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**BRAZIL**

**CONSERVATION RESTORATION AND SUSTAINABLE MANAGEMENT IN THE CAATINGA, PAMPA  
AND PANTANAL**

**GEF TERRESTRE**

**(BR-G1004)**

**MONITORING AND EVALUATION PLAN**

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## **ABBREVIATIONS**

AOP	Annual Operation Plan
BD	Biodiversity Conservation
CC	Climate Change
CO2	Carbon Dioxide
CU	Conservation Unit
ESMR	Environmental and Social Management Report
FUNBIO	Brazilian Biodiversity Fund
GEF	Global Environmental Facility
IADB	Inter-American Development Bank
ICMBio	Chico Mendes Institute for Biodiversity Conservation
JBRJ	Botanical Garden of Rio de Janeiro
MMA	Brazilian Ministry of the Environment
M&E	Monitoring and Evaluation System
PCR	Project Completion Report
PES	Payment for Ecosystem Services
PIR	Project Implementation Reports
PMR	Progress Monitoring Report
PEA	Project Executing Agency
POD	Proposal for Operation Development
PP	Procurement Plan
RM	Results Matrix
SFM	Sustainable Forest Management
SVC	Sustainable Value Chains
TT	GEF Tracking Tool
XPMR	Extended Progress Monitoring Report

## **I. INTRODUCTION**

- 1.1 The general objective of the project is to contribute to the long term viability of threatened priority species, avoid carbon emissions and increase conservation effectiveness in 3 Brazilian biomes through the improvement of the Protected Areas System, action plans for endangered species, restoration of degraded landscape and community-driven sustainable management practices.
- 1.2 The specific objectives are: (i) expand coverage and effectiveness of conservation efforts in those biomes [components 1 & 2]; (ii) improve management of priority habitats and priority species [components 3 & 4]; and (iii) foster community-driven sustainable use practices in productive areas associated to the PA system [component 5].
- 1.3 Component 1. Creation of New Protected Areas. This component fosters an improved representativeness of the SNUC by supporting the legal protection of ecologically important but currently unprotected areas within each of the three target biomes, and exploring sustainable financing options for newly created areas. Specifically, the component will finance the following activities: (i) biological, soil, socio-economic and land-titling assessments; (ii) public consultations and participation events; (iii) elaboration of legal documents to establish the PA –which differ depending on the type of PA; (iv) for units with tourism/visitation potential, basic outreach and information materials; and (v) for units with sustainable use provisions, analyses related to sustainable development of natural capital in conservation unit.
- 1.4 Component 2. Management of Existing Protected and Adjacent Areas. This component aims to increase protected area effectiveness by strengthening planning, monitoring and implementation capacity with PA's; promoting biome-appropriate fire management, and fostering biodiversity and ecosystem services-based management practices to benefit communities adjacent to PA's. It consists of three sub-components:
- 1.5 Effective Conservation Management. This sub-component will finance: (i) technical coordination and plans for PA management, sustainable financing and protection , including land-titling assessments; (ii) selection and implementation of priority actions to improve management effectiveness; (iii) biodiversity monitoring programs and equipment; and (iv) technical assistance for sustainable activities within protected (where permitted) and adjacent

areas. Parallel financing will finance the implementation of priority actions such as control of alien species; environmental education and public participation (including PA council meetings); basic infrastructure for conservation, public use and surveillance, including demarcation, signage, trails and ranger stations; surveillance and equipment; and basic outreach and information materials for visitors.

- 1.6 Fire Management. This sub-component will finance the following activities: (i) fire prevention, monitoring and control activities within PA's; (ii) community outreach and collaboration; (iii) integrated fire management protocols; and (iv) outreach, training and public awareness to promote implementation of fire management protocols in areas adjacent to PA's.
- 1.7 Sustainable Management of Productive Landscapes. This sub-component will finance the following activities: (i) land-use plans for prioritized sustainable use protected areas, based on biodiversity and ecosystem services (BES); and (ii) BES-based business plans, to be developed and implemented with communities adjacent to PA's
- 1.8 Component 3. Restoration of Deteriorated Areas. This component will contribute to improving landscape connectivity, both within PA's and with surrounding areas by providing information essential for discerning prioritization of restoration efforts and by thereafter restoring prioritized areas. As such, the component finances: (i) analytical decision-making instruments and monitoring protocols for Caatinga, Pampa, Pantanal and Cerrado; (ii) restoration maps for the three target biomes; (iii) restoration plans for priority areas; (iv) technical guidance and implementation of selected restoration activities; (v) results monitoring; and (vi) community engagement activities. Parallel financing will finance restoration activities by private land owners and activities to prevent, control and combat desertification in the Caatinga biome.
- 1.9 Component 4. Monitoring of Flora and Fauna Extinction Risks. This component will promote more effective management of threatened species in the three biomes through an innovative planning approach, targeted risk-reduction activities, effectiveness evaluations and improved access to information. The component will finance the following activities: (i) territorial National Action Plans (PAN)<sup>1</sup> for the three biomes; (ii) conservation and recovery actions in selected territories; (iii) PA effectiveness assessments; and (iv) consolidation of biodiversity information portal. Parallel financing will finance scientific analysis for the territorial PAN;

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<sup>1</sup> National Action Plans identify appropriate management instruments needed to curb existing threats to specific species. They were instituted by the do "Programa Pró-Espécies" (art. 8º Portaria MMA 43/2014)

implementation of priority conservation actions for selected threatened species, and an update of extinction risks and threats to fauna and flora species.

- 1.10 Component 5. Integration and Community Relations. This component will support the other four components by fostering effective collaboration between different levels and areas of government, as well as communication and participation programs designed to engage local communities in the creation and effective implementation of conservation activities. This component's activities will complement the community-oriented activities specified in previous components. Specifically, it will finance: (i) seminars to foster institutional collaboration; (ii) technical guidance and workshops for participatory communication with affected communities; (iii) production and dissemination of communication materials to assist local engagement; and (iv) implementation of conflict resolution mechanisms.
- 1.11 The following maps indicate project implementation areas in the Caatinga, Pampa and Pantanal biomes, respectively. The different colors represent the areas of intervention in each biome according to project Component: solid purple indicates areas for the creation or expansion of protected areas (Component 1); solid green represents PAs to be consolidated (Component 2); the orange outline highlights potential areas for restoration (Component 3); and in the blue outline are the areas for National Action Plans for the Conservation of Endangered Species (PANs) (Component 4).
- 1.12 The methodology to be adopted for the development of PANs no longer focuses on species or specific taxonomic groups, but instead follows a territorial approach, covering the area of occurrence of a significantly greater number of species.

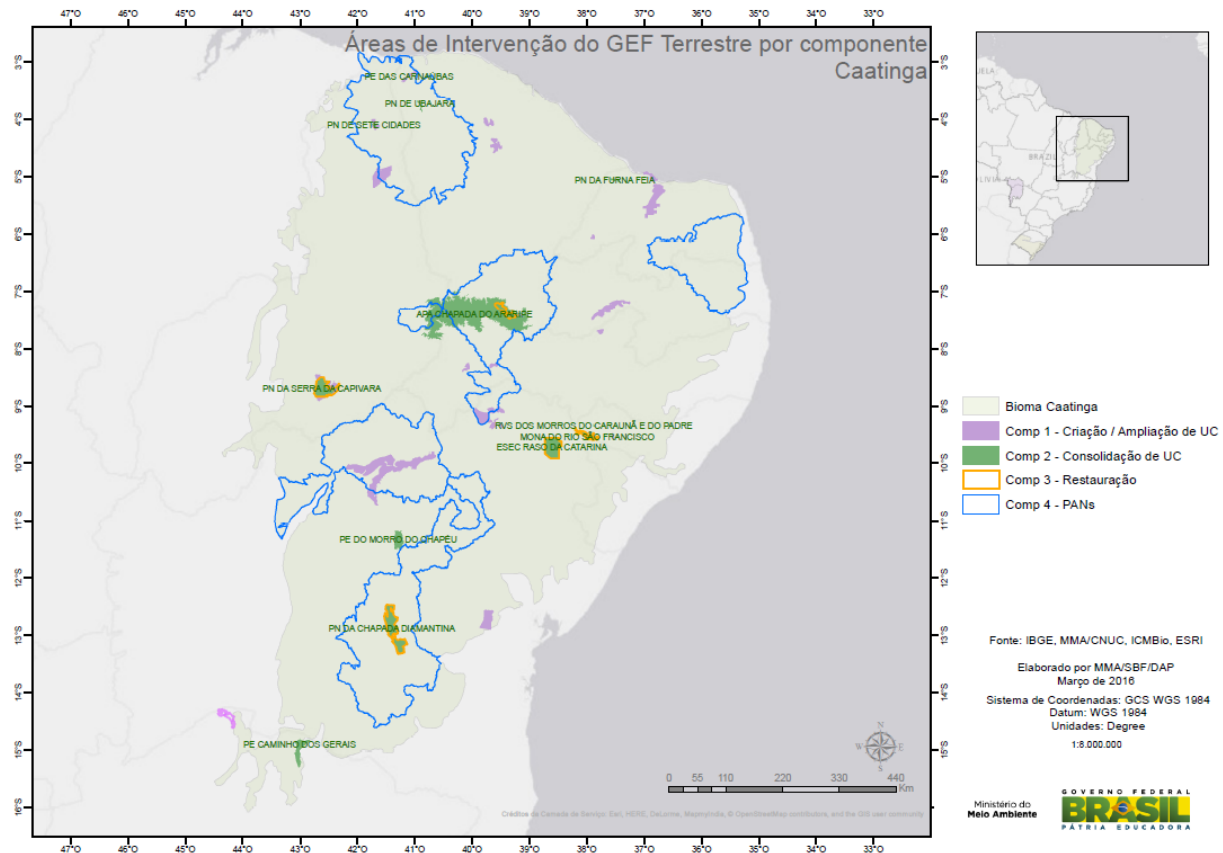


Figure 1. Intervention areas of the project in the Caatinga biome. The area covered by the biome is shown in pale green. The different colors indicate areas with planned activities by project Component - Component 1: solid purple; Component 2: solid green; Component 3: orange outline; Component 4: blue outline.





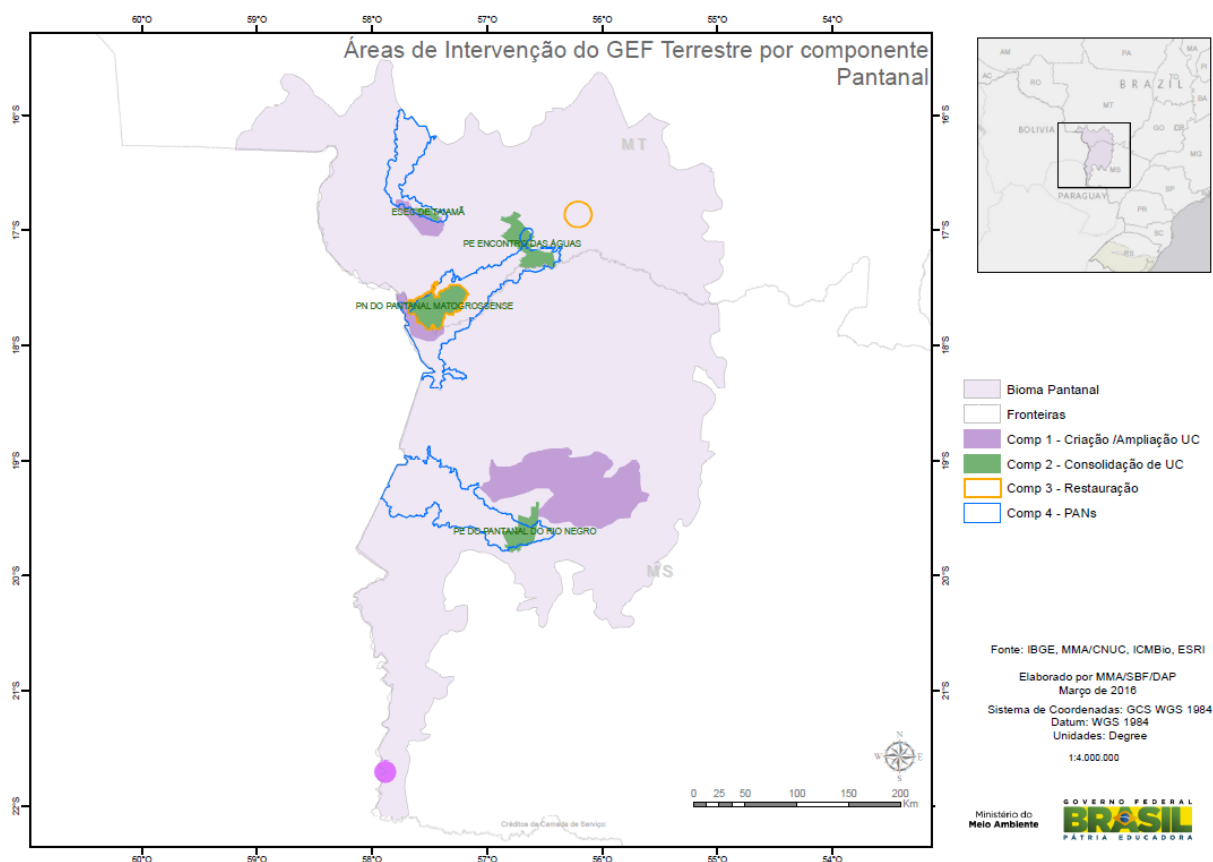


Figure 3: Intervention areas of the project in the Pantanal biome. The area covered by the biome is shown in pale green. The different colors indicate areas with planned activities by project Component: Component 1: solid purple; Component 2: solid green; Component 3: orange outline; Component 4: blue outline.

- 1.13 **Scope of M&E plan.** To enable proper monitoring and evaluation of the project, M&E will be undertaken at three levels: (i) monitoring of project implementation and financial performance (see Monitoring section below); (ii) delivery of project outputs in accordance with the annual work plans (see Monitoring section below); and (iii) assessment of accomplishment of project outcomes and impacts in relation to the results framework (see Evaluation and Impact Methodology sections below).
- 1.14 **IDB** The project team, based on information provided by the Project Executing Agency (PEA), will supervise the achievement of the outcomes and results associated to BID/GEF funding and will incorporate them in the Project Monitoring Report (PMR); the project team will also incorporate all project outcomes and results associated to GEF financing and parallel financing into the Project Implementation Reports (PIR), to be reported periodically to GEF. The Annual Operation Plan (AOP) will be used to monitor progress in physical implementation according to planned schedules, and observations derived from this will constitute an input to the periodic

evaluations, as well as to regular follow-up supervision missions to be undertaken by the project team during project implementation.

## II. MONITORING

### a. Monitoring of project implementation and financial performance

- 2.1 The Annual Operation Plan (AOP) will be used to monitor progress in physical implementation according to planned schedules, and observations derived from this will constitute an input to the periodic evaluations, as well as to regular follow-up supervision missions to be undertaken by the project team during project implementation.
- 2.2 Progress in the attainment of physical and financial targets will be reported by FUNBIO and consigned by IDB project team in the Project Monitoring Report (PMR). This information will be used in the periodic and final project evaluation reports.

### b. Output indicators

- 2.3 Based on the complete results matrix of the project, the monitoring will consider the output indicators shown in the table below, which correspond to the products financed by the IDB/GEF contribution.

**Table 1. Output Indicators for IDB/GEF Financed Products**

Indicator	Frequency of measurement	Source of verification
<b><u>Component 1: Creation of New Protected Areas</u></b>		
1.1. NEW PROTECTED AREAS (PA) DECLARED: Total area for which all required analyses, consultations and legal documents have been prepared and submitted to competent agencies for legal declaration as a PA.	Biannual	Protected Area Decree
1.2. PROGRESS WITH PA CREATION PROCESSES: Proposed PAs that have advanced at least one formal stage in the process towards creation compared to 2016 baseline.	Biannual	PMR and biannual progress reports from Project Management Unit (PMU)
1.3. SUSTAINABLE FINANCING PLANS PREPARED: PAs whose documentation has been submitted for legal declaration (Product 1.1.) for which a sustainable financing plan has been prepared as part of its planning	Biannual	PMR and biannual progress reports from Project Management Unit (PMU)

Indicator	Frequency of measurement	Source of verification
documents.		
<b><u>Component 2: Management of Existing Protected and Adjacent Areas</u></b>		
2.1. PLANNING INSTRUMENTS APPROVED. Priority PAs that have an up-to-date Management Plan & adequate Monitoring Program approved.	Biannual	PMR and biannual progress reports from Project Management Unit (PMU)
2.2. SUSTAINABLE FINANCING PLANS PREPARED: Sustainable Financing Plan developed, as part of planning instruments, for same priority PAs as Product 2.1.	Biannual	PMR and biannual progress reports from Project Management Unit (PMU)
2.3 PRIORITY ACTIONS DEFINED & IMPLEMENTED: Program of selected priority actions to improve management effectiveness fully implemented.	Biannual	PMR and biannual progress reports from Project Management Unit (PMU)
2.4. BIODIVERSITY MONITORING PROGRAMS IMPLEMENTED: Biodiversity Monitoring Protocols developed and tested in priority PAs in accordance with protocols	Biannual	PMR and biannual progress reports from Project Management Unit (PMU)
2.5. PA FIRE MANAGEMENT CAPACITY STRENGTHENED: PAs in which biome-specific Fire Management Program has been implemented.	Biannual	PMR and biannual progress reports from Project Management Unit (PMU)
2.6. MANAGEMENT PROTOCOLS APPLIED IN PA AND ADJACENT AREAS: New area adjacent to Conservation Units in which communities are applying biome-appropriate protocols to avoid carbon emissions.	Biannual	PMR and biannual progress reports from Project Management Unit (PMU)
2.7 BES-BASED INSTRUMENTS DEVELOPED AND UNDER IMPLEMENTATION: BES-based business plans, land use plans or regulatory instruments developed and under implementation with communities.	Biannual	PMR and biannual progress reports from Project Management Unit (PMU)
<b><u>Component 3: Restoration of Deteriorated Landscapes in Priority Areas</u></b>		
3.1. PLANNING & MONITORING INSTRUMENTS DEVELOPED: Biome-specific decision trees, monitoring protocols and priority-area maps for restoration developed.	Biannual	PMR and biannual progress reports from Project Management Unit (PMU)

Indicator	Frequency of measurement	Source of verification
3.2. ASSESSMENT & PLANS FOR RESTORATION COMPLETED: Assessments of degraded areas and Restoration Plans for selected UCs completed.	Biannual	PMR and biannual progress reports from Project Management Unit (PMU)
3.3. DEGRADED LANDSCAPES RESTORED: Area of degraded landscapes restored within selected UCs according to Restoration Plans and managed sustainably.	Biannual	PMR and biannual progress reports from Project Management Unit (PMU)
<b><u>Component 4: Monitoring of Flora and Fauna Extinction Risks</u></b>		
4.1. PA CONSERVATION EFFECTIVENESS ASSESSMENT COMPLETED: Assessment of PA effectiveness in meeting priority species conservation goals completed	Biannual	PMR and biannual progress reports from Project Management Unit (PMU)
4.2. TERRITORIAL ACTION PLANS (T-PANs) ELABORATED: Territories for which PANs, including guidelines for adequate PA design and management, are elaborated and published for 3 biomes.	Biannual	PANs approval legal acts
4.3. PRIORITY ACTIONS FROM T-PANs IMPLEMENTED: Territories in which priority actions from PANs are implemented and monitored in 3 biomes.	Biannual	PMR and biannual progress reports from Project Management Unit (PMU)
4.4. BIODIVERSITY PORTAL CONSOLIDATED: Existing datasets and systems integrated, up-dated with new data and published.	Biannual	PMR and biannual progress reports from Project Management Unit (PMU)
<b><u>Component 5: Integration and Community Relations</u></b>		
5.1 KEY GOVERNMENT INSTITUTIONS ENGAGED Number of State level organizations involved in project-sponsored seminars	Biannual	Attendance list of all seminars
5.2. COMMUNICATION STRATEGY UNDER WAY. Communication relations program to foster support for conservation objectives implemented	Biannual	PMR and biannual progress reports from Project Management Unit (PMU)

2.4 FUNBIO will also monitor progress in the delivery of product outputs financed by parallel financing contributed by several sources as outlined in project documents. The following table shows those output indicators.

**Table 2. Output Indicators for Parallel Financing Financed Products**

<b>Indicator</b>	<b>Frequency of measurement</b>	<b>Source of verification</b>
<b>Component 1: Creation of New Protected Areas</b>		
PFP 1. PROGRESS WITH PA CREATION PROCESSES: Proposed protected areas that have advanced at least one formal stage in the process towards creation compared to 2016 baseline.	Biannual	Protected Areas Management Institutions
<b>Component 2: Management of Existing Protected and Adjacent Areas</b>		
PFP 2. PRIORITY ACTIONS IMPLEMENTED: PAs that received infrastructure, equipment and other services, according to actions prioritized on the basis of planning instruments & financing plan (Products 2.1 & 2.2).	Biannual	Protected Areas Management Institutions
PFP 3. REMOTE SENSING DATA PROVIDED: Remote sensing data that supplement biodiversity monitoring programs for priority PAs provided by project partners.	Biannual	Protected Areas Management Institutions' partners
<b>Component 3: Restoration of Deteriorated Landscapes in Priority Areas</b>		
PFP 4. MAPPING DATA PROVIDED: Mapping data that supplement priority-area maps for restoration provided by project partners.	Biannual	INPE
PFP 5. DEGRADED LANDSCAPES RESTORED: Area of degraded landscapes restored within selected UCs according to Restoration Plans.	Biannual	Restoration Partners
<b><u>Component 4: Monitoring of Flora and Fauna Extinction Risks</u></b>		
PFP 6. EVALUATION OF EXTINCTION RISK UP-DATED: Analyses identifying extinction risks and threats to priority species have been up-dated.	Biannual	DESP/MMA
PFP 7. PRIORITY ACTIONS FROM PANs IMPLEMENTED: Territories in which priority actions from PANs are implemented and monitored.	Biannual	ICMBio and JBRJ

<b>Component 5: Integration and Community Relations</b>		
Protected Areas Council's Meetings	Biannual	Protected Areas Management Institutions
Local communities adopting sustainable use practices (Bolsa Verde Program beneficiaries, among others)	Biannual	SEDR/MMA and States' partners

- 2.5 In collecting and reviewing information on progress towards the completion of these outputs, FUNBIO will have the assistance of the MMA, which will act as technical and institutional coordinator for the project; in that capacity, the MMA will ensure that each participating agency will comply with the Parallel Financing program and, with those or other resources, will ensure that those products are indeed made available to the project.

#### **c. Data Collection and Instruments**

- 2.6 All output indicators will be measured directly. The different indicators will be contrasted with expected outputs and outcomes of the Results Matrix (RM).
- 2.7 FUNBIO will be responsible for the technical, financial and fiduciary execution and administration of the Project. In coordination with the project Beneficiary, FUNBIO will be responsible for collecting, systematizing and reporting information and data needed for the project's M&E system. FUNBIO will fulfill that responsibility by requesting and obtaining such information and data from project beneficiary (MMA) and other participating agencies, or by deriving it itself otherwise. FUNBIO will also be responsible for collecting information to monitor and report on local parallel financing.
- 2.8 Other functions of FUNBIO include: (i) operating the accounting system for the Project's financial resources; (ii) implementing and executing the planning and monitoring systems; (iii) executing all procurement activities for goods and services contained in each of the Project's components, and ensuring their effectiveness; (iv) implementing the necessary control systems to ensure the efficiency and transparency in the execution and management of the Project's physical and financial resources; (v) opening a bank account for the exclusive administration of the IDB/GEF resources; (vi) preparing the disbursement requests and submitting them to the Bank, along with all the supporting documentation; (vii) in coordination with the Beneficiary, ensuring the quality of the goods and services provided by contractors and vendors; (viii) preparing physical and financial progress reports for the project; and (ix) ensuring

compliance with Bank policies and provisions of the Non-Reimbursable Financing Agreement to be executed between the Bank and FUNBIO.

**d. Reporting**

- 2.9 In addition to the AOP and the Procurement Plan (PP), FUNBIO will send progress reports every six months during the entire period of the program execution. The progress reports will be submitted within sixty (60) days after the end of each semester. The reports shall contain but not be limited to the following information: (i) description of the activities performed, by program component; (ii) information on the current status of each activity and, if necessary, a corresponding action plan to resolve pending issues; (iii) information on the procurement processes carried out in the period reporting; (iv) update of physical and financial progress, by product; (v) the level of compliance with RM indicators, as recorded in the PMR system; (vi) identification of new risks / events that may affect the implementation of the program; (vii) compliance with contractual clauses; (viii) any modifications to the project, if applicable; (ix) a summary of lessons learned and (x) the estimated cash flow for the next two semesters and associated disbursement projections.

**e. Monitoring Coordination, Work Plan and Budget**

- 2.10 As indicated in the Proposal for Operation Development (POD), FUNBIO will be responsible for monitoring the performance and progress of the program during the implementation period.
- 2.11 In coordination with MMA, FUNBIO will be responsible for collecting the information for different output and outcome indicators included in the RM, establishing administrative control mechanisms that allow semiannually reporting on physical and financial progress of the products financed by GEF resources as well as to collect relevant information on indicators and implementation plans.
- 2.12 For that purpose, along with the RM report, field monitoring will be conducted every 6 months, in accordance with agreed monitoring guidelines and reporting templates. Monitoring workshops will be held annually, involving MMA, FUNBIO and other partners directly involved in project implementation to monitor progress in project activities and to propose adjustments if needed.
- 2.13 FUNBIO will also be responsible for collecting data and information to feed the project's impact evaluation, as explained in chapter III below.

**Table 3**  
**Monitoring Work Plan**

Key Monitoring Activities/Products per Activity	Year 1				Year 2				Year 3				Year 4				Year 5				Responsible	Cost (Currency) US\$	Funding
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4			
Field monitoring				x		x		x		x		x		x		x		x			FUNBIO, MMA	40.000	GEF
Monitoring Workshop						x				x				x				x			FUNBIO, MMA, ICMBio, JBRJ and other partners	40.000	GEF
<b>Total Cost:</b>																					US\$80.000		



### III. EVALUATION

#### a. Evaluations

- 3.1 Six evaluations events are planned for the project: two initial evaluation workshops at project commencement, a mid-term evaluation, a final evaluation, and two evaluation workshops associated with the mid-term and final evaluations.
- 3.2 Initial evaluation workshops will include the adaptation of well-established protected area planning tools to aid in refining and prioritizing the implementation of planned project activities associated with Component 2, as well as on the validation and refinement of all planned project activities and products, and the strategy for implementation and monitoring. In addition, project indicator baselines will be obtained and/or refined.
- 3.3 The mid-term evaluation will take place after 2.5 years of project execution, or when 50% of IDB/GEF contribution has been disbursed, whichever comes first, and will cover: (i) progress in the selection, preparation (including population-related issues) and legal establishment of the new PAs; (ii) improvements in management efficiency of PAs, under the parameters included in GEF evaluation tools; (iii) progress in recovery activities in degraded areas (component 3) and scientific research in support of monitoring of flora and fauna (component 4); (iv) progress in the attainment of results associated to enhanced institutional coordination and community participation (component 5), including progress in the adoption of BES-based instruments developed and implemented with communities adjacent to PAs (component 2); and (v) *pari passu* and coordination of the application of parallel financing<sup>2</sup>. An adequate Action Plan will be devised to correct identified problems or delays, if any.
- 3.4 The mid-term evaluation will recommend adjustments in the distribution of project resources, if necessary, as well as other management or technical adjustments as needed. In particular, the mid-term evaluation will devise an adequate Action Plan to counter delays, shortcomings or any other obstacle that is identified for the timely implementation of project activities. If such Action Plan is deemed needed, the Bank will inform GEF of its scope and contents and will continue to inform GEF of its results and impact.

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<sup>2</sup> *Pari passu*: BID/GEF 17%; parallel financing 83%.

3.5 The Final Evaluation will take place within the last 6 months of project execution and will focus on the overall achievement of results and the perceived impact of the project, as well as fulfillment of the project's objectives.

3.6 Both the mid-term as well as the final evaluation will be followed by workshops with the goal of reassessing project execution and the attainment of project targets and indicators, and proposing measures to ensure that project implementation remains aligned with project objectives (mid-term evaluation workshop) and to present the final results and achievements of the project (final evaluation workshop).

#### **b. Impact and Result Indicators**

2.14 The expected impacts and results and their correspondent indicators, that will be monitored and recorded in the PMR, are described below.

**Table 4. Impact and Outcome Indicators**

<b>Indicators</b>	<b>Formula/Definition</b>	<b>Frequency of measurement</b>	<b>Means of verification</b>
<b>IMPACT</b>			
Enlarged endangered species populations (BD)	Status of selected threatened species populations in three Biomes:		MMA Red List
	Caatinga:		
	• <i>Cyanopsitta spixii</i> (Wagler, 1832) - Ararinha-azul	Mid-term and final	Biodiversity in situ Monitoring Reports
	• <i>Anodorhynchus leari</i> Bonaparte, 1856 - Arara-azul-de-lear	Mid-term and final	Biodiversity in situ Monitoring Reports
	Pampa:		
	• <i>Leopardus colocolo</i> (Molina, 1782) - Gato-dos-pampas	Mid-term and final	Biodiversity in situ Monitoring Reports
	• <i>Gubernatrix cristata</i> (Vieillot, 1817) - Cardeal-	Mid-term and final	Biodiversity in situ Monitoring Reports

	amarelo		
	Pantanal		
	<ul style="list-style-type: none"> <li>• <i>Blastocerus dichotomus</i> (Illiger, 1815) - Cervo-do-pantanal</li> </ul>	Mid-term and final	Biodiversity in situ Monitoring Reports
	<ul style="list-style-type: none"> <li>• <i>Panthera onca</i> (Linnaeus, 1758) - Onça-pintada</li> </ul>	Mid-term and final	Biodiversity in situ Monitoring Reports
Reduced CO <sub>2</sub> emissions in protected areas (CC)	<p>Estimation of volume of CO<sub>2</sub> emissions avoided through the creation of new protected areas in the three biomes.</p> <p>Measured as MtCO<sub>2</sub> equivalent</p>	Mid-term and final	<p>Annual GHG Emissions Estimates in Brazil: <a href="http://www.mct.gov.br/">http://www.mct.gov.br/</a></p> <p>Fire occurrence monitoring in Protected Areas : <a href="http://www.dpi.inpe.br/poarco/bdqueimadas/">http://www.dpi.inpe.br/poarco/bdqueimadas/</a></p>
increased habitat connectivity of native vegetation fragments within selected UCs according to Restoration Plans (surface area in process of restoration) (SFM)	Estimation in hectares of increase in surface area of fragments of vegetation in between selected PA as selected in Restoration Plans, where restoration of natural habitat is underway, thus incrementing connectivity among those fragments.	Mid-term and final	Restoration Plans Reports
<b>RESULTS:</b>			
Result 1: Increase of extension of conservation priority areas in each biome that are legally protected, with view to meeting national and internationally agreed targets.			
% of Caatinga biome that is formally protected as part of the SNUC increased.	Register of surface area (in hectares) legally designated as new PA in the Caatinga biome, calculated as a % over total Caatinga biome estimated coverage using baseline figure	Annually	CNUC/MMA - <a href="http://www.mma.gov.br/cadastro_uc">www.mma.gov.br/cadastro_uc</a>
% of Pampa biome that is formally protected as part of the SNUC increased.	Register of surface area (in hectares) legally designated as new PA in the Pampa biome,	Annually	CNUC/MMA - <a href="http://www.mma.gov.br/cadastro_uc">www.mma.gov.br/cadastro_uc</a>

	calculated as a % over total Pampa biome estimated coverage using baseline figure		
% of Pantanal biome that is formally protected as part of the SNUC increased.	Register of surface area (in hectares) legally designated as new PA in the Pantanal biome, calculated as a % over total Pantanal biome estimated coverage using baseline figure	Annually	CNUC/MMA - <a href="http://www.mma.gov.br/cadastro_uc">www.mma.gov.br/cadastro_uc</a>
Result 2: Improved effectiveness of conservation of biodiversity, ecosystem services and endangered species of flora and fauna in existing protected areas and productive landscapes.			
Mean management effectiveness scores (as measured by BD-TT) for priority PA	Mean score of BD Tracking Tool of all PA included in component 2	Annually	TT Annual Reports
Number of PA with revenue sources identified	Number of PA with financial plans elaborated	Annually	Financial Sustainability Plans
Result 3: Increased area under sustainable management practices			
Total area (within and outside protected areas) that is managed in accordance to biome-appropriate management practices (e.g.: fire, grazing, restoration)	Total project intervention areas (in hectares) adopting biome-appropriate management practices (Subcomponents 2.2, 2.3 e Component 3)	Annually	Project Semiannual Progress Reports
Result 4: Effective National Action Plans (PAN) for three biomes adopted by main institutional actors			
Territorial PANs developed and under implementation (at least one per biome)	PANs developed must be recognized by MMA and PANs under implementation must have a budget assigned to their planned activities	Annually	PANs approval legal acts  PANs Monitoring and Management Reports
Result 5 (Component 5): Participatory landscape management adopted in selected areas			

Effective Institutional collaboration mechanism implemented through an electronic information portal online updated	Number of participatory meetings registered in the website	Annually	Progress Reports
Number of families adopting good management practices in productive areas benefiting from business plans	<p>Census of potential project beneficiary families to be taken at the beginning of the project and that datum will become project baseline for this indicator.</p> <p>These families will be followed during project implementation through household visits, reports from PA Managers and portal mechanism)</p> <p>Adoption of promoted practices will be measured by number of families living in the area where the instrument is applicable .</p>	Semi-annually	Project Semiannual Progress Reports

### **c. Evaluation Methodology**

- 3.7 The evaluation methodology will focus on two main aspects: project management (including financial monitoring, institutional arrangement and disclosure and transparency of the project) and implementation of the technical components of the project (Component 1: Creation of New Protected Areas; Component 2: Management of Existing Protected and Adjacent Areas; Component 3: Restoration of Deteriorated Landscapes in Priority Areas and Component; Component 4: Monitoring of Flora and Fauna Extinction Risks and 5: Integration and Community Relations). The methodology for evaluation of the implementation of the technical components of the project is based on a sequential process that is initiated with the definition and estimation of a baseline for each project indicator and the assessment of changes in such baseline as a result of project interventions.

- 3.8 The evaluation will assess whether the project implementation strategy was appropriate; whether the project was effective; and finally whether the project was efficient. Key questions to be addressed include:
- 3.9 Project implementation strategy: a) Is the protected area based conservation strategy successful? b) Is the project design, which provides for the creation and implementation of protected areas, deemed appropriate? Is the project's logic being adequately followed by government agencies responsible for its implementation? c) Is the institutional arrangement contributing to the integration with the communities referred to in Component 5? Is there social support for the project? How can local communities contribute more effectively to achieving the project's objectives and targets? e) Is the budget for each component of the project in accordance with the budget amount originally proposed?
- 3.10 Project effectiveness: a) Is the project attaining its targets? What other goals would be important to achieve the project's main and specific objectives? b) Protected areas created or supported by the Project are strategic to the conservation of biodiversity? Is the project prioritizing the restoration of critical ecosystems in supported biomes? Are the fauna and flora monitoring plans focusing on species representative of biodiversity? c) To what extent is the project internalized by the government? Is the project well coordinated with the other government activities and programs at the federal and states level? d) Have the activities undertaken by the project avoided GHG emissions? Are the project's activities able to promote positive and substantial changes in national GHG emissions? e) Is the current financing structure appropriate? Are the partners fulfilling their commitments?
- 3.11 Project implementation efficiency: a) Are the actions being implemented achieving the appropriate balance between cost, speed and readiness? b) Are the management tools in place and information flows adequate? c) Is the financial arrangement and the use of resources adequate? d) Are there adequate tools to control the use of resources according to the various levels of approval and supervision? d) Are the teams responsible for the implementation of the project sufficient and trained? e) Are the procedures and formalities between partners and within each institution efficient and transparent? f) Are the planning processes, existing evaluation and monitoring consistent with the level of complexity of the project?
- 3.12 Project monitoring and evaluation strategies will seek to ensure that incremental progress is achieved, contributing to the attainment of the project targets.

- 3.13 The information contained in the mid-term and final evaluation reports will be used as inputs for the preparation of the Project Completion Report (PCR) to be prepared by the Bank.
- 3.14 The evaluation reports, both interim and final, will be made publically available by FUNBIO within 30 days of the Bank approving the corresponding final report, submission of which is governed by the Grant Contract.

**d. Evaluation Coordination, Work Plan and Budget**

- 3.15 The mid-term evaluation and impact assessment will be carried out by an independent consultant or consultants financed with program resources. The Bank will support FUNBIO in defining the terms of reference, and in analyzing the implications derived from the results of the evaluations.

**Table 5**  
**Evaluation Work Plan**

Key Monitoring Activities/Products per Activity	Year 1				Year 2				Year 3				Year 4				Year 5				Responsible	Cost (Currency) US\$	Funding
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4			
Initial Evaluation workshops (2)	x																				FUNBIO, MMA, IADB, Operating Units	30.000	GEF
Mid-term Evaluation											x	x									FUNBIO, MMA, Operating Units, IADB, External Consultants	35.000	GEF
Final Evaluation																			x	x	FUNBIO, MMA, Operating Units, IADB, External Consultants	35.000	GEF
Mid-Term and Final Evaluation workshops (2)												x							x		FUNBIO, MMA, IADB, Operating Units, External Consultants	30.000	GEF
<b>Total Cost:</b>																					US\$130.000		



## **IV. METHODOLOGY OF THE IMPACT ASSESSMENT**

### **a. Introduction**

- 4.1 Changes in land cover (biophysical attributes of the earth's surface) and land use (human purpose applied to these attributes) are among the most important human alterations of the Earth's land surface (Turner et al., 1990; Lambin et al., 1999). Species extinctions over the last 500 years have primarily been driven by human actions, with the last 50 years experiencing the most rapid and extensive ecosystem changes during any period of human activity (Hassan, et al., 2003). A global study in 2003 estimated that undisturbed (or wilderness) areas represented only 46% of the earth's land surface (Mittermeier, et al., 2003). Forests covered about 50% of the earth's land area 8,000 years ago, as opposed to 30% today. Agriculture has expanded into forests, savannas, and steppes in all parts of the world to meet the demand for food and fiber.
- 4.2 As a response to this extreme land perturbations, in the last few decades the number of protected areas (PAs) established to conserve natural landscapes around the world has significantly increased. In fact, natural reserves or PAs such as national parks, forest or biological reserves have long been the most common approach to forest conservation and are a keystone of global strategies for biological conservation (Pfaff et al., 2009). The Convention on Biological Diversity in 2002 committed Parties to achieve a 'significant reduction of the current rate of biodiversity loss at the global, regional and national level' by 2010. Over this period, there have been clear increases in conservation efforts; 87% of countries have developed national biodiversity strategies and action plans, and areas designated as protected now number nearly 133,000, covering 12% of the terrestrial surface. In the context of less developed countries, not only the demand of land for conservation has increased, but also the land demand for other activities (e.g. agriculture and urban expansion) (Robalino, 2007).
- 4.3 At the global level future PAs growth is unlikely to even double the extent of the current global PA network or reserve system. Therefore, new investments in PAs will need to be efficient mainly based upon sophisticated conservation planning tools. Yet, promoting efficiency in new PAs investments may be problematic given that many current PAs were not created with a systematic eye to achieving conservation priorities (Naughton-Treves et al., 2005). Therefore, to inform any new investments, we not only need to understand where the past history of PAs has

placed protection to date, but also we need to understand how effective these conservation investments to achieve the conservation goal have been.

- 4.4 In order to assess PAs conservation effectiveness, an obvious question is whether PAs work to achieve their conservation goal. To answer this question, managers of PAs need measurements of conservation effectiveness in ways that are scientifically sound, practical, and comparable among PAs over time (Parrish, et al., 2003), especially because human population continues to mine the natural capital of Earth to support its growth, but the impact of conservation policy instruments is not widely understood in either public or policy spheres. The Millennium Ecosystem Assessment (MEA), the first truly global effort to provide a state-of-the-art scientific appraisal of the condition and trends in the world's ecosystems and the services they provide concluded in 2005 that few well-designed empirical analyses assess even the most common biodiversity conservation measures. Miteva et al. (2012) reviewed and confirmed the MEA claim that credible evaluations of common conservation instruments continue to be rare.
- 4.5 Answering a question like “What is the impact of PAs on avoided land-use and land-cover change (LULCC)?” is complicated because avoided LULCC is not directly measurable. Moreover, most evaluations rely on indirect estimates based on comparisons between protected and unprotected areas, and such methods can easily be biased when protection is not randomly assigned but rather is determined by characteristics that also affect LULCC (e.g., land productivity and accessibility) (Andam, et al., 2008; Joppa and Pfaff, 2010). In most countries, PAs are not randomly distributed across the landscape. While there are often good reasons for this, if the resulting distribution means that PAs are biased to favor areas of lower threat of deforestation then it also indicates that most previously used methods will overestimate the impact of protection on reducing LULCC (Joppa and Pfaff, 2010). Few researchers have conducted empirical studies to test whether parks are effective conservation tools. However, failure of most previous assessments to consider and explicitly control for the landscape characteristics within PAs can significantly bias their conclusions. Notable exceptions include studies conducted by Andam et al. (2008), Pfaff et al. (2009), Sims (2010) and Cuenca et al. (2016).
- 4.6 For the purpose of this consultancy work, the proposed impact evaluation method will be based on a conceptual framework to study the causal impacts of PAs that shows how impact estimates can be biased if not controlling for the process of protection assignment. This proposed methodology will be able to estimate causal impacts on a set of proposed outcome variables.

## **b. Conceptual framework: PAs and LULCC**

- 4.7 PAs are, and will remain, the cornerstone of global conservation efforts (Hansen and Defries, 2007). An increasing human population and standard of living, and demand for multiple ecosystem services, will intensify competition for the land inside and outside PAs. Following Robalino (2007) and Pfaff et al. (2009), Figure 1 presents a framework for considering PAs' impacts on LULCC. Rents are determined by opportunity costs of keeping land in forest and forest land is ordered according to the rent it provides, from lowest to highest. Where land rents are greater than zero, the land will be deforested in the absence of protection. Where rents are negative, the land will remain in forest even without any legal protection. Thus in the absence of protection, LULCC will take place only above  $XN$  in Figure 1.
- 4.8 Following Figure 1, PAs can lower clearing only within the interval above  $XN$ . Thus, a PA's impact depends on the fraction of its land that is in that interval. If that fraction is one, then every parcel that is protected represents avoided LULCC (Pfaff et al., 2009). If we consider PAs impact on avoided deforestation, PAs may remain forested due to the protection itself (i.e. *de jure* protection) or because the landscape characteristics of the protected lands discourage LULCC (i.e. *de facto* protection). In the latter case, protection may have no impact at all. The primary question PAs administrators should ask is whether the conservation scheme has a sufficiently large "additionality" which is the difference in conservation between the with-PAs scenario and the without-PAs baseline [22].
- 4.9 To illustrate how PAs may affect LULCC, the standard von Thünen style model that represents Figure 1 shows how land-use choices are driven by the returns to different uses. In this basic von Thünen approach, land is abundant and homogeneous and the limit on LULCC is cost-related to accessibility as measured by distance from a center. Although very simple, this type of framework captures several of the key stylized facts of LULCC, and therefore PAs additionality will depend on where protection is located across the land. However, at the end the impact of PAs is an empirical question that requires rigorous empirical evidence to be answered.

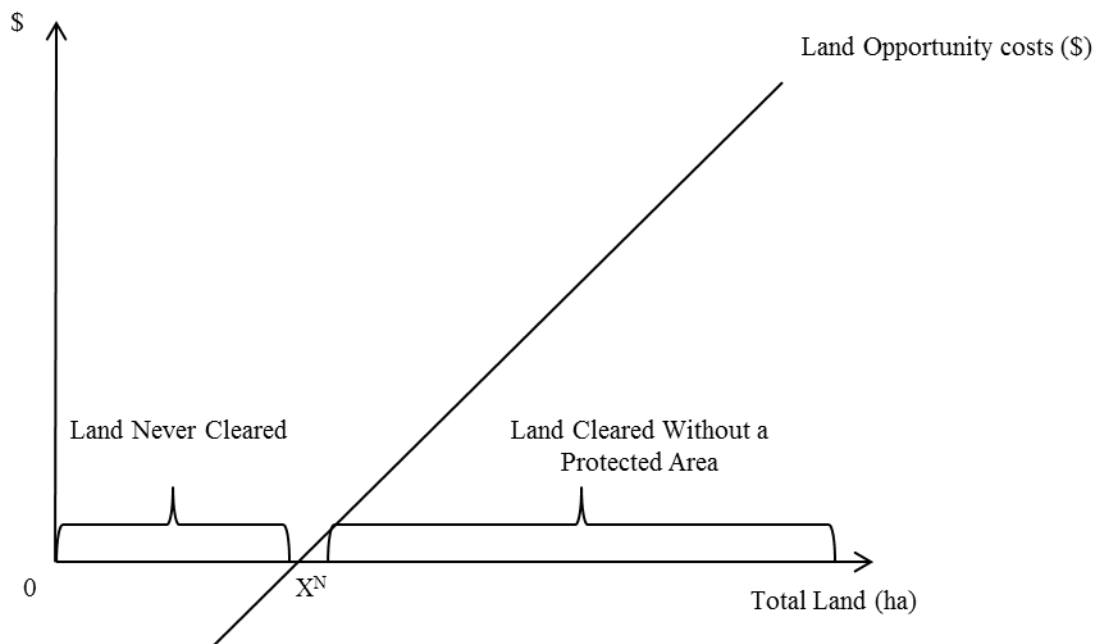


Figure 4. Conceptual Framework to study causal impacts of PAs

#### c. Evaluation question and outcomes

- 4.10 Main questions to be posed by the Impact Evaluation include: (i) have target threatened species achieved the levels of increase in population numbers that were predicted by the project? If yes, have project activities shown to be directly or indirectly responsible for that result? If not, what have been the factors affecting this result?; (ii) are there objective measurements available to describe possible changes in levels of emissions directly or indirectly associated to project outcomes in terms on increased surface area under protection, reduction in fire events, and expansion of sustainable management practices in forest and non forest areas within the three biomes targeted by the project? If not, are there other experiences or sources of information that could by proxy allow attribution of emissions reduction impacts to the project?; and (iii) has fragmentation in between PA been reduced, and can that reduction be tied directly or indirectly to the project? If not, what have been factors that have had an effect on this result?

#### d. Impact Indicators

- 4.11 The impact evaluation for this project will focus on the three indicators outlined below
- (i) Impact Indicator 1: Increase in the population of 6 priority species - six target species were selected as biome specific indicators (Spix's Macaw *Cyanopsitta spixii* (Wagler, 1832);

Lear's Macaw *Anodorhynchus leari* (Bonaparte, 1856); Pampa's Cat *Leopardus colocolo* (Molina, 1782); Yellow Cardinal *Gubernatrix cristata* (Vieillot, 1817); Marsh Deer *Blastocerus dichotomus* (Illiger, 1815); Jaguar *Panthera onca* (Linnaeus, 1758)). Estimates of population size for the six target species at baseline and during and after project implementation will be obtained using species-specific abundance estimation methodologies.

- (ii) Impact Indicator 2. CC Reduced CO2 emissions derived from the creation of new protected areas, good fire management practices and restoration of selected degraded landscapes – assessment of this indicator will be based on project monitoring data and secondary data presenting official estimates of GHG emissions in Brazil; in addition the occurrence of fires in PAs will be evaluated, utilizing official data from INPE (<http://www.dpi.inpe.br/proarco/bdqueimadas/Reporting Results>).
- (iii) Impact Indicator 3: increased habitat connectivity of forest fragments within selected UCs according to Restoration Plans (surface area re-connected) – assessment of this indicator will be carried out based on the Restoration Plans to be developed under Component 3.

#### **e. Evaluation methods**

- 4.12 The evaluation methodology is based on a sequential process that is initiated with the definition and estimation of a baseline for each project indicator and the assessment of changes in such baseline as a result of project interventions. Project monitoring and evaluation strategies will seek to ensure that incremental progress is achieved, contributing to the attainment of the project targets. Evaluation of the project's contributions towards the achievement of the desired impacts will include the following measurements:

#### **f. Data and sample size**

- 4.13 To be determined for each biome and for each expected impact.

#### **g. Work Plan and Budget**

- 4.14 Table 6 contains the detailed work plan, timeframe, respective responsible and budget for each activity.

**Table 6**  
**Impact assessment Work Plan and budget**

Key IA Activities/Products per Activity	Year 1				Year 2				Year 3				Year 4				Year 5				Responsible	Cost (Currency) US\$	Funding
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4			
Impact assessment data collection and analysis																			x	x	FUNBIO, MMA, ICMBio, IADB, External Consultants	100.000	GEF
<b>Total Cost:</b>																					US\$ 100.000		

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