	x	x	x	x	x

c. Biodiversity Management and Incentives
Cost Summary ($000)

Component Expenditures	*Corridors*				*Total*
	Araucaria	*Iguacu-Parana*	*Caiua-Ilha Grande*	*Common*	
Conservation Unit Activities/ Infrastructure	535	401	401		1,336
Conservation Unit Management	316	237	237		790
Macrostrategic Planning				283	283
Consolidation of Connectivity	79	59	59		197
Agroecological Modules Development & Dissemination	344	688	688		1,720
Municipal Institutional Support-EMATER	65	626	626		1,517
Institutional Support-Regional				132	132
Microbasin Management, Modules, Conversion to New Production Systems	4.153	8,304	8,304		20,761
Total	5,691	10,315	10,315	415	26,736

A description of the sub-components follows.

Sub-Component A: Macro-Planning for Prioritization and Connectivity

This small sub-component is primarily for the acquisition of GPS plus hardware and software to equip the central Macro-Strategic Planning Unit that will design corridor interventions and also monitor and evaluate results. The costs borne by GEF will amount to around $280,000 with the Government providing about $200,000 over four years for staffing and consultants. The work done in this unit will be vital for global planning of corridors as it will identify and prioritize critical micro-basins, connections, and degraded areas.

Sub-Component B: Activities in UCs and Contiguous Areas

The general objectives of this $2.4 million sub-component include

- Developing and implementing management processes in the UCs to support biodiversity conservation within the UC and in contiguous areas
- Equipping UCs for effectively carrying out their biodiversity conservation responsibilities including small infrastructure projects and basic equipment
- Training UC officials to efficiently carry out Project/biodiversity conservation activities (draws upon *Education & Capacity Building Component*)
- Establishing processes and procedures to refine and implement a State UC Management System
- Elaborating strategic plans for connectivity between UCs and fragments
- Generating information required to implement connectivity making use of ICMS Ecologico, SISLEG and other laws and regulations (Control and Protection Component)

The critical UCs for corridor consolidation have already been identified. Targeted UCs are indicated below.

Ecoregion	***Conservation Unit****	***Area (Ha)***	***Municipalities #***
Ombrofila Mista/Araucaria	PE das Araucarias	1,052	2
	RF do Pinhao	197	1
	EE Rio dos Touros	1,228	1
	PN do Iguacu	185,262	5
Interior Atlantic Rainforest	ARIE da Cabeca do Cachorro	61	1
	EE do Caiua	1,427	1
	PE Rio Guarani	2.235	1
	RB Sao Camilo	385	1
	APA das Ilhas e Varzeas do Rio Parana	274,900	12
Total		466,747	25

*PE-Parque Estadual, PN-Parque Nacional, APA-Area de Preservacao Ambiental, RB-Reserva Biológica, RF-Reserva Forestal, EE-Estacao Ecológica,

The specific activities covered under this sub-component will include the following.

(i) Planning and Management Activities. Each UC will develop, with the assistance of consultants, a comprehensive Management Plan that identifies the activities to be undertaken. IAP already has a model Management Plan that is participatory and will advance PBP objectives of involving interstitial stakeholders and consolidating connections. Local *Management Support Groups* will be formed from public and private stakeholders, including NGOs and associations, to assist UC management. Other activities that may be included under the rubric of management activities include title regularization, research, and monitoring of biodiversity.

(ii) Equipment, Maintenance and Small Infrastructure Activities. About half of the UC budget will be devoted to equipping UCs to be able to function more effectively. Expenditures will be verified in the management plans and could include, *inter alia*, maintenance, recuperation of degraded areas, construction of guard houses, visitor centers, research centers, fencing signage, and trails. Vehicles and other basic equipment will also be procured.

(iii) Public Use. UCs will be required, with consultant support, to examine public access and ecotourism potential. This will include requisite activities and infrastructure needs plus the development and dissemination of promotional materials and other marketing activities.

(iv) Interstitial Community Relations. The UC management plans will also identify what is required to work in a constructive way with populations living in areas contiguous to the UCs to preserve biodiversity. Education and outreach will be used especially to address problems such as fire control, recuperation of degraded areas, alternatives to agrotoxics, and other threats to the

integrity of the UC. These activities will be promoted through UC sponsored campaigns.

(v) Training. This will be carried out through the Education Component and will include critical skills such as promoting connectivity, management information systems, connecting fragments, and development of community conservation activities and programs.

Sub-Component C: Interstitial Areas Programs, Connectivity, and Fragments

This is the single largest component, costing nearly $27 million. It is where the macro-strategic plans get implemented. Consequently it addresses the need to:

- plan and connect protected areas through micro basin management
- plan and connect protected areas and and fragments
- ensure the adoption of environmentally benign productive systems throughout interstitial areas.

In order to achieve these ends, the Project will:

- mobilize authorities responsible for enforcing existing reserve requirements in targeted areas, activate SISLEG and promote RPPNs
- develop and test new, environmentally benign productive systems through implementation of agrecological modules
- persuade rural producers to convert traditional production systems to new ones in order to reduce the interstitial damage done by agriculture and cattle.

C-1 : Agroecological Modules Development

Except where legal reserve and other laws can be enforced, the intersititial program depends upon (i) the proving of superior, alternative economic activities and production methodologies through demonstration projects, (ii) the dissemination/'marketing' of results, (iii) the offering of appropriate incentives to rural producers to convert to new production systems including technical assistance and financing. Considerable progress has been made in diagnosing biodiversity threats in the target ecoregions and identifying the most appropriate alternative production systems. The development and implementation of these modules will cost roughly $3.4 million including the costs of setting them up, establishing deomonstration plots, and maintaining EMATER staff--the Environmental Advisors--to run them and upscale them thereafter.

Preliminary Diagnostic and Agroecological Module Proposals. The three corridors have been evaluated on a preliminary basis and the alternative production systems have been identified. There will be 40 modules implemented in the first two years with upscaling taking place during each year of the four year operation. Twenty-one production specific systems will be featured in these modules drawn from eight generic categories found to be important for the corridors:

- general environmental 'sanitation'/conservation activities in all micro basins
- forestry management
- organic agriculture
- new crops--medicinal, aromatic, condiments

- arts & crafts and ecotourism
- grain production
- dairy, meat and fish production
- fruit cultivation

The average cost of each module is about $102,000 including investment and recurrent costs, ranging from $23,000 for medicinal plants to $177,000 for organic coffee.

The preliminary diagnostic of corridor needs results in the generic and specific programs presented below.

Generic Activity Proposal	***Corridor***		
	Iguacu-Parana	***Caiua-Ilha Grande***	***Araucaria***
Environmental micro-basin sanitation (for all basins)	X	X	X
Forestry management	X	X	X
Organic agriculture	X		X
New crops--medicinal, aromatic, condiments	X	X	X
Arts & crafts, ecotouism	X	X	X
Grain production	X		
Dairy, meat and fish production	X	X	X
Fruit	X		X

Alternative Production Systems	*Corridor Iguacu-Parana*	*Corridor Caiua-Ilha Grande*	*Corridor Araucaria*	*Total by Activity*
Forest/agriculture with corn and beans	-	-	2	2
Forest/pasture	1	1	1	3
Forest/erva mate	-	-	2	2
Palmito cultivation (pupunha and palmeira real)	1	1	-	2
Organic herbs	1	-	2	3
Organic erva mate	-	-	1	1
Organic beans	-	-	1	1
Organic corn	1	-	2	3
Organic soja	2	-	2	4
Organic fuits	1	-	1	2
Organic chicken	-	-	1	1
Organic unrefined sugar	-	-	1	1
Organic coffee	-	1	-	1
Medicinal plants	1	1	1	3
Fafia	-	2	-	2
Tourism and arts & crafts	1	1	2	4
Various grains	1	-	-	1
Dairy farming	-	-	1	1
Cattle husbandry	-	1	-	1
Hog husbandry	1	-	1	2
Fish farms	-	-	2	2
Total	11	8	23	42

Implementation—EMATER's Technical Environmental Advisors. The activities described above will be undertaken by municipal based EMATER extension officials—EMATER maintains at least one in each municipality. EMATER is also experienced in the sort of work envisioned for PBP which is very similar to what is being done in *Parana 12 Meses*. At present there are 167 EMATER officials in municipalities included in the three corridors that could be involved in PBP. The Project contemplates using 63 of these in the first two years of operation, increasing to 74 in years 3 and 4, at a total cost to the the Project of $1.6 million. The time allotment and cost represents roughly 30% of the full-time cost of the EMATER officials.

C-2: Agroecological Module Upscaling

The micro basin planning and implementation of the new production systems proven in the Modules is the single largest PBP activity, stretching over the four years of the project and costing roughly $21 million. It is the activity that will implement Corridor connectivity and the conversion of production systems in interstitial areas. Some 280 micro basins will likely be targeted involving an area of 840,000 ha and a population of 19,600 rural producers. Most of the

funding comes from the Government's counterpart including the Parana 12 Meses resources for module development and upscaling/conversion to new production systems. The principle activities will include

(i) Micro planning including the prioritization and action plans for connections, microbasins and properties in each of the three corridors

(ii) Development of a micro basin cadastre of relevant information and including systematic and detailed evaluation of environmental problems that will feed into Global and Annual Operational Plans for each one.

(iii) Establishment of local Biodiversity Technical Committees to disseminate the PBP, prioritize local connections, approve Annual Operation Plans, serve as forums for debate, help resolve conflicts, and generally oversee local PBP activities.

(iv) Upscaling of modules to implement conversion to new production systems throughout interstitial areas with special emphasis on connectivity and degraded areas contiguous to protected areas.

Project Component 3 - US$ 2.05 million

Component III: Control and Protection

This component is budgeted at $2.05 million and is comprised of two sub-components, "Integrated Fiscalization" and "Protection of Endangered Species". The first addresses reforms in licensing and fiscalization activities. The second concentrates on developing monitoring and evaluation capacity, biodiversity indices and research into threatened species.

Specific Objectives. The specific objectives contemplated in this component include

- Establishing indicators for biodiversity and conducting monitoring and evaluation
- Developing and refining norms for licensing--that will be decentralized to regions-- of activities with potential for environmental impacts
- Strengthening fiscalization efforts which will be decentralized to municipalities in the corridors, requiring changing of IAP roles, elaboration of protocols, procedures and standards, and intensive training of IAP and municipal officials
- Protecting targeted threatened species in order
- Conducting research to identify endangered species in order to be able to develop appropriate programs
- Monitoring selected species as one means of guaranteeing their survival
- Developing programs to heighten the awareness of society in general regarding the need to protect biodiversity.

Component and Cost Summary. Detailed presentations of activities by year, GEF/counterpart, corridor and expenditure categories are available in the Component volume. The table below summarizes annual Component costs.

Sub-Component	***Year 1***	***Year 2***	***Year 3***	***Year 4***	***Total***
A. Integrated Fiscalization	523	311	203	203	1,241
B. Protection of Endangered Species	556	231	231	231	1,249
Total	1,080	542	434	434	2,490

Component Activities. The component comprises two sub-components and five principal activities

Sub-Component	Activities
A. Integrated Fiscalization	-Central Monitoring Unit -Regional Monitoring -Decentralized Fiscalization
B. Endangered Species Protection	-Wildlife Management Center -Endangered Species Protection Activities

Summary of Activities and Costs. The table below summarizes the costs by sub-component and activity for each Corridor. Detailed cost breakouts are available by year, expenditure, GEF/Counterpart, and Corridor.

Annual costs by Corridor
($000)

Sub-Component/Activity	***Araucaria***	***Iguacu-Parana***	***Caiua-Ilha Grande***	***Common to all Corridors***	***Total***
Integrated Fiscalization					
-Central Monitoring Unit				241	241
-Regional Licensing	351	262	183		796
-Decentralized Fiscalization	41	81	81		203
Endangered Species Protection					
-Wildlife Management Center		261			261
-Endangered Species Activities	247	371	371		989
Total					2,490

Sub-Component A: Integrated Fiscalization

(i) Central Environmental Monitoring Unit. The unit will be part of the Macro-Strategic Planning Unit to be set up in IAP. It will be staffed by IAP professionals and will be responsible for supervision and reporting of PBP and general biodiversity performance. It will also assist in the elaboration of reports, maps, benchmarks and parameters for licensing and fiscalization. The general approach to be followed in macro-strategic planning was outlined in Component II. The Unit will work intensively with satellite images to support field work and provide precise M&E. Regarding macrostrategic planning, the unit will use the images to do the initial diagnostic and prioritization of connectivity and micro basins that will orient all of the subsequent regional and field work culminating in Global and Annual Operations Plans at the property/microbasin/corridor levels. The Unit will also incorporate existing data bases, notably the System of Forest Recuperation (SERFLOR) and the SISLEG data base.

Central Monitoring Unit expenses total $95,000 in acquisition of satellite imagery, a GPS system, software and hardware.

(ii) Regional Licensing. The most difficult licensing activity involves the technical analysis of the specific request and this is an activity that should be organized geographically along regional lines to assure closer proximity to locations involved. One of the reforms to be undertaken by IAP is to regionalize this activity and at the same time, link it to the Central Monitoring Unit. Licensing should also be in closer proximity to the fiscalization function which is also being decentralized to a number of corridor municipalities with the IAP regional offices assuming a supervisory role.

Expenses for this activity, covering nine regional IAP offices, is $165,000 and the principal expenditures will be vehicles, GPS, hardware and software for each of the offices.

Decentralized Fiscalization. One of the serious, chronic problems confronting state and Federal agencies charged with environmental protection is the lack of adequately trained staff to discharge fiscalization/enforcement responsibilities. Parana is no exception. In IAP's nine regional offices there are 48 *fiscais* or an average 0.38 officials/municipal. Evidently, this number is far too low to mount the sort of control and enforcement required. Seven municipalities within the corridors have requested/agreed to assume fiscalization responsibilities and provide *fiscais*. Another 8 municipalities are contemplated for a second phase. If successful, this initiative could serve as an important prototype for other states wrestling with problems of staffing. Decentralization will also require establishing operational agreements, training and equipping municipal officials, establishing norms and institutional regulations so that technical, legal and administrative responsibilities can be effectively handed over to municipalities.

The decentralization activity will cost an estimated $203,000 for 15 municipalities. The municipal packages will cost about $15,000 each in terms of a vehicle and computer/GPS equipment.

Recurrent Expenses. The municipalities will be reimbursed from the roughly $1.4 million in environmental fines it currently assesses. It is expected that with the advent of municipal *fiscais*,

environmental fines will decline as enforcement becomes more rigorous. However, it is expected that increased revenues from the ICMS Ecologico, which will also undergo review as part of the PBP project, will compensate municipalities for diminishing funding from fines.

Sub-Component B—Threatened Species Protection.

General Objective. This sub-component is intended to protect species of interest, whether threatened, migratory, or for which information is lacking as a support to biodiversity management.

Specific Objectives.

- Monitor selected species to support preservation
- Manage and treat species apprehended through fiscalization
- Develop knowledge and data regarding the species about which relatively little is known
- Promote local, national or even international meetings regarding protection proposals.

Implementation. These activities will be developed in the field by the selected corridor UCs and IAP regional staff. Species have been selected and fall into five categories having to do with how much is known about them and whether they are the subject of ongoing, species specific projects. There are 24 species selected for monitoring and evaluation plus migratory species from three locations. This work will be done by four local teams that will include the municipal *fiscais.* Three of the teams will work on the two Interior Atlantic Forest corridors and the third will work with the Araucaria corridor.

Wildlife Management Center. The Centers are intended to receive and manage selected species of interest for protection, provide veterinary services as needed, undertake breeding programs, dispose of individuals that cannot be reintroduced to the wild., interface with other stakeholder institutions, create and maintain data bases and support species research.

Project Component 4 - US$1.58 million

IV. Project Administration

Component IV comprises two sub-components, Project Administration and Strategic Studies.

Cost Summary.

Detailed cost breakouts exist for this component in terms of year, expenditure item, sub-components, GEF and counterpart. The table below summarizes annual expenditures by sub-component.

Cost Summary and Chronogram ($000)

Sub-Component	*Year 1*	*Year 2*	*Year 3*	*Year 4*	*Total*
Project Administration	430	427	418	368	1,674
Strategic Studies	267	82	22	6	377
Total	697	509	441	374	2,051

Sub-Componente A: Project Administration

The basic project organization and terms of reference are summarized below.

Level	*Hierarchy*	*Organization/Description*
Central	Responsible entity	State of Parana
		State Secretary of Planning & General Coordination
		Center for the General Coordination of Government Programs (CGCC)
	UGP	Project Management Unit (headed by a General Manager) whose responsibilities include • Coordination and negotiation of programs between Federal, State and Bank authorities • Coordination of programs involving all State units • Establishment of general guidelines and implementation priorities priorities
Description of Responsibilities	• *Manage project excution and respond for results* • *Consolidate corridor program requests from regions and municipalities, discuss them with the advisory committee and formalize them in the Annual Operations Plan* • *Meet with and oversee subordinate Project organisms* • *Liberate Project rinancial resources in accordance with operations plans* • *Be responsible for project reporting* • *Articulate public and NGO cooperation and promote synergeies* • *Promote the PBP program of training and and conscientization of biodiversity among public Project executors at all levels*	
	Advisory	Advisory Committee comprising PBP participants: SEMA (IAP, SUDERHSA), SEAB (EMATER, DEFIS, UGP *Parana 12 Meses*), SESP (BPFlo), SEED
Description of Responsibilities	• *Support the General Manager in achieving PBP objectrrives* • *Promote coordination among Committee organizations participating in Project execution at the central, regional, and municipal levels* • *Discuss together with the General Manager Project proposals from the regional and municipal levels*	

	• *Evaluate public projects that could impact negatively on biodiversity and take suitable steps to remedy them* • *Analyse and provide input on legislative reform proposals affecting biodiversity* • *Support project execution by assuring organizational compliance at all Project levels*	
	UGP Secretariat	Project Advisory Nucleus (NAP) responsible for project administration, financial and accounting control, technical operational support
Description of Responsibilities	• *Competencies include supporting contracting, procedures, reporting, guidelines of annual operations plans, systematize project documents; data base organization and information required for physical and financial accompaniment, control, account for and report financial movements; carry out financial transactions* • *Additional attributions include coordinating M&E, contracting and carrying out of studies, supervising and reporting budget, financial and accounting activities and maintain accounting registries, financial and implementation reporting to the Bank, support and coordinate physical and financial chronograms, support procurement operations*	
	Technical Management	Technical Management
Description of Responsibilities	• *Plan, orient, coordinate and control the execution of technical activities and coordinate the work of the corridors' technical managers and establish norms* • *Support procurement operations regarding technical requirements* • *Support the elaboration of physical/financial chronograms according to priorities and reallocations and development of annual operation plans* • *Supervise monitor and evaluate project execution* • *Orient elaboration of technical terms of reference* • *Certify payments, vetting technical work performed* • *Approve technical proposals and support the Technical Manager* • *Oversee integration and coordination of project executors at all levels*	
	Subordinate TM Technical Units	• Education and capacity building • Biodiversity management and incentives • Control and protection
Regional/ Ecoregion/ Corridors	Corridor Managers	• Araucaria Corridor, Technical and Operational Management • Iguacu-Parana, Technical and Operational Management • Caiua-Ilha Grande, Technical and Operational Management
Description of Responsibilities	• *Articulate and coordinate actions of participants and respond for project implementation at the corridor level* • *Plan, orient, coordinate and control project implementation* • *Orient and coordinate Regional Commisions and Municipal Councils in actiona plan formulation and consolidate, evaluate and make them compatible with guidelines, recommending changes as required* • *Supervise, monitor and evaluate physical and financial project execution and provide support to Regional Commissions and NAP* • *Assist with terms of reference and advise on technical issues* • *Orientar training programming given corridor needs*	

	• *Assist with procurement, especially for studies*	
	Advisory	Regional Committees comprised of regional representatives of participating public agencies and important environmental NGOs
Description of Responsibilities	• *Support Corridor Managers ensuring coordination with central and municipal agencies and stakeholders and conflict resolution* • *Support vetting and consolidation of annual plans comprising municipal proposals and their processing from formulation through release of resources to fund them* • *Provide orientation on training and research needs* • *Support technical managers and their work at the municipal level* • *Propose technical, legal and operational interventions* • *Collaborate with municipal advisory bodies and participate in regional meetings of Forums (below)* • *Accompany Project execution at the regional level and determine what must be done to meet performance benchmarks*	
	Advisory	Regional Project Forums comprising participating public agency participants and major stakeholders from civil society, municipal representatives, NGOs to facilitate implementation and discuss issues.
Municipal	Municipal Management	Technical Enviromental Advisor—EMATER—responsible for project execution and reporting at the municipal level having to do with the carrying out directly of Component II and coordination of Components I and III.
	Advisory	Technical Biodiversity Councils –in conjunction with *Parana 12 Meses* Municipal Councils
Description of Responsibilities	• *Project dissemination at the local level* • *Evaluate macro-strategic plans at the municipal level and prioritization of micro basins* • *Approval of Annual Operation Plans and ensuring they are compatible with Parana 12 Meses guidelines* • *Serve as a forum of discussing biodiversity matters, resolving issues and conflicts, ensuring consonance with PBP strategic guidelines* • *Bring to the attention of the Regional Councils training and research needs at the local level.*	

Sub-Component B: Strategic Studies

Objective. In addition to Project Administration, the UGP will be responsible for the formulation of terms of reference, organization and procurement of study executors, monitoring of progress and validation of results. The five major studies to be done are described below.

1. Identification and consolidation of legislative aspects and norms regarding environment legislation at different levels of government (Year 1). This study will have three distinct components:

- Research of legislation at Federal, State and municipal levels ($52,000)

- Development of a legislative manual and cd-rom to disseminate findings ($16,000)
- Consolidation of legislation through proposals for reforms to strengthen biodiversity protection ($32,000).

2. Environmental Certification ($152,000- Years 1 through 3). This study looks at the definition of models and processes appropriate for certification of specific products with special attention being given to palmito and araucaria. The main activities will be (i) the characterization of certification systems, (ii) definition of benchmarks, (iii) development of norms for environmental certification of palmito and araucaria, and (iv) development of proposals for/to implement norms, incentives and institutional organization and processes to support certification

3. Identification and Characterization of Priority Areas for Conservation ($28,000—Year 1). This study has as its objective the mapping of fragments in the ecoregions targeted by the project. The activity will lead to eventual recommendations of guidelines and criterion for the establishing links to the most important ones and identification of which ones should be targeted for conservation and how this should be done. Specifically it includes fragment identification, mapping, characterization, and elaboration of 'thematic'maps plus a final report summarizing findings.

4. Cost-Benefit of Environmental Interventions ($33,000—Years 1-4). This methodology is not generally understood in Parana. It is also important for demonstrating the benefits of biodiversity conservation. The objectives of this study are to determine technically the relevant evaluation indicators, the cost-benefit methodology of biodiversity conservation, disseminate the techniques used, estimate the economic contribution of SISLEG interventions and siliar, agrotoxic control and other interventions impacting on water quality.

5. Perfection of ICMS Ecologico ($63,000—Years 1-2). The three component activities are (i) studies of ICMS Ecologico indicators re biodiversity and water sources (*mananciais*), rural land tax (ITR) and RPPN formation incentives, (ii) proposals to perfect the ICMS Ecologico, and (iii) reformulation and actualization of software to accommodate changes and improvements.

Monitoring & Evaluation.

The Project Management Unit, in conjunction with IAP staff, have defined PBP targets for many of the activities to be undertaken. This comprehensive list of indicators will be refined and then systematically monitored and fed back into the project over the four year implementation period. This should establish an excellent basis for performance evaluation.

Preliminary Project and Biodiversity Indicators*

Indicator/Input	*Unit of Measurement*	*Indicator*
Component 1: Education & Capacity Building		
Seminars for Project Concept dissemination:	seminars	
-Caiua-Ilha Grande	idem	4
-Iguacu-Parana	idem	4
-Araucaria	idem	2
Participants in Project Concept seminars	individuals (technicians, community leaders)	820
Project dissemination meetings	meetings	654
Rural producers participating in training	individuals	19,600
Courses for rural producers on agroecological module implantacao	courses/participants	20/800
Seminars for upscaling to non-participating municipalities	seminars	3
Social and educational environmental mobilization courses for community leaders and teachers	courses	20
Technical Environmental Advisors and NGO and municipal technicians trained	individuals	540
Municipal Promotional Contests for implantation of educational projects in schools	contests	63
Biodiversity volumes produced	units	16,000
Slide collections produced	collections	15 (comprising 3 types)
Videos on biodiversity/project	videos	25 (comprising 5 types)
Basic project executor course	course/IAP staff trained	34/200
Operational training for Environmental Technical Advisors and direct executors	course/individuals	11/380
Number of Environmental Technical Advisors trained (120 hours)	individuals	40
Conservation Unit staff training	course	11
IAP supervisor and municipal fiscalization agents training	course/municipal officials/municipal *fiscais* trained	8/63/135
Environmental justices (promotores) training	course/justices	5/80

Training assimilated (methodology to be defined)	%	executors 70% technical environmental advisors 80% teachers 50% rural producers 50%
Component 2: Biodiversity Management & Incentives		
Corridor area???	ha	2,151,175
Connectivity Index (recuperated connecting area/fragmented area)????	%	to be defined
Corridor macro-strategic plans elaborated	plans	3
Demonstration projects (corresponding to agricultural modules)	plots/projects	40
Microbasins with plans	microbasins/plans	280
Plans for individual properties	plans	19,600
Central Environmental Monitoring Unit	organization unit	1
Critical siliar area under preservation program	ha	84,000
Satellite imagery acquired	imagery packages	12
Area of conventional agricultural productive systems adopting module technologies in target interstitial areas	%	40%
Rural producers implementing module technologies	individuals	7,840
Rural producers in target micro basins involved in 'recuperation' over 4 year period	%	100
Wildlife Management Centers implanted	centers	1
Fencing put up in UCs	m	12,200
UC trails established	m	2,000
Water pumps installed	pumps	200
Fences on rural properties	km	2,500
UC degraded areas recuperated	ha	30
Producers involved in recuperating target micro basins	individuals	19,600
Agroecological modules implanted	modules	40
Micro basin properties with appropriate productive systems	properties	7,840
Conservation Unit management plans developed/validated/implemented	plans	7
Regional IAP offices linked to the Central Environmental Monitoring Unit	offices	9
Infrastructure implanted	m2	710
Component 3: Control and Protection		
Fauna surveillance teams equipped & trained	teams	4
Licensing and fiscalization reports produced by 9 IAP regional offices	reports	18/year
Fiscalization processes in properties in municipalities with	processes	6,000/year

decentralized structure		
Rural producers recuperating Legal reserves relative to the total number trained and assisted	%	40
Area of Legal Reserves recuperated	ha	53,000
23% of AIDP municipalities with *fiscais* trained by year 4	%	100% of *fiscais*
Annual increase of legal actions for environmental infractions	%	10
Abundance of targeted species in targeted areas	number	to be defined
Convenios/agreements with municipalities to decentralize fiscalization	*convenios*	15
Component 4: Project Administration		
Camaras Tecnicas da Biodiversidade instaladas	municipal committees	63
Studies concluded	studies	4

*Additional indicators having to do with enforcement functions are available in project documents.

Annex 3: Incremental Cost Analysis
BRAZIL: Parana Biodiversity Project (GEF)

Under the baseline scenario, the two ecoregions would benefit from efforts aimed at biodiversity management, incentives for biodiversity conservation, protection and regulation of threatened species, and to a lesser extent from efforts at capacity building and education. Specifically, in the fields of education and capacity building, government efforts to incorporate biodiversity conservation objectives will be very limited under the baseline. A maximum of $297,000 would be spent on: (i) government-funded courses related to decentralization of fiscal responsibilities for IAP staff and municipal officers; (ii) government-funded training for EMATER officials located in the project's interstitial area's municipalities; and (iii) Parana 12 meses-funded development and implementation of agroecological models that would at a very minimum be somewhat related to environmentally benign systems and/or targeted to the two ecoregions under the GEF project.

Parana is perhaps the leading State in Brazil in terms of specific efforts aimed at biodiversity management and incentives. Hence in the absence of the GEF project, there would be some benefits from government programs and projects directly aimed at biodiversity management in the two ecoregions. Specifically, the government would likely spend approximately $1.8 million in the absence of the GEF project toward biodiversity management of the Conservation Units in the corridors within the two ecoregions. In addition, no more than $4.7 million from the Parana 12 meses would be oriented toward rural development projects that could generate some co-benefits for biodiversity conservation within the two ecoregions. This estimate of $4.7 million is quite uncertain, bearing in mind that the Parana 12 meses project as currently designed does not incorporate biodiversity conservation objectives in its rural poverty alleviation strategy. Thus, under the most optimal baseline scenario of $6.6 million for biodiversity management, benefits to biodiversity conservation in these two ecoregions from Parana 12 meses would at best be ad hoc and government budgeted efforts would certainly not be optimal.

Also under the baseline, government efforts to regulate and protect threatened species in the two ecoregions would be limited to $1.4 million, of which $800,000 would support efforts the process of decentralizing the licensing and fiscal system, and $600,000 would support wildlife monitoring and management.

Finally, about $150,000 of government funds would be used to finance strategic studies related to biodiversity conservation that would likely take place in the absence of the GEF project.

In contrast to the baseline scenario of sub-optimal efforts aimed at conserving the two top priority ecoregions in Parana, the GEF Alternative would enable these highly biodiversity-rich ecoregions to be recipients of a very targeted and systematic effort to conserve biodiversity through: (1) education programs, training and other capacity building efforts; (2) biodiversity management of high priority conservation units and their buffer zones; (3) strengthening existing incentives for biodiversity conservation; (4) enforcing regulations and supporting fiscal reforms aimed at protecting threatened species; and (5) special studies to improve the legal, policy and regulatory framework for biodiversity conservation. The total cost of this effort (GEF Alternative) is estimated at $32.8 million. With the baseline of $8.447 million, there are $24.410 of incremental

costs to finance: (1) $1.283 million in new education and capacity building efforts directly aimed at biodiversity conservation; (2) $20.137 million in biodiversity management and strengthening biodiversity conservation incentives; (3) $1.200 million aimed at regulating, managing and protecting threatened species; and (4) $1.900 million in project management and to conduct strategic studies.

The government is financing $16.671 million of the incremental costs, which includes their efforts to reorient an additional $10 million (over and above the baseline of $4.7 million) from the *Parana 12 Meses* rural poverty alleviation program to explicitly incorporate biodiversity conservation objectives into rural development projects. The bulk of GEF support is sought to co-finance project activities focused on biodiversity management and incentives. GEF funds are also sought to support project activities related to education and capacity building efforts; protection of threatened species, strategic studies and project administration.

Incremental Cost Analysis ($000)

Components:	**Baseline**	**GEF Alternative**	**Increment**		
			Total	**Of which GEF-funded**	**Co-financed**
Education and Capacity Building	297	1580	1283	1209	74
Biodiversity Management and Incentives	6,600	26,737	20,137	4925	15212
Regulation and Protection of Threatened Species	1,400	2,490	1,090	1159	41
Strategic Studies	150	377	227	227	0
Project Administration	0	1674	1674	330	1344

Annex 4: Response to STAP Technical Review

BRAZIL: Parana Biodiversity Project (GEF)

The Technical Review is presented below in italics/bold format along with the Project Team's response on specific recommendations.

Technical Review

Project Name: ***Paraná Biodiversity Project Biodiversity (GEF)***

Reviewer: ***Enrique H. Bucher***

Date: ***September 28, 2001***

Proposal's global priority and relevance

This project deals with a vast, biologically rich ecoregion that is being threatened by several human activities. Effective conservation actions to reverse the present negative trends are urgently needed. The global priority of the area is high. Proposal fits very well with GEF objectives. The project has the potential for becoming a leading case, replicable for similar situations in Latin America.

Adequacy and cost-effectiveness of the project design

The project is in general scientific and technically sound (see below for specific comments). In essence, biodiversity protection would be achieved through promoting a) corridor management and expansion between conservation units, b) development and implementation of alternative production systems for the non-preserved areas, c) development of comprehensive conservation and management plans at the regional level, and d) promoting law enforcement through improved environmental legislation and better institutional structure and organization.

The proposed project costs seem in general adequate considering the proposed goals, the size of the management area, and the range of activities and disciplines involved. The proposed outcomes (benefits) include not only biodiversity conservation but also a substantial component dedicated to environmental education and community development (in coordination with other initiatives focused on rural poverty), which seems critical in terms of achieving long term, sustainable results. The global environmental benefits and/or drawbacks of the project are clearly identified. The project fits well within the context of GEF goals, as well as its operational strategies and program priorities. The regional context is adequately analyzed. Certainly, the area proposed is particularly rich not only in biodiversity, but also ecosystems and ecoregions.

The project has a clear potential for replicability in other tropical regions of South America. It has also great potential for becoming sustainable well beyond its financed period, considering the involvement and interest of the State of Paraná and local municipalities within the state. Education and training of a considerable number of government agents and students is a valuable component that enhances long-term capacity building and therefore sustainability. Involvement by stakeholders appears to be adequate.

Specific comments

The following aspects would require clarification

Coordination: Even if it were made explicit that the management in the proposed area will be coordinated by Ecoregion Managers, more details would be necessary to understand what kind of operational and practical mechanisms will be available for effective planning, control, and monitoring of the proposed actions. More specifically, is important to show whether Managers will be empowered at a sufficient degree to make their task truly effective and operational. It would be useful to know if there is previous experience in this kind of management structure.

Response: The management structure established for this operation replicates the successful model used by CGCC to manage other Bank and multilateral operations. It makes use of participating agencies and their regional and local representatives to manage the project (IAP and EMATER) and as Advisory Committee advisors and facilitators. The Ecoregion Manager was included at the request of the project team to specifically address coordination issues. The Project Team believes that the Ecoregion Manager, Technical Environment Advisors (municipal interstitial programs) and IAP officials have sufficient authority to implement their components effectively. Nevertheless, during appraisal, we shall one more verify that this is the case.

Production systems: One important component of the proposal is the dissemination of alternative production systems. The proposal assumes that alternative production models for the region will be found, and that they will be economically feasible. In fact, this is not the case today in most of Latin America today. There is growing evidence indicating that any alternative production model that is ecologically sustainable require some kind of economic incentive, at least at the initial stages. There is no indication that an economic analysis will be developed, or that the financial sectors of the government are willing to be part of the effort for developing new production alternatives for the local population. Consideration to markets and demand should be an important component of this analysis. Overall, my impression is that given its importance and complexity, the section on development of alternative production systems should be expanded. This activity seems under budgeted.

Response: The adoption of alternative production systems is of critical importance. Inducements will include technical assistance and funding for rural producers' projects to support conversion. There has been ample discussion during preparation regarding the possible

need to get involved in the marketing end for some new products and this will be monitored closely and adjustments made during implementation. This facet of the interstitial program has not been adequately developed and will be addressed and elaborated further during appraisal. The budgetary allocation for interstitial work—about $25 million dollars ($1.6m GEF and $23.rm counterpart) —should be sufficient but this will also be closely monitored.

Collaboration with civil society organizations: Several of the proposed activities include activities that are highly technical, like wildlife monitoring, conservation units management, conservation of selected species, etc. It would be desirable that at least local universities and other research and academic institutions in Paraná could contribute to the success of the present project. Moreover, it is not clear in the proposal whether the local government has the capability (both in terms of staff and infrastructure) to continue with these technical activities beyond the project's life.

Response: NGOs were involved in project design and meetings and will continue to be involved. The Education Component has a budget allocation to allow them to participate as trainers and especially where the have a strong local presence. It is very likely that a university will be identified to be host for the Wildlife Management Center in the Protection and Control Component. NGOs will also likely be involved in the local surveillance teams in the same component that will provide regular targeted fauna counts as part of project monitoring and evaluation. And NGOs will participate in municipal and regional advisory committees and invited to take part in local forums. This structure ensures that NGOs and academic institutions will be involved and heard and those with the capacity to contribute to project implementation can be identified and involved.

Regarding municipal capacity in the post project era, the project activities that require their continued activity are few and structured in such a way as to address sustainability as indicated below.

Activity Requiring Continued Municipal Participation	*Supporting Mechanism*
General integrity of local parks, interstitial areas, connections, fragments and creation of RPPNs	Refinement of ICMS should result in a stronger municipal incentive to continue with these activities, especially in critical areas
Decentralization of fiscalization to municipalities	Decentralization will be structured as part of the project and performance will be continuously monitored by IAP which will have authority to revoke or not renew *convenios* (agreements) with non-performing municipalities. IAP will need to maintain an education/training capacity with its own resources.
Continued rural producer conversion to new production systems	This activity will be run by the EMATER Technical Environmental Advisor and paid by the Grant. The EMATER staff will continue in the municipalities after the project closes and their activities depend upon municipal contracts—if the municipalities decide to pay for conversion support—and this might be supported by the ICMS-Ecologico—then EMATER will have competent staff to manage this business.

Sustainable use of palmito and araucaria: On page 24, it is stated that regulations for certification of palmito and araucaria (production?) will be developed. However, on page 40 prohibition of cutting Araucaria is mentioned as a possible controversial aspect of the project. This inconsistency should be corrected. Moreover, it is not clear why sustainable exploitation of palmito and araucaria is not included in the listing of alternative production systems to be developed.

Regarding sustainable exploitation of palmito, commercial production of (pupunha, palmito real) is one of the production systems to be offered (see Annex 2). The scattered araucaria forests that are targeted for biodiversity conservation are so reduced in size after hundred's of years of unrestrained exploitation that cutting is likely not an alternative. The commercial interests that are responsible for this devastation may protest the ban on cutting in these areas and the settlement may allow for cutting in exploited areas that are not important for biodiversity conservation. This and the feasibility of commercial planting of araucaria (ie. Plantations) will be clarified during appraisal.

Cost-benefit of Environmental Interventions and ICM ecologico: These sections are not sufficiently developed and would require expansion. As presented, it is difficult for the reader to assess how cost-benefit analysis of environmental interventions (obviously is an important tool) will be developed and connected with other activities. The same applies for ICM.

Parana's ICMS-Ecologico is leading edge in Brazil. It takes a percentage of the ICMS tax revenue and uses it to reward municipalities for compliance with laws and care of local parks, especially those that have important protected areas within their boundaries. This funding can be quite important for municipalities and an effective conservation incentive. The study to be undertaken will look at how the ICMS-Ecologico can be revised to provide even greater incentives. This might include payment of fiscalization officials in cases of decentralization, rewards for incorporation of fragments and creation of RPPN, mobilization of local officials to ensure the quality of connections, participation in fire-control campaigns, etc. Given the importance of this reform and the fact that it requires a reform of a budget allocation law and close, formal monitoring and evaluation means justifies the Project study. If an annex explaining the ICMS-Ecologico is deemed necessary this can be added.

The Parana Government wants the environmental cost-benefit training as part of its effort to mainstream biodiversity/environmental conservation within the Government and for the public at large. Parana has decided that its environmental officials do not have the requisite skills to do this. Once they are acquired it is expected that the internal Government 'debate' regarding the desirability of environmental interventions will be greatly enriched as will the elaboration and dissemination of justifications for an often skeptical and poorly informed public that tends to view new regulations as an inconvenience or unjustified restriction of their hitherto unconstrained use of natural resources. Studies will be done of important interventions to pilot and affirm the utility of the new approach. The Project Team believes this activity is important to sustaining the State's efforts to mainstream biodiversity conservation.

Summary and suggestions: Overall, I consider this GEF proposal viable, with very high chances of having a positive impact on such an important bioregion as the Atlantic Interior Forest. If the above detailed comments are taken into consideration, I fully support this project.