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IMPLEMENTATION COMPLETION AND RESULTS REPORT
(TF-51007)

ON A

GRANT

IN THE AMOUNT OF US$ 8.0 MILLION

TO THE

THE STATE OF PARANA (BRAZIL)

FOR A

PARANA BIODIVERSITY PROJECT

(GLOBAL ENVIRONMENT FACILITY)

September 28, 2009

Sustainable Development Sector Unit
Brazil Country Management Unit
Latin America and the Caribbean Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective January 30, 2009)

Currency Unit = Real
1.00 Real = US$ 0.4312
US$ 1.00 = 2.319 Reais

FISCAL YEAR

ABBREVIATIONS AND ACRONYMS

APA	Protected Environmental Area (permits restricted commercial use)
CAS	Country Assistance Strategy
CCPG	Center for Coordination of Government Programs (project coordinating unit)
DEFIS	State Secretariat of Agriculture's Fiscalization Department
DIBAP	Department of Biodiversity and Protected Areas (IAP)
EMATER	Technical Assistance and Rural Extension Company of Parana
GEF	Global Environment Facility
GTZ	Bilateral Technical Cooperation Enterprise of Germany
IAP	Environmental Institute of Parana
ICMS	Tax on the Circulation of Merchandise and Services (VAT)
KFW	Germany's development bank
NAP	Project Advisory Nucleus (secretariat)
Parana 12 Meses	Parana Rural Poverty Alleviation and Natural Resources Management Project (World Bank loan to Parana)
PBP	Parana Biodiversity Project
PNMA II	Second National Environment Program financed (World Bank loan to Brazil)
RPPN	Natural Privately Owned Protected Area Recognized by the Government
SEAB	Secretariat of Agriculture and Supply
SEMA	State Secretariat of the Environment and Water Resources
SIG	Geographic information System (GIS)
SISLEG	State System for Conservation and Recuperation of Legal Reserves and Permanent Preservation Areas
SNUC	National System of Conservation Units
SPVS	Wildlife Research and Environmental Education Society (NGO)
SUDERHSA	Superintendency of Water Resources and Environmental Sanitation Development
UC	Conservation Unit
UGP	Project Management Unit
UNILIVRE	Free University of the Environment (NGO)

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BRAZIL
Parana Biodiversity Project

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D A T A S H E E T

H E R E

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1. Project Context, Global Environment Objectives and Design

The Parana Biodiversity Project (PBP) was a five year project aimed at the consolidation of existing biodiversity corridors in globally important forest eco-regions that occur in the state of Parana, Brazil (Brazilian Atlantic Forest and Araucaria Forest). The two eco-regions are internationally recognized as unique and important repositories of biodiversity, but severely threatened by deforestation and forest fragmentation. The PBP also intended to establish biodiversity management models that would assist stakeholders in organizing conservation activities throughout the State.

The PBP was supported by a US$8.0 million grant from the Global Environmental Facility Trust Fund (GEF). The Grant Agreement between the State of Parana and IBRD was approved by the Board of Executive Directors on May 21, 2002. The project became effective on August 27, 2002. The project was extended once for a period of 24 months and closed on January 31, 2009.

1.1 Context at Appraisal

a. Country and Sector Background: Parana harbors significant, pristine tracts of important ecoregions, including Araucaria Forest and Brazilian Atlantic Rainforest, or "Mata Atlantica." The global importance of these ecoregions' is based upon their extraordinary biodiversity and the fact that they are threatened by agricultural expansion, deforestation, forest fragmentation, and habitat degradation for many species. Both the Federal and State governments faced the ever growing challenge of balancing development priorities and conservation. Another limitation affecting conservation was the lack of efficiency and coordination between agencies that characterized most public bodies in charge with biodiversity conservation. Due to the financial crisis that had affected Federal and State governments, the tight budget constraints imposed by Federal debt renegotiations and legislation governing the size of Government payrolls resulted in a freeze on hiring, and reduced resources for lower priority environmental initiatives.

b. Federal Government Strategic Initiatives: Despite this scenario, considerable progress had been made in reforming legislation and regulations bearing on environmental issues although implementation has often lagged. Since 1998, the Federal Government had created over 1.2 million hectares of strict conservation protected areas including four parks totaling about 50,000 ha in the Atlantic Forest. Major institutional reforms included approval of the following legislations: the National Protected Areas System Law (SNUC), a "Green Protocol" requiring banks and lending agencies to consider environmental criteria in project finance, National Water Resources Law (1997), Environmental Crimes Law (1998), a legislation allowing for forested lands to be considered to be "in productive use". Also an Agenda 21 for Brazil and for the Amazon was prepared. Environmental management was decentralized to states and municipalities. In addition, the Ministry of Environment was providing substantial support to individual States for the implementation of environmental programs. This initiative was partially funded by the Bank-financed Second National Environment Program (PNMA II), from which the State of Parana had received funding.

c. c. State of Parana Strategic Initiatives: *During the 1990s, t*he State of Parana became an environmental leader in Brazil as evidenced by its groundbreaking work on fiscal incentives for biodiversity conservation *(ICMS-Ecologico)* and tradable development rights *(SISLEG)*. The State launched the "Biodiversity Network Program" in 1997 that was intended to mainstream environmental conservation throughout the State Government structure. The Government had used it own funds to support project preparation and established a strong and well funded project preparation unit in the Planning Secretariat. It was also committed to applying US$10 million of the Bank-funded "Parana Rural Poverty Alleviation and Natural Resources Management Project" (Parana 12 Meses) as cofinancing for

the PBP to finance the implementation of alternative production systems in PBP targeted interstitial[1] areas. Equally encouraging was its commitment to undertake significant environmental reforms, including regulation of the cutting of natural stands of *Araucaria,* and certification of Araucaria and non-timber forest products.

d. Country Assistance Strategy: The CAS (March 24, 2000) specifically cited the PBP and several closely related pipeline operations which addressed and defined environmental program objectives. These operations had in common (i) targeting of critical biodiversity rich areas, (ii) creation of unbroken "corridors" which include interstitial areas to improve biodiversity maintenance and management, (iii) institutional strengthening to ensure enforcement of appropriate laws, regulations, and adoption of incentive based programs, (iv) stakeholder participation, and (v) strengthening of monitoring and evaluation functions. The design of the PBP directly addressed each of these five points.

e. Rationale for Bank Assistance: The World Bank has a long-standing and productive partnership with the State of Parana since the 1980s, mainly through the support to programs aimed at developing environmentally sustainable agricultural production systems through improved land management. Based on this, the Bank's involvement was a logical continuation of such partnership, and was instrumental to the decision to launch an ambitious environmental project in rural areas. In addition to serving as a catalyst to mobilize and reorient the Government's environmental programs, Bank participation in the PBP would add value in the following ways:

i. The Bank would serve as an "independent broker" among competing government agencies and stakeholders which were especially important in a multi-sector operation.
ii. The Bank had successfully directed the inclusion of significant institutional and regulatory reforms cited above.
iii. The Bank had, in a parallel effort, supported a collaborative effort by Government, NGOs, and the private sector to identify important public and private land holdings and to develop proposals as to how they might be incorporated into protected areas.
iv. Bank experience with Brazilian, Latin American, and global environmental reform including corridor consolidation and management of Conservation Units (UC) could help to orient design work on these components.
v. Bank knowledge of Brazilian initiatives, including the RFPP program and GEF ARPA work would provide important input to project design.
vi. The interstitial area management component would draw upon the Bank's loan resources and experience. The loan's Task Manager was also responsible for the PBP project which would ensure close coordination.

1.2 Original Global Environment Objectives (GEO) and Key Indicators (*as approved*)

a. Global Environment Objectives: The primary objectives of the Paraná Biodiversity Project (PBP) were (i) to support biodiversity conservation and sustainable natural resource management in two highly threatened ecoregions in the State of Paraná, the Brazilian Atlantic Rainforest and Araucaria Forest, and to (ii) design and implement a model for improving biodiversity conservation in Paraná.

The project would achieve these objectives in three selected areas of the State through: (a) mainstreaming biodiversity conservation among targeted Government agencies, rural communities and civil society organizations; (b) mitigating threats to biodiversity through establishment of three ecological corridors and consolidation of sustainable practices in target areas; (c) strengthening monitoring and enforcement

[1] **Interstitial**: at the landscape level, non-forested areas intermingled with native forest fragments. They are needed to maintain or re-create connectivity among conservation units.

functions ; and (d) reviewing and developing relevant norms, legislation, regulation, enforcement and incentive systems.

Figure 1. Map of Three Ecological Corridors

b. Target Areas: The PBP supported the consolidation of three ecological corridors: two in the inland Atlantic Rainforest and one in the Araucária Forest.

i. *Caiuá Ilha Grande Corridor.* Located on the northwestern border of Paraná, the corridor generally follows the Rio Paraná which contributes to making this one of the Atlantic Rainforest's richest repositories of biodiversity. It included an archipelago of more than 300 islands, várzeas (periodically flooded areas), alluvial forests and transitional areas between forest and savanna. The main State Parks targeted by the PBP for Management Plans and modernization are the Caiuá Ecological Station and the São Camilo State Biological Reserve.

ii. *Iguaçu-Paraná Corridor.* Located in the southeastern corner of the State, this area was under pressure from agricultural expansion initiatives owing to the richness of its soils. It was important also because it linked the Federal Iguaçu National Park, the largest continuous area of inland Atlantic forest, with a major initiative to recuperate areas in and around the lake formed by the Itaipú hydroelectric dam. The PBP would target the State Park of Rio Guarani and the Cabeça do Cachorro Area of Relevant Ecological Interest for the development of management plans.

iii. *Araucária Corridor.* Paraná has the largest Araucária (*Araucária angustifolia*) forests in Brazil, which at one time covered roughly 40 percent of the State's area. Less than 1 percent of the original forest survives in a highly fragmented pattern, exacerbating its fragility. Located in the Araucária ecoregion in the center-south of the State, the area chosen for the corridor represents among the most important surviving forests and those with the best chance of achieving sustainability through increased connectivity and corridor consolidation.

Together, the three Corridors cover an area of about two million hectares. In addition, they involve seven state protected areas, 280 micro-catchments and 63 municipalities. The corridors comprise over 40 percent of the territory of the 63 municipalities. The rural population was estimated at about 300,000.

c. Key Indicators: The key performance indicators for the PBP were:

i. Selection of species and environmental quality indicators.
ii. Provide technical basis to promote any necessary institutional and legislative revisions.
iii. Adoption of alternative production systems in 40% of targeted interstitial areas in microcatchments or roughly 336,000 ha of the total area of 840,000 ha.
iv. Involvement of about 19,600 producers in the PBP interstitial area dissemination/training programs and adopting alternative production systems.
v. An estimated 21,000 participants in the training program including; i) project management, ii) EMATER environmental advisors, iii) rural producers—basic concepts, agriculture modules, iv) UC-IAP staff, v) IAP-municipal inspectors, vi) local justices training.
vi. Creation of a Central Macro-Planning Unit in IAP and development of strategic intervention plans for three Corridors.
vii. Six prototype Management Plans including interstitial area programs under implementation
viii. An estimated 20,000 ha of native species forest planted annually.
ix. 15 municipalities with effective decentralized systems of fiscalization.
x. Deforestation reduced in priority municipalities and interstitial areas.
xi. Protection of threatened species; maintenance of abundance of targeted species within corridors.
xii. Studies carried out to provide the technical basis and/or support for key policy aspects, including licensing, enforcement, fiscal incentives, and environmental legislation,:
xiii. Development and use of a comprehensive biodiversity database

1.3 Revised GEO (*as approved by original approving authority*) and Key Indicators, and reasons/justification

The original objective was not modified and the associated outcome targets remained unchanged throughout the duration of the project, although, as part of the Mid Term Review, the Grant agreement was amended on February 2, 2007, approving a Second-Order Restructuring and reallocation of funds, and extending the closing date from January 31, 2007 to January 31, 2009. Additional details are provided in Section 2.2 (Implementation).

1.4 Main Beneficiaries

The main beneficiaries identified in the PAD were as follows:

i. Farmers and other economic stakeholders in the Corridors' interstitial areas who would be offered training, technical assistance and funding to convert to environmentally benign agricultural activities and technologies;
ii. Municipal governments, local NGOs, opinion makers, and teachers who would 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 control; and
iii. Parana State Government officials across a number of secretaries and agencies who were in some way involved in, or accountable for, environmental conservation.

1.5 Original Components (*as approved*)

Component 1: Education and Capacity Building (Total US$1.58m: GEF $1.21m + State $0.37m)
The objective of this component was to (i) 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 implementing agencies, beneficiaries and stakeholders to take part in the Project. Specifically, this component aimed to:

- 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; and
- involve civil society and especially NGOs within the State in project implementation.

Component 2: Biodiversity Management (Total US$26.74m: GEF **$4.93m** + **State $21.81m)**
The objective of the largest component of the project was to work with targeted rural producers in interstitial areas and UC officials to assure the production and conservation activities promoted by the project would improve the environmental integrity of the three corridors and thereby safeguard biodiversity.
Specifically, this component aimed to:

- improve administration of the seven protected areas that are the geographic core of the corridors;
- shift to alternative, environmentally more benign production systems in interstitial areas;
- incorporate fragments of natural vegetation into the corridors through establishment of RPPN, protected areas or other means;
- increase connectivity of existing fragments and protected areas through microcatchment management ; and,
- rehabilitate degraded areas in selected microcatchments and Protected Areas (UC).

Component 3: Control and Protection (Total US$2.49m: GEF $1.16m + State $1.33m)
This component would address reform of the state environmental monitoring and evaluation, licensing and enforcement functions, and the protection of threatened species. The specific objectives of this component were to:

- Establish parameters for monitoring and evaluating the quality of biodiversity conservation;
- Develop and refine norms for licensing of activities with environmental impact in support of the decentralization of this function to regions;
- Support the decentralization of monitoring and control functions to select municipalities in the corridors which would require changing of IAP roles, elaboration of protocols, procedures and standards, and intensive training of IAP and municipal officials; and,
- Conduct research to identify endangered species and develop appropriate programs to protect them.

Component 4: Project Administration (Total US$2.05m: GEF $0.71m + State $1.34m)

4.1 Project Administration

The basic project structure and organization was based upon the establishment of a PMU headed by the Planning Secretariat, and staffed with representatives of the main implementing agencies (EMATER, the agricultural extension agency, and IAP, the Environmental Institute of Parana) and supporting a successful and often used State model that ensures project coordination by forming central, regional and municipal management committees comprising relevant state officials whose secretariats and agencies were also organized according to the three government tiers.

4.2 Strategic Studies

This subcomponent would carry out the following major studies: i) identification and consolidation of legislative aspects and norms regarding environment legislation at different levels of government, ii) environmental certification, iii) identification and characterization of priority areas for conservation, iv) cost-benefit of environmental interventions, v) improvement of *ICMS ecologico* ("Green" Value Added Tax).

1.6 Revised Components

The components were not modified during implementation.

1.7 Other significant changes

In light of the findings of the Technical Audit conducted as part of the Mid-Term Review process (as described in section 1.3), the following changes were made: (i) an extension of the closing date until January 31, 2009; (ii) support to local civil society organizations interested in conducting environmental studies, education activities or to improve infrastructure in order to promote decentralized conservation of biodiversity through a new subcomponent, (Biodiversity Subproject Grants)- under Component 2 of the Project; (iii) a revision of procurement provisions of the Grant Agreement; and (iv) a reallocation of funds mainly to provide strengthening of the activities of the Environmental Institute of Parana (IAP). The strengthening of the Advisory Committee was also contemplated in the restructuring as an efficient means to get all stakeholders involved as well as to get feedback from them on the progress achieved by the Project.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

(including whether lessons of earlier operations were taken into account, risks and their mitigations identified, and adequacy of participatory processes, as applicable)

Strategic Approach. Bank and GEF involvement was supported by the correct assessment of the importance of Parana in terms of its environmental assets, particularly biodiversity. The two key, highly endangered ecoregions that are widely represented within its boundaries are the Brazilian Inland Atlantic Rainforest and the Araucaria Forest. The project was designed under the assumption that increasing fragmentation of the remaining forests was primarily located in private properties (i.e., outside the protected areas) and had the highest relevance-priority among critical factors affecting forest conservation in the state. Therefore, the main project focus was on the protection and restoration of forest fragments that could provide connectivity for species presently isolated in protected areas (see "Strategic Approach" section of Annex 2 of the PAD).

Lessons learned and reflected in the project design. The first lesson incorporated in this project is the management implications of the concept of fragmentation and ecological isolation of forest fragments as key factors for biodiversity conservation. Although well established in academic circles for more than three decades, it was only since the beginning of the present century that it was widely incorporated in large scale conservation projects as one step beyond the classical single conservation unit.

Another important lesson incorporated into the project design was the multiple-focus strategic approach, which encompassed site protection, law enforcement, community and stakeholder involvement, including a very valuable attempt at integrating conservation and agriculture-oriented agencies. Past experience

also influenced the wide set of resources and incentives that were considered including enforcement (e.g., Legal Reserves, SISLEG) and incentive structures (e.g., ICMS Ecologico).

Decentralization was another leading criterion that emerged from previous GEF experience. Available expertise from 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. Decentralized monitoring through the project's creation of Municipal Biodiversity Chambers and Regional Councils was another innovative concept resulting from past experiences derived of extension activities originated in the agriculture sector in Parana.

Consistency. The project was conceived as fully consistent with the priorities of the country with respect to both its main objective of biodiversity conservation in highly threatened forests and its regional focus in the Inland Atlantic Forest and Araucaria Forest.

Project design. A major positive aspect of project design was to emphasize inter-agency and inter-community interaction, including capacity building, development of production systems compatible with biodiversity conservation, and incorporation of the local community and stakeholders in management and monitoring of local and regional issues. More specifically, achieving an effective collaboration in project planning and implementation activities of agriculture and conservation agents working together under the coordination of Parana State planning authority represents a valuable, foresighted initiative. It responds to an obvious (but frequently ignored) need for the development of effective tools for achieving an integrated approach in terms of land-use, development, and ecosystem preservation.

Risk assessment. Risk identification was comprehensive and objective. Some identified risks become reality during project implementation, including: a) possibility of corridor implementation delays because several factors such as mapping and identification of specific sites using satellite imagery; b) delays in the implementation of decentralized conservation enforcement and monitoring , and c) continued fiscal problems result in budgetary retrenchment that undercut PBP development.

Adequacy of participatory process. Integration with the local community at all levels was very adequate. This was a necessary requisite, taking into consideration that project vision was based on a strong participatory process, including local land-owners, local NGOs, and Government agencies (planning, biodiversity conservation and agriculture sectors) involved in common projects.

The success of this component would depend greatly upon activities under other components such as refinement of incentive systems (*ICMS Ecologico* and *SISLEG*) and enforcement of existing regulations governing water sources, riparian[2] galleries, exploitation of natural resources, strengthening of fiscalization and licensing through decentralization and legal reserves

2.2 Implementation

(including any project changes/restructuring, mid-term review, Project at Risk status, and actions taken, as applicable)

Project changes/restructuring. During the first half of the project implementation period (September 2002-early 2005) overall implementation progressed in a satisfactory manner, with most project activities showing acceptable progress, and commendable participation of implementing agencies, both at the

[2] **A riparian zone** or **riparian gallery** (known as "mata ciliar" in Brazil) is the interface between land and a stream. Plant communities along the river margins are called riparian vegetation.

central and field levels. Despite this, GEF-financed activities of the project were implemented at a slower pace than the NRM activities financed by the ongoing loan. The relatively slower implementation of the biodiversity conservation component was mainly caused by disagreements over procurement procedures between the new state administration in Parana (which took office in January 2003) and the Bank. The result was an 18 month delay in the GEF-financed activities, and different rates of progress under the two parts of the project.

The impact of slower than anticipated implementation of the GEF-financed activities was noticeable. Due to slow implementation of the GEF-financed activities, the task team downgraded the Development Objective and Implementation Progress ratings of the Project in June 2005. Following the resolution of the procurement issue, execution of the GEF-financed activities of the project accelerated gradually, balancing overall implementation. In 2006, a local NGO on behalf of a network called Rede Mata Atlantica submitted a Request for Inspection to the Bank's Inspection Panel in 2006, criticizing the way the Project was being implemented. The Requester's complaint was centered on "methodological changes" made to Project implementation after it was approved that compromised the project's biodiversity goals, as they resulted in lack of adequate attention and emphasis on the protection of remaining patches of mature native Araucaria forests, as compared with the effort and resources dedicated to restoration of degraded areas along the planned corridors in between protected areas.

In response to this important allegation, the Bank decided to conduct a comprehensive Technical Audit, in the context of the scheduled mid-term Review of the project. The Technical Audit recommended that it would be appropriate to make certain modifications and adjustments in order to make the project more effective in achieving its global objective of conserving biodiversity. Based on these recommendations, the Grant Agreement was amended on February 2, 2007, approving a Second-Order Restructuring and reallocation of funds, extending the closing date from January 31, 2007 to January 31, 2009. Complementing the amendment, the State of Parana proposed an Action Plan for the remaining period of the project, which was approved by the Bank. In this new Plan, several of the concerns presented by the local NGO were addressed, particularly those referred to the Araucaria forest corridor. In the Project Paper dated March 2007, additional indicators were established in order to monitor these operational changes.

In March 2007 the Inspection Panel produced a report recognizing that there were efforts on the part of the Bank and the Parana State Authorities to redirect the activities and the allocation of funds to make the implementation of the Project more consistent with the biodiversity conservation objectives of the Project.

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

The project's initial design included key performance indicators for outcomes and intermediate outcomes for the main objectives of the project (Biodiversity Management, Education and Capacity Building, Control and Protection, and Project Administration). Indicator information at this level is considered to be satisfactory overall, particularly for the operational monitoring. For the second phase of the project (January 2007 to March 2009) output indicators were listed in the approved Action Plan Phase 2 prepared by the agencies involved in project implementation Selected indicators were adopted in the Second-order Restructuring Project Paper (March 13, 2007) as the formally revised output indicators for 2007-2009.

With regards to environmental monitoring, information available on the selected indicators is lacking to a large extent. This lack is due to a great extent to the nature of the project. A significant delay between implementation of conservation measures and biodiversity response is to be expected because of the natural forest successional process in managed areas. Moreover, the studies being funded that aimed at developing adequate monitoring methods were also delayed, from satellite image analysis to specific methodology to particular indicator species such as parrots, felids, tapirs, monkeys, and epiphytes.

It would be very desirable therefore that monitoring of the long-term results of the project (particularly restoration of forest patches along corridors) would continue to be implemented after project finalization, for periods long enough to include successional vegetation changes and other long-term effects on biodiversity.

2.4 Safeguard and Fiduciary Compliance

The project complied with World Bank safeguard policies indicated in the PAD: (i) Environmental Assessment and (ii) OP 4.04 Natural Habitats. Although OP 4.36 Forestry (March 1993) was not applicable to the PBP at the time of approval, the project has applied the principles of this safeguard.

a. Environmental Assessment. The PBP has complied with all requirements under OP/BP 4.01 including those for the methodology and content of the EA, the EA rating and timing, and the EA consultation process. An in-depth consultation on project objectives and components was held on August 24, 2000 with the State of Parana Association of Environmental NGOs (UNIAP), additional four NGOs, and eight different governmental institutions involved in biodiversity conservation issues. The final draft of the EA was received by the Bank and disclosed in the InfoShop on April 8, 2002. The EA was widely disseminated among stakeholders and project beneficiaries in local language via the project website and four meetings in the project corridors (April-June, 2002). An EA summarized the procedures for subproject eligibility and screening. The EA found positive effects of the PBP on the environment, noting in particular the institutional factors that allow for efficient application of enforcement through various incentive schemes. NGOs continued to be involved in the project in various ways: in subgrants to improve conservation of the Araucaria Biome, as trainers in Component 1, as part of the surveillance teams under Component 3, in municipal and regional advisory committees, and in local forums.

b. Natural Habitats. The PBP took proactive measures to support natural habitats. There were no identified project interventions that could cause any harm to, or loss of, such habitats. The primary purpose of the OP4.04 is to ensure that Bank-supported project cause no harm to natural habitats, and prohibits support for projects that would lead to the significant loss or degradation of any critical natural habitats as defined in the policy. It is worth noting that the Request for Inspection was based on claims for areas systematically destroyed, some of them under licenses issued by the State environmental agency, the IAP." As the Inspection Panel's final eligibility report noted, concrete steps, including the amendment of the Grant Agreement, were taken to ensure full project compliance with Bank policies.

c. Forestry. The PBP did not fund any logging or deforestation activities, legal or illegal. It also did not include any provision to support tree planting for commercial use, be it a monoculture or a mixed species field. Although there were significant areas of plantation forest in the project corridors (forestry for pulp and paper) where logging is taking place, this logging was not supported by the project. The project supported the reforestation only of areas cleared before the project began. Such reforestation took place in properties inside the corridor necessary to ensure the connectivity between natural areas. It also uses a mix of more than 20 local species and created permanent forested areas, in which no harvesting was permitted. The PBP supported the operation of state-managed nurseries that produced high quality seedlings of local species, including Araucária. The PBP distributed to farmers sets of seedlings to ensure the growth of balanced forests. It also provided farmers with technical assistance regarding planting, spacing, and maintenance and protection of the field. Based on the recommendation of the Technical Audit, the project implemented Biodiversity Subprojects which supported civil society organizations to promote conservation of the Araucária Forest.

2.5 Post-completion Operation/Next Phase

Integrated Environmental Management Program in Microcatchments. Formal collaboration agreement between IAP and Emater was signed to continue working together through a new state program, Integrated Environmental Management Program in Microcatchments (PGAIM). PGAIM adopts the methodology of the Paraná Biodiversity Project, both planning of microcatchments as well as environmental education in a cooperative model. It operates throughout the State and with the participation of a greater number of institutions. This new program will be operationalized through an executive secretariat, in which the Project Director of PBP continues as the executive secretary. They will also work in Prodesus, the project currently under preparation, expected to be financed by the Bank.

Parana Social Inclusion & Sustainable Development Project in Rural Areas. The State of Parana is preparing a US$50 million loan titled the Parana Social Inclusion & Sustainable Development Project in Rural Areas – Prodesus (ID:P097305) with the IBRD. Its objective is to increase rural competitiveness in Central Region of Parana which would contribute to the overall strategy of the Government for helping this region to catch up socioeconomically with other parts of the State. The PBP and the associated Rural Poverty Alleviation and Natural Resources Management Project (1998-2006) have helped introduce environmentally sound agricultural practices and promote environmental awareness. The proposed loan would continue mainstreaming of sound land and water management practices into agricultural systems and for protection of remnant natural vegetation in the Central Region which remains fragile with a high concentration of poverty. The implementing agency is State Secretariat of Agriculture and Supply (SEAB). State Secretariat of Planning and General Coordination (SEPL) and Parana's Institute of Technical Assistance and Rural Extension (Emater) will be participating in the project. Currently the loan is projected to go to the Board in March 2010.

IDB Loan. The State Government is also negotiating a US$10 million loan from the Inter-American Development Bank to support the *Projeto de Arranjos Produtivos Locais* which would finance small, local investments state-wide.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

(to current country and global priorities, and Bank assistance strategy)

This project had significant relevance in terms of objectives, design, and implementation, in the following aspects:

1. Implementation of forest restoration as an integrated component of production systems in key conservation areas.
2. Implementation of a novel and useful institutional framework by which conservation and agriculture agencies worked together under the coordination of a state planning organism in projects that integrate conservation with sustainable use of natural resources.
3. Decentralization of planning and operational activities with strong participation of stakeholders and local communities.
4. Adequate flexibility and capacity to respond effectively to recommendations of the Inspection Panel and MTR and other consultants and reviewers.

3.2 Achievement of Global Environmental Objectives

The project aimed i) to support biodiversity conservation and sustainable natural resource management in the Biodiversity Corridors with a view to protect two highly threatened ecoregions in the Parana state, and ii) to design and implement a management model for improving biodiversity conservation in the recipient's territory. These objectives were achieved to a large extent (see Table 1). Being of a clear innovative nature, outcomes of the project provided useful, lessons, particularly in the area of institutional

development and inter-agency collaboration. The handling of unexpected situations, particularly criticisms from local NGOs and administrative delays in the utilization of funds were also managed in a positive way and adequate responses were implemented. More specifically, the project made significant contributions in the following areas:

- Restoration of degraded forest areas along the forest corridors;
- Support for protected areas in the project area, including both state and private;
- Implementation of an integrated approach to management, biodiversity conservation and sustainable use of protected areas that includes collaboration and complementary work between conservation and agriculture agencies, in close interaction with the local communities and stakeholders;
- Emphasis in environmental education and capacity building of local communities regarding biodiversity conservation and sustainable use of natural resources;
- Improvement of the existing biodiversity monitoring systems with participation of the local communities (Environmental Monitoring Network);
- Research and management projects aiming at key management needs;
- Support of conservation initiatives from local NGOs;
- Support for community-generated sustainable agriculture and forest conservation projects in key conservation areas.

A detailed analysis of the achievements of the regarding PDO and GEO, as well as each of the key indicators is provided below.

Forest restoration

Conservation of existing native forests and expansion of forested areas, particularly along the corridors connecting important protected areas was one of the primary objectives of the project. The project largely accomplished this objective through several integrated, complementary activities, that benefitted a total of 251,000 hectares , representing 75% of the initial target of 336,000 hectares. (See Annex 11: Images of Restored Forests.) A total of 48,000 hectares were directly supported through implementation of 67 ecological modules, and an additional 18,000 hectares of forests were planned for conservation, and registered. Riparian forest restoration covered 35,000 ha along watercourses (area estimation based on 35,000 km of forest conservation in gallery forest conservation/ restoration). The project also covered the buffer zones of conservation units and their preservation area, totaling an area of 150,000 hectares. According to Emater extensionists, this activity has provided demonstration sites for local landholders, encouraging them to adopt new conservation criteria and techniques.

In addition, the project provided the means to develop planning and regulations for the Reservas Privadas do Patrimônio Natural (RPPNs) system within IAP and to implement RPPNs. Thirty-two RPPNs were created during the implementation of the Project, 16 during the first four years and 16 during the last two years. Their area totals 14,520 hectares. The project also supported the NGO “Preservação” to undertake the processes for the creation of 51 new RPPNs totaling 8,293 hectares: eight of them under the process of landowners’ decision; ten preparing the documentation for their proposals; one effectively created; and the remaining 32 being processed by IAP. Together with the RPPNs already created, these RPPNs in process are expected to bring the total area of new protected areas under private domain supported by the Project to almost 23,000 hectares.

Despite the difficulties in assessing the effects of the biodiversity conservation and management implemented in the PBP inherent to the slow process of forest recovery, satellite images indicate a clear recovery of fragment connectivity in the area, which results mostly to the restoration of riparian vegetation, and also to the addition of new RPPN units. Recovery is particularly visible along the Iguaçu-Paraná e Caiuá-Ilha Grande corridors, and to a lesser extent in the Araucaria corridor. The difference is that the main problem in the latter was not fragmentation, but poverty and high rate of deforestation.

Mainstreaming Biodiversity Conservation and Sustainable Use of Biodiversity

The biodiversity component produced significant outputs in several areas, including support for existing protected areas and creation of additional units, which resulted in improved connectivity along forest corridors linking important protected areas. Moreover, the project also promoted integration of conservation and resource use in specially designed production systems (agro-ecological projects), protected areas, regional planning and development, institutional capacity building at the institutional level, environmental education and extension, and conservation projects and research.

Agro-ecological modules. Development and implementation of 67 agro-ecological projects that showed the feasibility and benefits of developing production systems amenable with the environment that at the same time included protection or generation of permanent protected areas of native forest was one of the most positive and innovative outcomes of the project. Modules were very effective in adding native forest land cover (through riparian vegetation restoration and in some cases creation of private reserves (RRPN), increasing connectivity along corridors. Moreover, the modules also showed economic feasibility thanks to the technological investment that the project provided to land owners.

Despite this, during the initial phases of the project there was an apparent disconnection between the proposed activities and the primary objective of restoring and integrating degraded forest fragments into functional corridors. Although all the selected subprojects had a conservation component (use of environmentally-friendly techniques and products, and protection of the forest), they did not relate directly with the essential priority in corridor management: to ensure continuity of suitable habitat fragments that allow dispersal of biodiversity between protected areas. This issue was signaled in the Mid-term Review. Originally, the ecological modules were considered demonstration projects of production systems with potential aptitude for replacing predominant, production systems aggressive to the environment. Accordingly, they supported a wide range of productive activities (including sugar cane production, organic agriculture, dairy production, etc.). Protection of native biodiversity was encouraged, but corridor management and conservation were not the central focus these grants.

This approach changed in the second phase of the project, as a result of the Mid Term Review. The criteria for evaluation of subprojects included a specific focus on promoting connectivity between forest patches of significant size. Moreover, selection of the new modules started to follow the results of ecological evaluations of the corridors carried out by IAP.

Protected areas. The project contribute to the support of existing areas, to the creation of new areas, to the management of degraded areas leading to the restoration of the native forest, and to the integration of protected areas and production systems in innovative agro-ecological systems.

Support for existing protected areas focused on six state conservation units, including design and initial implementation of Management Plans, involvement of the local communities in the conservation buffer zones, and provision of new infrastructure in three units.

In addition to the RPPNs noted above, the Project also contributed to the creation of eight private reserves "Reservas Privadas do Patrimônio Natural (RPPN)" program, in association with RPPN Paraná, a local NGO. Two of these RPPNs are already approved, and five more are in the final phase of the approval process. The creation of 15 more private reserves was also supported by the project, by providing documentation and mapping processing: ten in the mapping and documentation stage; three with approved surveys; and two more waiting for survey approval.

Regional planning and development. Along the project implementation period, strategic plans for the design, implementation and conservation of the biodiversity modules were developed in cooperation by State of Parana government agencies, particularly IAP and EMATER. They included detection of forest fragments suitable for conservation (rapid assessment of corridors), as well as monitoring forest recovery in restored areas and land-use planning in the protected areas buffer zones where agro-ecological modules were implemented.

Moreover, Emater assessed the land-use present situation in the watershed basins selected by the Parana Biodiversity Project, exploring opportunities for forest restoration as well as conflict areas. A land-use map set for these basins is being developed and expected to be published during 2009.

Finally, the Paraná Biodiversity Project also supported the environmental restoration of micro-catchments in the corridors area, which resulted in the protection of 3,500 km of riparian forest (35,000 hectares), involving about 12,000 local residents. The technical assistance provided by Emater to help with planning microcatchments also incorporated biodiversity contents and needs.

Capacity building at the institutional level. The Project provided significant benefits and incentives in terms of capacity building at least to two Paraná government agencies: IAP and EMATER. IAP Biodiversity Department developed a significant capacity for conservation planning, supported by infrastructure, equipment, and human resources.

The same applies to Emater. With PBP support, a central planning unit and six satellite centers, fully equipped, were implemented. Moreover, about 100 Emater professional and technical staff were trained in remote sensing and geographic information system techniques. As a result, the State of Parana has in place a regional planning system devoted to land-use planning, biodiversity conservation, and catchment conservation.

Moreover the project also promoted and supported institutional capacity building at the state level, by helping Instituto Ambiental do Paraná (IAP) to strengthen and expand its operational capacity, particularly in terms of remote sensing and land-use planning area.
The project also benefited IAP by supporting activities at the state level, beyond the corridor areas. Of particular relevance is the support provided to IAP to better implement and enforce the new federal legislation on Mata Atlantica protection at the Parana state level.

Environmental education and extension. A wide range, intensive environmental education and assistance scheme was implemented by Emater, with the coordination of one Corridor Manager for each of the three corridors included in the project. A total of 65 Municipalities were benefited by the initiative. The fact that Emater extensionists, specialized in agriculture, were trained to add environmental matters in their work represents a very interesting and pioneering outcome of the Parana Biodiversity Project.

Conservation projects and research. During the second phase of the Project, several conservation and research projects were funded. Consistent with the recommendations of the Mid Term Review, small conservation projects were granted to local NGOs. A total of 41 subprojects were implemented, including local awareness campaigns, carbon sequestration, analysis of legislation, and feasibility of introducing the environmental services concept in the project, strategies for the conservation and monitoring of the 71 species for a wide and diverse group in different taxa have the commitment of the State to be implemented. These action plans were developed for threatened birds and mammals, control of alien invasive species, predation control by felids and domestic animals, meliponids, fish, and epiphytes.

Biodiversity monitoring: the project supported developing of a state biodiversity monitoring system, which will contribute to the long-term conservation of biodiversity in the state. Activities included biodiversity conservation in the long term including selection of indicator species (71) for baseline evaluations, training of 150 field monitors, and training, extension and education activities. The 71 species identified as good monitoring units provided with the support of governmental, academic and

civil society contributions the establishment of baseline data base. To support this monitoring, 150 monitors were trained and adequately equipped, as well as staff of the Universidad Federal Parana, Emater, NGOs, agro-ecological schools, local communities, IAP, SEMA and Municipalities.

The project also funded activities for the SISFAUNA, a pioneering integrated information system based on the Pro-Fauna Network (on line database on wildlife).

In addition , support to the meetings of the State Council for the Protection of Native Fauna - CONFAUNA (consultative and ruling body of the SISFAUNA) and the preparation of prioritized action plans for threatened species or particular issues dealing with specific biodiversity.

Indicators. Despite the difficulties in assessing the effects of the biodiversity conservation and management implemented in the PBP inherent to the slow process of forest recovery, satellite images indicate a clear recovery of fragment connectivity in the area, which results mostly to the restoration of riparian vegetation, and also to the addition of new RPPN units. Recovery is particularly visible along the Iguaçu-Paraná e Caiuá-Ilha Grande corridors, and to a lesser extent in the Araucaria corridor.

Table 1. Key performance indicators

Objectives	***Indicators***	***Outcomes/Outputs***
Sector-related CAS Goal:	**Sector Indicators**	**Sector Outcomes**
Achieve biodiversity conservation in two priority ecoregions	Selected species and environmental quality indicators	The objective was achieved through several components and actions, including agro-ecological modules, support of creation and protection of protected areas, environmental education and extension, legislation support, and establishment of indicators and baseline for biodiversity monitoring (see Annexes).
Mainstream biodiversity conservation in Parana State	Provide technical basis to promote any necessary institutional and legislative revisions	Objective achieved through: -Mainstreaming at the institutional level (Emater, IAP, SEPL, and SEAB). -Central Unit of Macro Planning (Dibap/DBIO) established at IAP. -Establishment of Fauna Protection System (Sisfauna), the first public policy in Brazil for the protection of fauna. - Municipal Biodiversity Chambers, Regional Councils, with IAP and EMATER's regional offices and the network of environmental monitors - Adoption of the biodiversity component in micro-basin Emater extension to producers.
GEF Operational Program: Conserve biodiversity in globally important forest and freshwater ecosystems (OP 3)	**GEO Indicators**	**GEO Outcomes**
(i) in situ conservation of globally unique	Selected species and environmental	Biodiversity monitoring methods and criteria were established including identification of 71

biodiversity	quality indicators.	indicator species for baseline evaluation.
(ii) sustainable use of biodiversity	Adoption of alternative production systems in 40% of targeted Corridor interstitial areas or roughly 336,000 ha.	The Project promoted sustainable use of biodiversity in a total of 251,000 ha (75% of the target) through several integrated actions (agro-ecological modules, registered forest, riparian restoration, buffer zones)
(iii) local participation in the benefits of conservation activities	Number of participants involved in PBP interstitial area dissemination/training programs (19,600 producers) and adopting alternative production systems	14,237 producers were assisted with environmental technical assistance, 2,740 producers gained basic concepts of agro-ecological modules through training and 1,434 producers benefited from agro-ecological modules. The indicator was fully achieved given that more than 200,000 producers participated in dissemination programs financed by the project

3.3 Efficiency

As required for a full-sized GEF project, an incremental cost analysis was done during the project preparation. No formal economic analysis was done over project implementation. Potentially the results of agro-ecological modules could be used for such economic analysis. However, the economic data of those modules could not be obtained at the time of this ICR, as they all combine tree plantation into the production system and they have not reached the maturity yet. It would take more than the time allowed under the PBP for the trees to produce benefits. The economic analysis of the modules will be done as part of the normal operation of Emater in a more established manner in the future.

Agroecological modules. With respect to direct support to farmers, through the implementation of 67 agroecological modules, the project granted an average of **$ 1,620** per beneficiary (total invested: $**2,322,511**; total number of producers: **1,434**). This level of direct support to producers through small grants is considered both acceptable and efficient (see Annex 3 for more details)

Milk Production Module. While data from the project is very limited, this ICR attempts to demonstrate the valuation of outputs and inputs using the example of milk production in Boa Vista da Aparecida. Thirty local milk producers used to produce 2,390 liters/day, delivered to local merchants without quality control and sanitary treatment. Intermediary merchants would pay R$ 0.46/liter in average. If the producers sold directly to consumers, the price would have been R$ 0.75/liter. As a result, their association now produces 5,000 liter/day, commercializing at R$ 0.80/liter. The economic value of the milk production improved by the agro-ecological module is $ 1,534.00 (See Annex 3 for more details.)

In addition to the productivity, the module brought about the environmental benefits from the revitalization of riparian forests and legal reserves on their lands. One producer is proud that groundwater returned to his 12 ha property which was converted to local natural attraction.

It was noted that the gain obtained by organizing their productions through creation of associations and cooperatives was deemed significantly high. And it has already changed their attitude positively toward agro-ecological production. For example, milk producers observed that with the creation of the producers association the productivity went up, so did their negotiation power to obtain unified and adequate price. They have also eliminated the intermediary, distributing their own milk. Before, they did not even think about price. People paid whatever they wanted. Also the quality of their milk was considered low quality.

Survey. The project also has conducted a survey to the environmental technical assistants of Emater who assisted the modules. According to the survey, there was an increase in productivity by 15% on average. For example, the annual production for livestock modules increased from R$15,142,888 to R$2,271,433. Some anecdotal examples are indicated below:

i. For honey agribusiness subprojects, there was an increase in income of up to 70% of the producers, both by increase in average productivity from 12kg to 20kg per box per year, by the added value achieved from the industrialization of products, and by increased price from improved quality of honey (from R$2.00/kg to US$8.00/kg). A similar gain was repeated in Terra Roxa.

ii. The producers of medicinal plants of Inácio Martins have managed to diversify its production and to commercialize chamomile with significant gains.

iii. The carbon reduction producers, the Carbon Cooperative, have tentatively traded its first credits in the voluntary market. They are finalizing the legal arrangements of the cooperative and have good prospects of increasing its board membership with neighbors and producers in other regions.

3.4 Justification of Overall Outcome Rating

Rating: Moderately Satisfactory

Given the achievement or exceeding of two of the GEO outcome indicators and the reaching of a 75% level of attainment for the indicator for sustainable use of biodiversity, the Parana Biodiversity Project's overall outcome rating is deemed moderately satisfactory in achieving conservation of globally important biodiversity

The key activity of agro-ecological modules was successfully implemented in a significant number of sites along the corridors. Lack of completion of some objectives, particularly the Control and Enforcement component and lower disbursement that affected significant infrastructure components such as the Wildlife Management Center (CEMA) were to a large extent a consequence of unexpected institutional and administrative problems, which were identified as potential risks in the initial PAD. The project also achieved significant contributions to the protected areas in the Parana State, including support to six State Conservation Units, as well as support for the creation of new, private reserves (RPPNs).

Moreover, changes introduced into the project after the Mid-Term Evaluation and Technical Audit and their following implementation during the project's second phase demonstrated the project's capacity to correct and improve its development course, as shown by a significant recovery of Phase I delays and the introduction of new components, including the recruitment of consultants and services with strong participation from local NGOs. Another significant merit of the project is the successful integration of four state agencies working together under the coordination of the Planning authorities working as a neutral management unit.

Finally, it is also worth mentioning that the Education Component has implemented a wide range of activities reaching a large number of rural communities (both adults and children), which usually have less opportunities of reaching this kind of innovative, updates information directly related with their environment and way of living.

3.5 Overarching Themes, Other Outcomes and Impacts

Making conservation compatible with agro-ecosystems

Implementation of agro-ecological modules represents a very valuable initiative and an important step forward towards the important goal of making compatible intensive land use with biodiversity conservation. Moreover, this kind of on-site projects gives preeminence to a problem-oriented vision, in contrast with the traditional agency-oriented approach, opening a wide range of opportunities for multi-disciplinary and transversal approaches at different scales, particularly within the regional context.

Moreover, it is also very significant the role played by PBP on working with small landholders in conserving and organizing their lands, including the conservation of riparian forests.

Supporting existing protected areas versus restoring degraded land

One important outcome of the project was the complaint raised by local NGOs regarding the need to prioritize existing mature forest patches of the native forests (Mata Atlantica and Araucaria Forest) instead of focusing on the forest restoration in degraded land along the vegetation corridors between important protected areas.

From a conceptual point of view, it is clear that both are clear priorities of a complementary nature. Clearly, preserving large and mature patches of forest is key in terms of minimizing the risk of extinction of many species that are exclusive of this forest successional stage and strongly related with the size of the forest fragment At the same time, restoring degraded land with native vegetation is very significant in terms of catchment and soil protection, in addition to the creation of stepping stones for biodiversity that increases the effective area of the existing protected sites.
At the moment of the Parana Biodiversity Project design, it was assumed that existing protected areas and remaining forest patches under private ownership were protected by the existing State regulations. Accordingly, emphasis was given to a novel, complementary approach to biodiversity conservation based on the need of increasing connectivity between isolated forest fragments, complementary of ongoing existing catchment protection and riparian forest protection initiatives.

From a general perspective, the lesson to be incorporated is that implementation of future initiatives of similar nature to the Parana Biodiversity Project should add to the initial diagnostic evaluation the real conservation status and threats of both existing protected areas and fragments under private ownership, and establish restoration priorities accordingly.

In summary, the valuable experience gained in the Parana Biodiversity Project indicates that management planning of threatened ecoregions should be designed at a higher landscape level. In the case of the State of Parana, this project has helped to raise the capacity level of two agencies (Emater and IAP) in terms of both material and human resources. Both are now fully capable of dealing with the above mentioned landscape planning challenge.

(b) Institutional Change/Strengthening

As mentioned in the previous section, the fact that the Project achieved effective coordination and collaboration between agencies within the Parana State Government represents a very significant step towards institutionalization of transversal collaboration and interactions among government agencies, an essential component of sound environmental policies and actions. As the process not only involved institutions, but also staff that was benefited from training courses, it is likely the project will have a long lasting influence on the government structures of the Parana State.

(c) Other Unintended Outcomes and Impacts

Administrative issues
Differences in accounting criteria between the Bank and the Brazilian "Tribunal de Contas do Estado" regarding financial procedures led to significant delays in the Project implementation leading to undisbursement of some funds at the end of project. Moreover, consultancies of the State Fauna System and biological monitoring were also cancelled.

Wildlife Management Center. The planned building of the proposed Wildlife Management Center in Palotina was not contracted. This is probably the most critical negative result of the project in terms of infrastructure. Cancellation of this plan was caused by restrictions imposed by the recipient administrative authorities that delayed contracts to a point when construction was no longer feasible. In contrast, technical equipment for another Management Center was purchased as scheduled. The IAP has committed to budget the construction and to staff the Palotina Center during 2009-10.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

As part of the Mid-term Review of the project, two workshops were organized to analyze the Technical Audit report, presented by their authors. Attendance was open to governments (State and Municipal), NGOs, academia and other interested sectors of the civil society. Contributions and comments presented by the attendants during these events helped to restructure the Project, define the main elements of the second phase, and eventually to the extension of the closing date.

A second workshop was conducted in Curitiba on September 10, 2009 with the objective of disseminating project's results and share with the general audience the impact and ongoing activities. This workshop was chaired by high authorities of the Secretariats of Planning, Environment and Agriculture, as well as EMATER and IAP. The Bank presented the main conclusions of the project´s final evaluation and recommendation for future actions in favor of biodiversity conservation. The State authorities shared the different mechanisms put in place and those to be developed to sustain the project's achievements. The event was attended by over 120 participants, including technical staff of relevant government agencies, academia and civil society and was well covered by the state press.

4. Assessment of Risk to Development Outcome
Rating: Moderate

Formal collaboration agreement of different state agencies and institutions has assured the continued support for project objectives. IAP and Emater signed an agreement of cooperation to continue working together through a new state program, Integrated Environmental Management Program in Microcatchments (PGAIM). They will also work together in Prodesus, the loan currently in preparation with the Bank. PGAIM adopts the methodology of the Paraná Biodiversity Project, both planning of microcatchments as well as environmental education in a cooperative model. It operates throughout the State and with the participation of a greater number of institutions. This new program will be operationalized through an executive secretariat, in which the Project Director of PBP continues as the executive secretary.

5. Assessment of Bank and Borrower Performance

(relating to design, implementation and outcome issues)

5.1 Bank

(a) Bank Performance in Ensuring Quality at Entry

Rating: Satisfactory

The Bank preparation team and management provided adequate attention to the design of an innovative and challenging project and made efforts to ensure the balanced project design in terms of strategic approach, technical and financial aspects, components, implementation arrangements, fiduciary aspects, and monitoring and evaluation arrangements. This also included the appropriate link and blend of project design with the implementation of the Natural Resources Management Project.

Risk identification was comprehensive and objective. However, some identified risks became reality during the project implementation, including: a) possibility of corridor implementation delays because several factors such as mapping and identification of specific sites using satellite imagery; b) delays in the implementation of decentralized conservation enforcement and monitoring , and c) continued fiscal problems result in budgetary retrenchment that undercuts PBP development. And the mitigation measures identified were not enough to overcome some of those risks.

(b) Quality of Supervision

Rating: Moderately Satisfactory

The Bank task team conducted a total of 17 supervision missions during the implementation of the project, where the mission provided adequate inputs and processes to the recipient and beneficiaries. Fifteen Implementation Status Reports (ISRs) were filed with straightforward reporting on the issues focusing on the implementation progress and its impact on the achievement of project objectives.

When the Government's procurement issues were identified, the task team pressed the Government to address the issues. After the issues were resolved in 2005, it conducted a full performance review and developed and guided the project to implement a four-month plan (Sep-Dec '05) with a detailed budget and targets for 42 indicators.

During the Inspection Panel process, the task team and Bank management worked swiftly to respond to the Inspection Panel. The task team followed up the case by conducting a comprehensive technical audit, as part of the mid-term review. The recommendations from these reviews were critical for preventing a full investigation by the Panel and for the successful outcomes in the second half of the project implementation.

However, the Bank did not make an effort to revise the target value for one of the outcome indicators despite having identified the issue of substantially reduced co-financing from the IBRD loan (Parana 12 Meses) for farmers to adopt the alternative production systems to help protect or restore forested areas. As a result, the overall achievement in terms of hectares on which alternative production systems were adopted reached only75% of the target value, though the project provided the planned level of GEF resources for direct support to producers through small grants. For this reason, the quality of supervision is rated Moderately Satisfactory.

(c) Justification of Rating for Overall Bank Performance

Rating: Moderately Satisfactory

As per OPCS guidelines on ICRs, Bank performance is rated Moderately Satisfactory because quality of supervision has been rated Moderately Satisfactory while quality at entry has been rated Satisfactory.

5.2 Borrower

(a) Government Performance

Rating: Moderately Satisfactory

The Parana State Government has demonstrated their ability and commitment to achieve development objectives in general. Adequate support by the Government has been provided throughout the preparation and the implementation. It was reconfirmed through the restructuring exercise based on the recommendations from the technical audit to adequately involve civil society organizations in the project implementation.

However, when the project faced lack of co-financing from the Parana 12 Meses loan, the Government of Parana failed to obtain an alternative source of funding to fill the gap. The low disbursement of the loan from NRM Project (Parana 12 Meses) was due to three factors: 1) the requirement of the State Court of Accounts (Tribunal de Contas do Estado) that all procurements were made in a centralized manner via electronic bidding, a new system for both the project staff and service providers who were unprepared and needed time to learn the system; 2) procurement procedures was affected by the interpretation of the Tribunal de Contas do Estado that procedures should follow Law 8.666 instead of World Bank procedures; and 3) the timing of the loan which closed in 2005. By the time the procurement issues finally resolved in 2005, the loan was closed. The Government did not supplement it with other source of funding when it was clear that lack of support from Parana 12 Meses was affecting the implementation of the agro-ecological modules.

Also most activities requiring the recruitment of consultants had been delayed due to the administration's requirement that all contracts have to be reviewed and authorized by the office of the Governor and, in some cases, sent to the Procuradoria for further review. Especially, contracts of NGOs and consultancies had to go through rigid review, which affected the conservation activities introduced after the restructuring.

In the last twelve months, the state government made positive steps toward meeting their commitments. The issue showed strong improvement as all consultancies and the granting scheme for NGO subprojects were authorized and the UGP was able to process the contracts before the project execution period ended.

(b) Implementing Agency or Agencies Performance

Rating: Satisfactory

The inter-institutional arrangement among SEPL/SEAB/SEMA/IAP/Emater functioned well for the implementation of the project, consequently for the achievement of the project objectives.

The agencies demonstrated their commitment and ability to adhere to the "Four-month Plan" (Sep-Dec 2005) which was developed following the full performance review by the Bank team. In May 2006, compliance of 91% with the indicators was confirmed. Areas where further progress was required were monitored closely and subsequently improved.

The State agencies together reacted swiftly and positively to the Inspection Panel case by holding consultations with NGOs and presenting the Action Plan which incorporated the recommendations from the consultations and the Technical Audit. As a result, the second half of the project implementation contributed positively to the achievement of the project objectives, including: (i) stronger participation of civil society, especially in the Araucaria area; (ii) biodiversity subprojects to be carried out by NGOs, and (iii) structural changes in the State Secretariat of Environment to promote a stronger system of monitoring and enforcement. In the last 12 months, all project components and subcomponents progressed satisfactorily.

(c) Justification of Rating for Overall Borrower Performance

Rating: Moderately Satisfactory

As per OPCS guidelines on ICRs, it is rated moderately satisfactory because government performance is rated moderately satisfactory while implementing agencies performance is rated satisfactory.

6. Lessons Learned

(both project-specific and of wide general application)

The importance of a transversal, multi-sectorial approach to GEF projects. The success of the Parana Biodiversity Project, even considering the difficulties that emerged along its development, strongly suggests that there is an added value in trying to promote this innovative approach. Moreover, it could be further expanded by including more government agencies, NGOs with different, complementary profiles, the Academic and Research, as well as other relevant sectors of the civil society. Even if challenging and difficult to implement, developing a better and wider coordination and integration between government sectors and other non-governmental institutions is becoming an urgent need in face of the growing environmental problems that affect the whole planet.

Given its innovative and somewhat experimental nature, it is important to bear in mind that even errors, difficulties and unexpected outcomes resulting from this project provide very useful experience and insight applicable to future projects of similar intersectoral and transversal nature.

Monitoring and indicators. Because of its long-term nature, adequate indicators for projects like the Parana Biodiversity Program are very difficult to design and measure. However, it would be extremely useful in case monitoring of the effects of the project is not continued. Otherwise, a great deal of useful information may be lost. At least two critical questions need to be answered: a) to what extent the agro-ecological projects resulted in a permanent, effective restoration of forest fragments?; and b) to what extent interaction and coordination between conservation and agriculture agencies remained well established after the end of the project? These are the two more sensitive, reliable and synthetic indicators of the success of this project, as well as relatively easy to monitor. In both cases, understanding of the factors influencing both success and failures will be of great importance for future projects.

It would be very desirable that monitoring of the long-term results of projects of this nature (particularly restoration of forest patches along corridors) would continue to be implemented after project finalization, for periods long enough to include successional vegetation changes and other long-term effects on biodiversity.

Technical resources. From a technical perspective**,** some of the practices supported by the agro-ecological modules and biodiversity evaluation and monitoring could be improved in future projects, particularly in the following cases.

Agro-ecological Modules: It would be useful to explore (or develop) more advanced restoration models, beyond the provision of pioneer and secondary tree species seedlings and the fencing of areas for natural restoration through exclusion of productive activities, considering that the latter only proved effective when appropriate genetic material was present. Effective forest restoration should mimic the natural successional process, which requires a sequence of different plant species (from pioneer to climax species) that allow soil and microclimatic factors to restore.
Evaluation and monitoring: this activity may require a more sophisticated approach in the future, given that detecting changes in biodiversity is usually difficult in tropical forests, where a sophisticated statistical design is required, which can only be accomplished by specialists. Training of field assistants for biodiversity monitoring is an important first step, but insufficient in most cases. Indeed, the fact that some of the research projects granted in the second phase of the project focused on species monitoring indicate that the need was perceived by project management.

Ecological services: Agro-ecological modules implicitly recognized the value of the native forest in terms of biodiversity and river basin protection as a key reason for financing agro-ecological modules. A possible missed opportunity is the explicit inclusion of the ecosystem services concept as a conservation tool. Ecosystem services were excluded from the list of economic alternatives with potential to promote river basin protection and forest corridor restoration. However, a more explicit recognition of the ecological services concept could help local communities to better understand the value of their forests. A study produced during the second phase of the project on economic incentives for conservation shows that the ecosystem service concept is, among others, present in the Brazilian legislation.

Institutional integration and coordination. Problems related with Project Administration that emerged along this project (particularly those related with financial administration and decentralization of wildlife fiscalization and control) suggest that as projects become more complex and inter-sectoral, conflicts of this nature are more likely to arise. Therefore, it would be important in future projects to resource to all the available mechanisms that may contribute to eliminate beforehand as many potential difficulties of this kind as possible.

Changes in government support. At the time when the Parana Biodiversity Project was planned, the State Government of Parana had showed a strong commitment and support for environmental protection. Accordingly, the project was designed under the assumption that the State authorities will support innovative approaches and their effective implementation. After elections in 2002 the new authorities did not embrace the government commitment with the same emphasis. As a result, project implementation suffered both administrative delays and changes in priorities that affected the normal development of planned activities in several components.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

(a) Borrower/implementing agencies

Provided in Annex 7.

(b) Cofinanciers

Not applicable

(c) Other partners and stakeholders

NGOs' request for Inspection

As described previously, a local NGO on behalf of a network called Rede Mata Atlantica submitted a Request for Inspection to the Bank's Inspection Panel in 2006, criticizing the way the Project was being

implemented. The Requester's complaint was centered on "methodological changes" made to Project implementation after it was approved that compromised project success, particularly in reference to the following technical aspects.

1) A critical shift from the initial emphasis in the protection of the last well-preserved natural forests, such as the Araucaria Forest, to a higher priority (in terms of resource allocation) given to the recovery of degraded areas. This shift in priority was negative because could jeopardize the future of the most valuable, mature forest fragments, as compared with much lower chances of ensuring biodiversity protection by restoring degraded areas. This change in priority was considered a "serious strategic error" because it implied missing the last opportunity to preserve the region's biodiversity.
2) The continued destruction of natural areas through illegal removal of timber, mismanagement, replacement of native forests with tree monocultures, and agriculture expansion after deforestation, in some cases with the endorsement the Paraná Environmental Institute (IAP).

An Inspection Panel was triggered to deal with the above mentioned complains. As part if it's response to the allegations made, the Bank recommended an independent Technical Audit (TA), as suggested also by the Requesters, which was conducted in 2006, in the context of the Mid-term Review of the project.

The overall conclusion of the TA was that "the project is a well-developed and advanced initiative, which has achieved positive planned objectives". In addition, the TA proposed increased focus and attention on actions to conserve the remaining forest remnants, especially for Araucaria forests, including financing of activities to be carried out by local NGOs working in biodiversity conservation.

In March 2007, the Inspection Panel produced a report recognizing that there were efforts on the part of the Bank and the Parana State Authorities to redirect the activities and the allocation of funds to make the implementation of the Project more consistent with the objectives of the Project to conserve biodiversity. Therefore, the Panel did not recommend a full investigation of whether the Bank has complied with its operational policies and procedures. Subsequently, changes in the Grant Agreement and a reallocation of funds were proposed and approved. Moreover, the closing date for disbursements under the Grant Agreement was extended to January 31, 2009.

The second phase of the project (2007-2009) incorporated comments and suggestions of the Technical Audit particularly by increasing support to the existing State protected areas, promotion of the private reserve system (RRPN), a more focused emphasis of the agro-ecological models on forest restoration and forest corridor continuity, and a small-grant program, aimed at financing NGO-proposed conservation and research projects aiming at improving biodiversity conservation and sustainable management in the State of Parana, particularly in the corridors .

The NGOs initiative had a strong influence on project outcomes during the last two years of the project. It resulted in a corrective response from the Project Management leading to the successful incorporation of new activities that improved the overall achievements of the project. In first place, the NGOs request led to a detailed review of the project. In addition, the Bank initiative of conducting a Technical Audit in place resulted in a comprehensive assessment and useful recommendations for change and improvement. The Inspection Panel document provided, on top of its final conclusions, useful comments that help to understand and evaluate the conflicting issues and their implications, which may be seen as useful lessons for future projects of similar scope.

Annex 1. Project Costs and Financing

(a) Project Cost by Component (in USD Million equivalent)

Components	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Education and Capacity Building	1.21	1.75	145%
Biodiversity Management	4.92	4.87	99%
Control and Protection	1.16	0.72	62%
Project Administration	0.71	0.46	65%
	8.00	**7.80**	**97.5%**
Total Baseline Cost			
Physical Contingencies	0.00	0.00	
Price Contingencies	0.00	0.00	
Total Project Costs	**8.00**	**7.80**	**97.5%**
Project Preparation Facility (PPF)	0.00	0.00	
Front-end fee IBRD	0.79	0.79	100%
Total Financing Required	**8.79**	**8.59**	**97.7%**

(b) Financing

Source of Funds	Type of Co-financing	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Borrower	Cash	14.86	11.36	76.4%
Global Environment - Associated IBRD Fund	Loan	10.00	4.86	48.6%
Global Environment Facility (GEF)	Grant	8.00	7.8	97.5%
Local farmers	In-kind	0.00	4.57	
Total		32.86	28.59	87.0%

Annex 2. Outputs by Component

	Output Indicator	Target	Unit	Data Source	Value at EOP
Component 1: Education & Capacity Building					
1.1	Number of participants in the training program including; i) project management, ii) EMATER environmental advisors, iii) rural producers—basic concepts, agriculture modules, iv) UC-IAP staff, v) IAP-municipal inspectors, vi) local justices training.	21,000	people	IAP, SEMA, Emater	26,600 people total (31 events organized and 2,740 rural producers)
1.2	Environmental education for farmers and communities devoted to conservation of biodiversity	20 60	courses communities participated (those with agriecological modules and from the buffers of UCs)	SEMA	49 76
1.3	Technical training driven by local demands and local operational plans (of farmers created by local AOP, prioritizing training of farmers of agriecological modules)	40	events	Emater	73
1.4	Technical training including technical staff of UCs, licensing, Emater, monitoring, and geoprocessing, etc.	20	courses	IAP/ Emater/ Sema/ UGP	21
1.5	Materials of divulgation about conservation of biodiversity	18	publications	IAP/ Emater/ Sema/ UGP	27
1.6	Various campaigns: valuation of biodiversity, fire prevention, wildlife protection.	3	programs	IAP/ Emater/ Sema/ UGP	5
Component 2: Biodiversity Management					
2.01	Establishment of a Central Unit of Macro Planning at IAP and development of strategic intervention plans for 3 corridors.	1 3	Central Unit plans	IAP, SEMA, Emater	The IAP/Dibap/DBIO is established and able to promote strategic interventions. Elaborated plans for three corridors.
2.02	Prototypes of management plans including programs for areas of connection under implementation	6	management plan	IAP, SEMA, Emater	Six management plans prepared and under implementation
2.03	Production systems suitable for areas of priority connection	40% approx. 840,000 ha	Corridors area	IAP, SEMA, Emater	Through planning methodology application in 296 microcatchments a total of 1.2 million ha was achieved, well above the initial target of 840,000 ha.

2.04	Area of forests with native species planted annually	20,000	ha	IAP, SEMA, Emater	Forest cover increased by 70,000 ha, including 35,000 ha of recovered areas in legal reserves (riparian forests).
2.05	Management plans of RPPN	6	management plans accepted by IAP	IAP	Eight Management Plans approved by IAP
2.06	Agriecological modules in corridors in the Caiuá-Ilha Grande corridor and the Iguaçu-Paraná corridor	41	modules installed	Emater/ Codapar	53 modules (1115 beneficiaries)
2.07	Agriecological modules in the Araucária corridor(new indicator established at the mid-term review)	20	modules installed	Emater/ Codapar	14 (319 beneficiaries)
2.08	Private reserves created (RPPN)	5	New RPPN created	IAP	Two approved RPPN and five more in the final phase of approval procedure.
2.09	Support to process for the creation of private reserves	10	process completed		10 under documentation and mapping process, 3 approved survey, 2 pending survey
2.10	Microcatchments with plans and assistance	280	microcatchments	Emater	Total of 296 microcatchments were planned and received biodiversity-related assistance
2.11	Seed collection of native species in rural properties	40	producers registered as seed collectors		Target surpassed: Seeds collected in130 properties, 98 in Caiua Ilha Grande Corridor and 32 in the Araucaria corridor
2.12	Seed collection of native species in rural properties	20	species with georeferenced matrices	IAP/ Emater	32
2.13	Producers assisted by Environmental Technical Assistance	8,000	producers	Emater	14,237
2.14	Seminars/workshops with broad participation for the discussion of strategies for biodiversity conservation	12	seminars	IAP	18
2.15	Biodiversity studies	7	published studies	IAP/SEAB	7
2.16	Constructions in UCs	4	works	IAP	Parque Estadual de São Camilo and Parque Estadual Cabeça do Cachorro
2.17	Subprojects executed by NGOs: research on forest remnant biodiversity, environmental education in buffer areas of forest remnants, small-scale infrastructure in forest remnants, and management of existing private reserves and creation of new ones	40	projects	SEMA	41 grants were awarded, for a total of US$ 400,000
2.18	Institutional structure to support the formation of RPPNs	1	specific structure	IAP	1

Component 3: Control and Protection					
3.01	Municipalities with effective decentralized system of monitoring	15	municipalities		The decentralization was not implemented by a political decision early in the project. However, structural changes were made in the State Secretariat of Environment to promote a stronger system of monitoring and enforcement.
3.02	Studies carried out to provide the technical basis and/or support for the implementation of: • Certification model for sustainably produced products • Decentralization of fiscalization • Decentralization of licensing • Improved enforcement of legal/regulatory framework • Revised targeting of fiscal policies to support biodiversity conservation • Review and modernization of environmental legislative framework • Alternative allocation of budget resources to benefit biodiversity conservation	7	studies		All studies carried out except decentralization of fiscalization and licensing, because a political decision was made not to decentralize those.
3.03	Development and use of comprehensive biodiversity database	1	system		Database developed. Information still needs to be gathered and updated. The system (*Atlas do Meio Ambiente*) is already operational within agencies but not yet public domain
3.04	GIS on areas licensed by the IAP	1	system installed online	IAP	All licenses are geo-referenced and incorporated to a database. Operational for government agencies, not yet available as public domain. Committed to be made available this year
3.07	Organization of procedures and provision of information on SISLEG including procedures for technical audit	1	Availability of SISLEG data on internet through routine integration with the Environmental Information System	IAP	Under processing by CODAPAR. Expected to be finished by the end of 2009.
3.08	Monitoring of forest cover from SPOT images (2005-2006)	1	cover map	UGP/ SEMA	Fully achieved

3.09	Multi-temporal monitoring of forest cover using aerial mapping	1 3	standardized system implemented with a frequency and scale defined mappings of the corridor areas	UGP/ SEMA/ Polícia Ambiental	Fully achieved Fully achieved
3.10	Development and implementation of methodology for defining bioindicators to monitor fauna. Applied study with routines and training of technical staff	1	publication of methodology	IAP	Fully achieved
Component 4: Project Administration					
4.1	Geographic Information System for monitoring activity goals of the project	1	system online	UGP	Fully achieved
4.2	Communication plan of the project	1	communication plan published	UGP	Fully achieved
4.3	Management reports w/ cooperating agencies of the Project	4	reports	UGP	Fully achieved
4.4	Advisory Committee	6	Minutes of the meeting approved and disseminated	UGP	Fully achieved

Annex 3. Economic and Financial Analysis

As required for a full-sized GEF project, an incremental cost analysis was done during the project preparation. No formal economic analysis was done over project implementation. Potentially the results of agro-ecological modules could be used for such economic analysis. However, the economic data of those modules could not be obtained at the time of this ICR, as they all combines tree plantation into the production system and they have not reached the maturity yet. It would take more than the time allowed under the PBP for the trees to produce benefits. The economic analysis of the modules will be done as part of the normal operation of Emater in a more established manner in the future.

Agro-ecological Modules

The agro-ecological modules support community ventures to use agricultural and livestock technologies that have low impact on the environment. The modules aim at demonstrating the environmental benefits for the existing production systems. The PBP supported **67** agro-ecological modules, benefitting **1,434** rural producers with the total investments of **$ 2,322,511** The counterpart funding provided by the beneficiaries was calculated at **$ 2,758,732.**

Table 1 – Agro-ecological Modules by Category

CATEGORIA	CORREDOR	MUNICÍPIO	MICROBACIA	BENEFICIÁRIOS	Área (ha)
Floresta	Iguaçu-Paraná	São José das Palmeiras	Rio do Corvo	22	211,42
	Iguaçu-Paraná	São José das Palmeiras	Rio do Corvo	83	784,54
	Caiua - Ilha Grande	Paranavaí	Coroa do Frade	14	995
	Caiua - Ilha Grande	Loanda	Acegua – Atibaião – Atibaia	18	915,44
	Caiua - Ilha Grande	Loanda (São Pedro do Paraná, Porto Rico, S	Água da Mina	107	1456,42
	Caiua - Ilha Grande	Querência do Norte e Loanda	Caveira	80	1559,94
	Caiua - Ilha Grande	São Pedro do Paraná	Rio Ataíba	27	1115,6
	Caiua - Ilha Grande	Santa Cruz do Monte Castelo	Espirito Santo	23	2804,04
	Caiua - Ilha Grande	Itaúna do Sul	Placa Itaúna	20	765,29
	Caiua - Ilha Grande	Itaúna do Sul	Zimaré / São Paulo e Paraná e Placa Itaúna	5	80,98
	Caiua - Ilha Grande	Porto Rico	Relíquia do Norte	27	748,8
	Araucária	Inácio Martins	Guarani	45	810
	Araucária	Pinhão e General Carneiro	Rio Iguaçu	13	1659,35
Floresta com Agricultura	Iguaçu-Paraná	Capitão Leônidas Marques	Rio Monteiro IV	4	30,19
	Iguaçu-Paraná	São Jorge do Oeste	Nossa Senhora Conso	16	122
	Caiua - Ilha Grande	Altônia	Lagoa Xambrê	8	59,85
	Caiua - Ilha Grande	Guairaçá	Água São João	28	142,88
	Caiua - Ilha Grande	Guairaçá	Coroa do Frade	7	137,84
	Caiua - Ilha Grande	São Jorge do Patrocínio	Ribeirão São João	47	1912,78
	Caiua - Ilha Grande	São Jorge do Patrocínio	Ribeirão São Manoel e São João	107	700
Floresta com Agricultura e Pecuária	Iguaçu-Paraná	São Pedro do Iguaçu	Santa Quitéria	21	210,8
	Iguaçu-Paraná	São Pedro do Iguaçu	Luz Marina	24	279,5
	Iguaçu-Paraná	Capanema	Barra Grande	20	251,57
	Iguaçu-Paraná	Diamante do Oeste	Rio Corvo Branco	10	448,61
	Iguaçu-Paraná	Santa Helena	Rio São Francisco	25	295,9
	Iguaçu-Paraná	Santa Helena	Ponte Quebrada	70	896,17
	Caiua - Ilha Grande	Alto Paraíso	Bela Vista	24	422,25
	Caiua - Ilha Grande	Francisco Alves	Rio Bonito / Placa Nove	13	134,62
	Caiua - Ilha Grande	São Jorge do Patrocínio	Ribeirão São Manoel	22	332
	Caiua - Ilha Grande	Alto Paraíso	Santo Antônio	23	337,58
	Araucária	Honório Serpa	Alto Covó - Bem Viver	14	363,3
	Araucária	Honório Serpa	Alto Covó	20	521,42
	Araucária	Coronel Domingos Soares	Rio Estrela	32	524,86
	Araucária	Coronel Domingos Soares	Rio Butiá	15	258
	Araucária	Cruz Machado	Rio Santana II - Potingal	20	3226
	Araucária	Cruz Machado	Rio Santana	60	9375
	Araucária	Mangueirinha	Rio Covó	20	533,2
	Araucária	Mangueirinha	Rio Covó	12	340,17
	Araucária	Mangueirinha	Rio Covó	14	318,36
	Araucária	Palmas	São Lourenço – Passo Feio	30	502,4
	Araucária	Reserva do Iguaçu	Bragança - Capoteiro	20	340
Floresta com Apicultura e/ou Meliponicultura	Iguaçu-Paraná	Cascavel	Arroio da Caverna	16	128
	Iguaçu-Paraná	Santa Lúcia	Rio Monteiro	31	296,96
	Caiua - Ilha Grande	Marilena	Água da Marilena	20	457,47
	Caiua - Ilha Grande	Terra Roxa	Rio Açú III	22	480
	Araucária	General Carneiro	Matão - Iratim	20	363,1
	Araucária	Mangueirinha	Rio Lajeado - Serelepe	11	135
	Araucária	Pinhão	São Pedro	7	102,9
	Araucária	Pinhão	Lajeado Grande	15	121,6
Floresta com Pecuária	Iguaçu-Paraná	Realeza	Flôr da Serra	20	379,76
	Iguaçu-Paraná	Três Barras do Paraná	Córrego Três Barras	15	177,05
	Iguaçu-Paraná	Vera Cruz do Oeste	Rio Jacutinga	10	123
	Caiua - Ilha Grande	Santa Isabel do Ivaí	Ferreira e Figueira	25	769,56
	Caiua - Ilha Grande	Diamante do Norte	Córrego Chibiu e Diamante	25	577,43
	Caiua - Ilha Grande	Diamante do Norte	Córrego Chibiu ,Diamante e Arapongas	20	2606,54
	Araucária	Bituruna	Mato Frio	27	1000,7
	Araucária	Reserva do Iguaçu	Rio dos Touros	6	207,82
	Araucária	Pinhão	Lajeado Feio	7	145,22
	Araucária	Reserva do Iguaçu	Rio da Divisa – Santo Antão	11	182,01
	Araucária	Foz do Jordão	Arroio dos Índios	30	255,4
	Araucária	General Carneiro	Rio Iratim	20	352,9
Floresta com Agroindústria	Iguaçu-Paraná	Boa Vista da Aparecida	Rio Jacutinga	30	384,78
	Iguaçu-Paraná	Capitão Leônidas Marques	Alto Alegre	7	70,11
	Iguaçu-Paraná	Guaraniaçu	Rio Izolina II	5	49,09
	Caiua - Ilha Grande	Guaíra	Cruzeirinho	12	67,46
	Caiua - Ilha Grande	Guaíra	Cachimbeiro	30	366,91
	Caiua - Ilha Grande	Querência do Norte	Pontal do Tigre II	30	700
	Araucária	Inácio Martins	Rio Claro	20	360
	Araucária	Foz do Jordão	Arroio dos Índios	10	120

While data from the project is very limited, this ICR attempts to demonstrate the valuation of outputs and inputs using the example of milk production in Boa Vista da Aparecida. Thirty local milk producers used to produce 2,390 liters/day, delivered to local merchants without quality control and sanitary treatment. Intermediary merchants would pay R$ 0.46/liter in average. If the producers sold directly to consumers, the price would have been R$ 0.75/liter. The PBP invested R$ 120,000 for their participation in the agro-

ecological module combining forestry/forest restoration with agro-industry. Equipments were purchased to increase productivity and technical assistance was provided by the State extensionists.

As a result, their association now produces 5,000 liter/day, commercializing at R$ 0.80/liter. In addition to the productivity, the module brought about the environmental benefits from the revitalization of riparian forests and legal reserves on their lands. One producer is proud that groundwater returned to his 12 ha property which was converted to local natural attraction.

The gross economic benefit of this module is given by the non-incremental output times the average supply price plus the incremental output times the average demand price. The average supply price is derived from the without module cost of R$ 0.46/liter and the with module cost of R$ 0.80/liter. The average supply price is R$ 0.63/liter. The average demand price is the average cost of milk/liter without and with the module. The price is R$ 0.75/liter without and R$ 0.80/liter with, giving an average demand price of R$ 0.775.

The gross economic benefit for the Boa Vista da Aparecida agro-ecological module can be calculated from the non-incremental and incremental outputs and the economic supply and demand prices. These gross economic benefits can be compared with the revenue to the new milk producers, which will be 5,000 liter/day at R$ 0.80/liter, or R$ 4,000. The resulting conversion factor is 0.565, which can be applied to the revenue accruing to the new milk producers to derive the economic value of the milk production.

The economic value of the milk production improved by the agro-ecological module is R$ 3,528.45.

Table 2. Gross Economic Benefits of the Agro-ecological Module in Boa Vista da Aparecida

Production	Non-incremental	Incremental
Milk (liter/day)	2390	2610
Economic Supply Price (R$/liter)	0.63	
Economic Demand Price (R$/liter)		0.775
Gross Economic Benefits (R$/day)	1505.7	2022.75
Total (R$/day)		3528.45

It was noted that the gain obtained by organizing their productions through creation of associations and cooperatives marked significantly high. And it has already changed their attitude positively toward agro-ecological production. For example, milk producers observed that with the creation of the producers association the productivity went up, so did their negotiation power to obtain unified and adequate price. They have also eliminated the intermediary, distributing their own milk. Before, they did not even think about price. People paid whatever they wanted. Also the quality of their milk was considered low quality.

The project also has conducted a survey to the environmental technical assistants of Emater who assisted the modules. According to the survey, there was an increase in productivity by 15% on average. For example, the annual production for livestock modules increased from R$15,142,888 to R$2,271,433.

Some anecdotal examples are indicated below:

i. For honey agribusiness subprojects, there was an increase in income of up to 70% of the producers, both by increase in average productivity from 12kg to 20kg per box per year, by the added value achieved from the industrialization of products, and by increased price from improved quality of honey (from R$2.00/kg to US$8.00/kg). A similar gain was repeated in Terra Roxa.

ii. The producers of medicinal plants of Inácio Martins have managed to diversify its production and to commercialize chamomile with significant gains.

iii. The carbon reduction producers, the Carbon Cooperative,, have tentatively traded its first credits in the voluntary market. They are finalizing the legal arrangements of the cooperative and have good prospects of increasing its board membership with neighbors and producers in other regions.

Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
Lending			
Michael G. Carroll	Natural Resources Management Specialist	LCSAR	Task Team Leader
Chris Parel	Senior Country Officer	LCC5C	Co-Task Team Leader
Adriana Moreira	Sr Environmental Spec.	LCSEN	Team Member
Marta Molares-Halberg	Legal Counsel	LEGLA	Legal
Alvaro Soler	Agricultural Economist	LCSAR	M&E Specialist
Enzo de Laurentis	Procurement Specialist	LCSES	Procurement
Claudio Mitterlstaedt	Financial Management Specialist	LCC5C	Financial Management
Claudia Sobrevila	Biodiversity Specialist	LCSEN	Peer Reviewer
Omowunmi Ladipo	Sr Financial Management Specialist	LOA	Disbursement
Supervision/ICR			
Michael G. Carroll	Lead Natural Resources Management Specialist	ECSS1	Task Team Leader
Greicy C. Amjadi	Senior Program Assistant	LCSAR	SPN
Mauricio Cifuentes	Program Assistant	CGFRF	SPN
Simon Nicholas Milward	Junior Professional Associate	LCSEN	SPN
Adriana Moreira	Sr Environmental Spec.	LCSEN	SPN
Alberto Ninio	Lead Counsel	LEGEN	SPN
Diego L. Paysse	Consultant	LCSAR	SPN
Manuel Felipe Rego	Consultant	LCSSD	SPN
Cristina Oliveira Roriz	Operations Analyst	LCSRF	SPN
Patricia Soto Cardenas	Language Program Assistant	LCSSD	SPN
Timothy S. Valentiner	Junior Professional Associate	LCSAR	SPN
Angel Alberto Yanosky	Consultant	LCSEN	SPN

Enrique Bucher	Consultant	LCSEN	ICR
Keiko Ashida Tao	Operations Analyst	LCSEN	ICR

(b) Staff Time and Cost

	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	**USD Thousands (including travel and consultant costs)**
Lending		
FY00	0.40	4.17
FY01	10.98	80.59
FY02	12.98	57.31
FY03	1.53	11.54
Total:	**25.89**	**153.62**
Supervision/ICR		
FY03	0.98	19.08
FY04	6.20	53.42
FY05	5.07	53.55
FY06	8.90	75.06
FY07	1.99	63.44
FY08	5.70	34.90
FY09	1.76	25.15
Total:	**30.60**	**324.59**

Annex 5. Beneficiary Survey Results

Not applicable.

Annex 6. Stakeholder Workshop Report and Results

Not applicable.

Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR

SECRETARIA DE ESTADO DO PLANEJAMENTO E COORDENAÇÃO GERAL
UNIDADE DE GERENCIAMENTO DO PROJETO PARANÁ BIODIVERSIDADE

GOVERNO DO PARANÁ

Ofício UGP PARANÁ BIODIVERSIDADE

Curitiba, 25 de setembro de 2009

Ref.: ICR - Acordo de Doação nº TF 051007 – Governo do Estado/BIRD

Prezado Senhor,

Agradecemos o envio do ICR do Projeto Paraná Biodiversidade e parabenizamos a sua equipe pela precisão do relatório.

Gostaríamos de fazer algumas considerações sobre ele:

1. No item 1, **Project context, global environment objectives and design**, consta que o projeto foi executado em 5 anos, quando na verdade foi em 6 anos. No item 3.3. **Survey**, está dito que a produção de criações nos módulos cresceu de 15,1 milhões para 2,3 milhões de reais.
2. No item 2.3., o relatório sugere que seria desejável continuar a monitorar os resultados de longo prazo do projeto. Essa preocupação é novamente reforçada em **6. Lessons learned. Monitoring and Indicators.** Concordamos com essa opinião e gostaríamos de contar, se possível, com o apoio técnico e a participação do Banco Mundial para tal.
3. Em **6. Lessons learned. Technical resources. Agricultural modules** está dito que seria útil explorar ou desenvolver técnicas mais avançadas de restauração, além do fornecimento de sementes de plantas nativas. Essa afirmativa é incorreta, uma vez que o projeto não forneceu sementes de plantas nativas para nenhum agricultor e sempre usou as melhores práticas de restauração disponíveis, aceitas e recomendadas pela comunidade técnica local e internacional. A prioridade de restauração foi dada para a facilitação da regeneração natural, em alguns casos com o apoio de plantio de árvores pioneiras e secudárias de forma complementar.
4. Com relação ao desmatamento no Estado do Paraná, ao longo do projeto, e ao compromisso do Estado com a proteção e conservação dos recursos florestais, gostaríamos de frisar que:
   a. O Governo do Estado do Paraná sempre foi comprometido com a conservação da biodiversidade e com a proteção de florestas maduras, remanescentes da Floresta com Araucária. As conservação dessas florestas é uma das prioridades do Estado.
   b. Não concordamos inteiramente com as críticas das ONGs apresentadas ao Painel de Inspeção, mas acreditamos que havia pontos importantes a serem considerados e que o apoio do Banco foi sempre positivo e firme no sentido de promover a

SECRETARIA DE ESTADO DO PLANEJAMENTO E COORDENAÇÃO GERAL
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conservação da biodiversidade. As mudanças realizadas no desenho inicial do projeto foram positivas.

c. Segundo o Instituto Nacional de Pesquisas Espaciais (INPE), o desmatamento de remanescentes da Mata Atlântica no Estado do Paraná nos últimos 3 anos foi de aproximadamente 9.000ha, para uma cobertura um pouco superior a 3 milhões de hectares. Esse desmatamento equivale a aproximadamente 0,1% da área florestal do Estado e não considera ingresso e regeneração de novas florestas. Representa a soma incêndios, cortes autorizados por interesse público e corte criminoso.

d. Apenas o ingresso de novas áreas florestais, através da promoção de regeneração natural ou restauração florestal, financiados pelo GEF foi maior do que esse desmatamento.

e. O Estado busca diminuir ainda mais o desmatamento e concomitantemente aumentar a área de floresta natural, através de regeneração natural e de silvicultura de restauração. Tem certeza de que no futuro não terá as mesmas florestas de hoje, mas trabalhará para, dentro de um enfoque ecossistêmico, conservar toda a biodiversidade paranaense.

Finalmente, gostariamos de agradecer ao apoio do Banco. Temos certeza de que o projeto contribuiu com a conservação da biodiversidade paranaense e mundial e que o papel do Banco foi essencial nesse caminho. O Estado procurará implementar vários processos desenvolvidos durante o Projeto Paraná Biodiversidade em uma escala mais ampla e espera contar com o apoio do Banco Mundial no desenvolvimento dessas ações.

Atenciosamente,

ERICH GOMES SCHAITZA
Coordenador-Geral
Paraná Biodiversidade

Ao Senhor
MICHEL CARROLL
Task Manager
Banco Mundial
Washington, N.W

Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders - Not Apllicable

Annex 9. List of Supporting Documents

The World Bank, Project Appraisal Document on a Proposed Grant from the Global Environment Facility Trust Fund in the Amount of SDR 6.5 Million (US$8 Million Equivalent) to the State of Parana (Brazil) for the Parana Biodiversity Project, April 25, 2002

Ajuda Memória, Missão de Supervisão no.2, 17 a 18 e de 26 a 28 de novembro de 2003

Ajuda Memória, Missão de Supervisão no.3, 12 a 14 de abril de 2004

Ajuda Memória, Missão de Supervisão no.5, 4 a 7 de outubro de 2004

Ajuda Memória, Missão de Supervisão no.6, 4 a 7 de abril de 2005

Ajuda Memória, Missão de Supervisão no.7, agosto e setembro de 2005

Ajuda Memória, Missão de Supervisão no.8, 9 e 10 de janeiro de 2006

Ajuda Memória, Missão de Supervisão no.9, 28 de junho de 2006

Ajuda Memória, Missão de Supervisão, 27 de julho a 1º de agosto de 2006

Ajuda Memória, Missão de Supervisão no.11, 10-11 e 16-17 de outubro de 2006

Ajuda Memória, Missão de Supervisão no.12, 13-14 e 20-21 de novembro de 2006

SEPL/SEAB/SEMA/CCPG/UGP, Projecto Panara Biodiversidade, Plano de Ação, Fase II, Novembro 2006

The World Bank, Brazil Parana Biodiversity Project, Project Paper, January 31, 2007

The World Bank, Bank Management Response to Request for Inspection Panel Review of the Brazil: Parana Biodiversity Project (GEF TF051007)

The Inspection Panel, Final Eligibility Report and Recommendation, Brazil: Parana Biodiversity Project (GEF TF 051007), March 1, 2007

Ajuda Memória, Missão de Supervisão no.14, 16 e 17 de abril de 2007

Ajuda Memória, Missão de Supervisão no.15, 26-27 de setembro e 19-20 dev novembro de 2007

Ajuda Memória, Missão de Supervisão no.17, 18-21 agosto de 2008

IAP, SEMA, Emater, Relatório de Atividades Consolidado, Janeiro 2007 a Julho 2008, Julho 2008 ao Encerramento do Projecto, 20 de junho de 2009

Silvia Ziller, Odete Terezinha Bertol Carpanezzi e João Batista Campos, Programa de controle e erradicação de espécies exóticas invasoras.

Drª Annet Bonnet, Levantamento e caracterização do componente epifítico em areas prioritarias do corredor de biodiversidade araucaria.

MsC Pedro Scherer Neto, pesquisador do Museo de História Natural de Curitba "Capão da Imbuia", Avaliação do atual “status” das araras (Ara chloropterus e Ara ararauna) como indicadoras da qualidade ambiental no Corredor Ecológico Caiuá Ilha-Grande, Paraná,

Dennis Nogarolli Marques Patrocínio, Estruturação da Central de Apoio às Ações de Monitoramento de Fauna Silvestre.

Programa do Estado do Paraná para espécies exóticas invasoras.

Equipe Técnica do IAP Estratégia Estadual para Redução de Impactos em Áreas de Entorno de Unidades de Conservação.

Orçamento Participativo em Meio Ambiente, software elaborado pela Celepar com apoio da Secretaria de Planejamento para permitir pesquisas sobre atividades relacionadas a meio ambiente em todos os projetos atividade do governo.

IAP/DIBAP/DBIO, Identificação e Caracterização de Áreas Prioritárias para a Conservação.

IAP/DIBAP/DBIO, Estruturação de Sistema de Biodiversidade.

IAP/DIBAP/DBIO, Incentivos Econômicos para Conservação Áreas Naturais no Estado do Paraná.

IAP/DIBAP/DBIO, Definição de Bioindicadores para o Monitoramento da Fauna.

Annex 10. Support for Creation of RPPN

						PROTO-COLO RPPN					
Qtd	**Proprietá-rio**	**Municí-pio**	**Matri-cula**	**Area (ha) Propri-edade**	**Tipo de Apoio do Paraná Biodiversidade**	**N. Protocolo**	**Órgão ambi-ental**	**Data**	**Liberação órgão ambiental**	**Area (ha) RPPN**	**Nome RPPN**
1	Loire Biavatti Francischini	Boa Esp.Iguaçú	7575	25,80	Mapeamento	Coleta documentos/mapeamento				5,42	
2	Antenor Alberto Borsatto	Boa Esp.Iguaçú	16159	7,50	Mapeamento	Coleta documentos/mapeamento				1,58	
3	Silvio Antonio Viganó	Cruzeiro do Iguaçu	3493	25,90	Mapeamento	Coleta documentos/mapeamento				5,44	
4	Silvio Antonio Viganó	Cruzeiro do Iguaçu	4035	15,60	Mapeamento	Coleta documentos/mapeamento				3,28	
5	João Carlos Ghedin	Cruzeiro do Iguaçu	17001	20,30	Mapeamento	Coleta documentos/mapeamento				4,26	
6	Ong Preservaçã o	General Carneiro	7983	1254,90	Reunião com poder público municipal em agosto/2006 + apoio institucional junto ao Editla Aliança	IAP 9.373.707-5	Estadual	27/04/2007	18/06/2008	1.040,00	RPPN Paisagem Araucária - Papagagaio do Peito Roxo
7	Orlando Malucelli Moro	Imbituva	3.487	2000,00	Apoio institucional junto ao Edital Aliança	Coleta de documentos/mapeamento				350,00	
8	Nilson Xavier Marchioro	Ipiranga	2.985	1985,00	Apoio institucional junto ao Edital Aliança	Coleta de documentos/mapeamento				400,00	
9	Mario Nascimento de Paula Xavier	Ipiranga e Imbituva	3.488	2000,00	Apoio institucional junto ao Edital Aliança	Coleta de documentos/mapeamento				250,00	
10	Acorinha (João Bevilaqua)	Mangueirinha	25 matrículas	502,00	Reunião com poder público municipal em dezembro/2005	IAP # (25 protocolos)	Estadual	27/04/2007	**P**	413,00	

11	Enedir de Souza e Outros	Mangue irinha	448	24,20	Reunião com poder público municipal em dezembro/2005	IAP 9.956.097-7	Estadual	15/05/2008	**P**	3,25	
12	Ney André	Mangue irinha	2748	27,18	Reunião com poder público municipal em dezembro/2005	**IBAMA** PR 02017.006 590/06-62	**Federal**	20/12/2006	**vistoria agendada**	4,80	
13	Ney André	Mangue irinha	3416	28,60	Reunião com poder público municipal em dezembro/2005	**IBAMA** PR 02017.006 593/06-51	**Federal**	20/12/2006	**vistoria agendada**	10,00	
14	Valmor P. Savi	Mangue irinha	2546	25,70	Reunião com poder público municipal em dezembro/2005	Coleta de documento s				6,05	
15	Antonio Ferreira de Oliveira	Pinhão	2.100	54,86	Reunião com poder público municipal em dezembro/2005 + apoio institucional junto ao Edital Aliança. Importante destacar que o IAP priorizou a análise e vistoria desses processos no Corredor Araucária e o importante papel do Gerente de Corredor. O trâmite dos processos fluiu mais rápido que os demais.	IAP 7.119.839-1	Estadual	05/09/2008	**Vistoria favorável**	45,03	RPPN Fazenda Pedra Grande II
16	Antonio Ferreira de Oliveira	Pinhão	2.099	54,86	Reunião com poder público municipal em dezembro/2005 + apoio institucional junto ao Edital Aliança. Importante destacar que o IAP priorizou a análise e vistoria desses processos no Corredor Araucária e o importante papel do Gerente de Corredor. O trâmite dos processos fluiu mais rápido que os demais.	IAP 7.119.840-5	Estadual	05/09/2008	**Vistoria favorável**	26,18	RPPN Fazenda Pedra Grande I
17	Antonio Ferreira de Oliveira	Pinhão	2.103	15,42	Reunião com poder público municipal em dezembro/2005 + apoio institucional junto ao Edital Aliança. Importante destacar que o IAP priorizou a análise e vistoria desses processos no Corredor Araucária e o importante papel do Gerente de Corredor. O trâmite dos processos fluiu mais rápido que os demais.	IAP 7.119838-3	Estadual	05/09/2008	**Vistoria favorável**	2,08	RPPN Fazenda Pedra Grande III
18	Adir Antonio Marafon	S. Jorge D'Oeste	20464	39,50	Mapeamento	Coleta documento s/mapeame nto				8,30	
19	Adir Antonio Marafon	S. Jorge D'Oeste	20466	39,50	Mapeamento	Coleta documento s/mapeame nto				8,30	

Annex 11: Satellite Images of Restored Forests

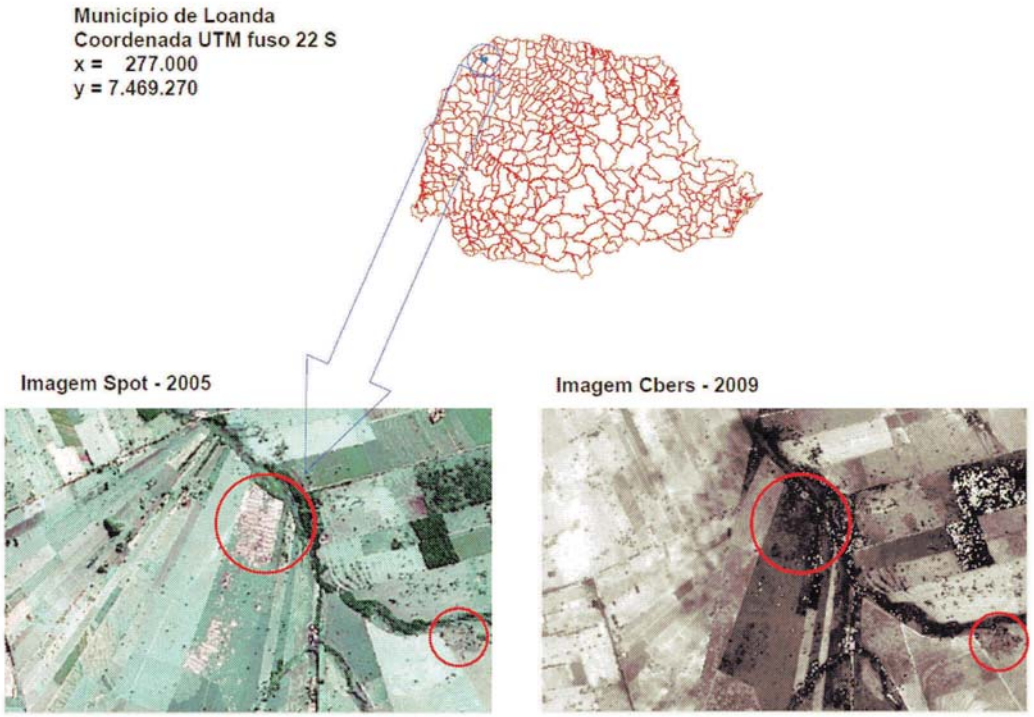
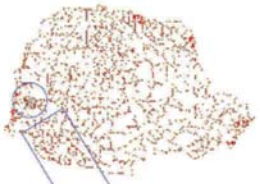


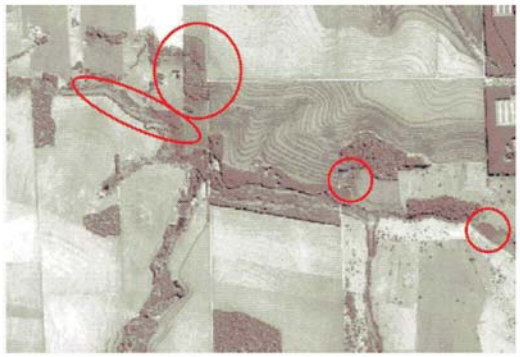

Imagem Spot - 2005
Imagem Cbers - 2009
Município de
São Pedro do Paraná
Coordenada UTM fuso 22 S
x = 275.300
y = 7.479.880



Município de Vera Cruz do Oeste
Coordenada UTM fuso 22 S
x = 196.275
y = 7.240.140

Imagem Spot - 2005

Imagem Cbers - 2009



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