



# PROJECT IDENTIFICATION FORM (PIF)

**PROJECT TYPE: Full-sized Project**

**TYPE OF TRUST FUND: GEF Trust Fund**

## PART I: PROJECT IDENTIFICATION

Project Title:	A landscape approach to the conservation of threatened mountain ecosystems		
Country(ies):	Cuba	GEF Project ID:	TBD
GEF Agency(ies):	UNDP	GEF Agency Project ID:	4716
Other Executing Partner(s):	Ministry of Science, Technology and Environment (CITMA) and Ministry of Agriculture (MINAG)	Submission Date:	
GEF Focal Area (s):	Biodiversity	Project Duration (Months):	96
Name of parent program (if applicable): For SFM/REDD+ <input type="checkbox"/>	N/A	Agency Fee (\$):	748,194

### A. FOCAL AREA STRATEGY FRAMEWORK:

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Co-financing (\$)
BD-1: Improve Sustainability of Protected Area Systems	<b>Outcome 1.1:</b> Improved management effectiveness of existing and new protected areas (PAs)	<b>Output 1.</b> New or strengthened protected areas (PAs) (17) and coverage (115,000 hectares) of unprotected ecosystems <b>Output 2.</b> New or strengthened PAs (17) and coverage (357,055 hectares) of unprotected threatened species (ca.450) <b>Output 3.</b> Sustainable financing plans (4).	GEFTF	4,275,389	23,397,502
BD-2: Mainstream Biodiversity Conservation and Sustainable Use into Production Landscapes, Seascapes and Sectors	<b>Outcome 2.1:</b> Increase in sustainably managed landscapes and seascapes that integrate biodiversity conservation.	<b>Output 1:</b> Policies and regulatory frameworks (3) for production sectors. <b>Output 2:</b> National and subnational land-use plans (4) that incorporate biodiversity and ecosystem services valuation.	GEFTF	1,425,129	7,594,694
	<b>Outcome 2.2:</b> Measures to conserve and sustainably use biodiversity incorporated in policy and regulatory frameworks.	<b>Output 3:</b> Certified production landscapes and seascapes (6000hectares).	GEFTF	1,425,129	7,901,404
Sub-Total				7,125,647	38,893,600
Project Management Cost			GEFTF	356,297	1,900,000
<b>Total Project Cost</b>				<b>7,481,944</b>	<b>40,793,600</b>

### B. PROJECT FRAMEWORK:

Project Objective: Biodiversity effectively buffered from current and future threats across mountain landscapes, from the foothills to the mountain ridges						
Project Component	Grant type	Expected Outcomes	Expected Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Co-financing (\$)
Component 1: Systemic landscape management framework	TA	<b>Effective cross sectoral governance</b> of 4 threatened mountain landscapes (Guaniguanico 374km <sup>2</sup> , Guamuhaya 195km <sup>2</sup> , Bamburanao 78km <sup>2</sup> , Nipe-Sagua-Baracoa 792km <sup>2</sup> ) protects major habitat blocks, and biodiversity patterns and process, resulting in: - <b>No net loss of major habitats</b> (e.g. mesophyllous forest, Mogotes vegetation complex, <i>Pinus caribaea</i> , <i>P. tropicalis</i> and <i>P. cubensis</i> forests, xerophytic scrub, white sand	<b>1.1 Decision making tools for planning and enforcement</b> to ensure that infrastructure, productive/extractive activities and habitat clearance are not located in ecologically sensitive areas, including: - <b>Strategic Environmental Assessment</b> of the impacts of programmes of infrastructural or productive development - Updated and accurate <b>maps, database, integrated inter-institutional Geographical Information Systems</b> and documents making information on the		1,425,129	7,901,404

		<p>savannas, montane rainforest, microphyllous evergreen vegetation and cloud forests)</p> <ul style="list-style-type: none"> <li>- <b>Increases in ecosystem connectivity</b>, as indicated by increases in connectivity, integrity and resilience indices and reduction in distance between major habitat blocks (indices to be developed and baseline values to be determined during the PPG phase)</li> </ul> <p><b>Capacities to plan, budget and enforce landscape management</b> across institutions (national, including IES, IIAF, CIGEA and CNAP and local Government) sustain conservation outcomes, resulting in:</p> <ul style="list-style-type: none"> <li>- <b>Environmental land use plans</b> covering 639,200ha of priority watersheds and 675,000ha of forest estate with <b>inventory and planning instruments</b> in place</li> <li>- <b>Increased budget allocations</b> to ecosystem management</li> <li>- At least 20% <b>increase in Capacity Scorecard ratings</b> in these target institutions (baseline to be established during PPG)</li> </ul> <p><b>Direct reduction in threats</b> from infrastructure and productive and extractive activities, resulting in:</p> <ul style="list-style-type: none"> <li>- <b>Stability or increase in populations</b> of key target and indicator species (to be determined during the PPG phase)</li> </ul>	<p>biological importance, fragility and productive potential of the target areas available as supports to planning decision-making at different levels.</p> <ul style="list-style-type: none"> <li>- <b>Landscape-level land use plans</b>: applied by CITMA, covering the whole of the target areas, defining priority areas for conservation and connectivity and the range of specific uses and management regimes appropriate to different site types, based on reliable, standardized and uniform data.</li> <li>- <b>Community-based environmental plans</b> based on participatory analyses of resource management options and zoning.</li> <li>- <b>Proscriptions of land uses</b> in sensitive areas.</li> <li>- <b>System for early warning of fires and for planning of fire management and control</b>, including characterization of land units according to fire risk (determined by factors such as vegetation type and proximity to agricultural areas, settlements and roads), vulnerability and ecological responses to fire, and definition of corresponding response strategies in the case of fire outbreaks</li> </ul> <p>1.2 <b>Extension support system</b>, to guide land holders/ users to adapt production practices:</p> <ul style="list-style-type: none"> <li>- <b>Integrated training modules for extension agents</b>, resulting in more effective and participatory delivery of extension services and the incorporation into extension messages of environmental issues including sustainability, resilience, production of ecosystem goods and services and the compatibility of productive practices with BD conservation.</li> </ul> <p>1.3 <b>Cross sectoral institutional platform</b> for planning, implementation, enforcement and monitoring</p> <p>1.4 <b>Local participation mechanisms</b> (popular councils) with increased capacities in relation to the design and implementation of plans and programmes on the conservation and sustainable use of BD and the solution of priority environmental programmes</p>			
<p><b>Component 2:</b> Management effectiveness for core PAs and their areas of influence in threatened mountain ecosystems</p>	TA	<p><b>Improved PA management effectiveness</b> (measured by METT), resulting in:</p> <ul style="list-style-type: none"> <li>- <b>Maintained and improved intactness of core refugia</b> in 17 sites covering 3,648km<sup>2</sup> ha, representative of habitats including mesophyllous forest, Mogotes vegetation complex, <i>Pinus caribaea</i>, <i>P. tropicalis</i> and <i>P. cubensis</i> forests, xerophytic scrub, white sand savannas, montane rainforest, microphyllous evergreen vegetation and cloud forests.</li> <li>- <b>Improvement in conservation status of critically endangered species</b> in PAs (e.g. <i>Abarema maestrensis</i>, <i>Accipiter gundlachi</i>,</li> </ul>	<p>2.1 <b>Institutional capabilities for PA management functions</b>, including:</p> <ul style="list-style-type: none"> <li>- Development and/or renewal of management plans</li> <li>- Staff deployment</li> <li>- Funding allocation and financial planning</li> <li>- Monitoring, surveillance and enforcement, Reporting</li> </ul> <p>2.2 <b>Declaration of connectivity zones linking protected areas</b>, backed up by:</p> <ul style="list-style-type: none"> <li>- Management and zoning plans which provide for connectivity</li> <li>- Installation of infrastructure and equipment required for effective management</li> </ul>		2,550,259	15,496,098

		<p><i>Aralia rex, Aratinga euops, Bombacopsis cubensis, Eleutherodactylus symingtoni, Hemithrinax ekmaniana, Magnolia cubensis, Microcycas callocoma, Protium maestrensis, Pterodroma hasitata and Tyrannus cubensis</i>)</p> <ul style="list-style-type: none"> <li>- <b>Increased effectiveness of enforcement</b> (prosecution per unit effort) – baseline and target values to be determined during PPG phase</li> </ul> <p><b>Expansion of connectivity zones covering 115,000ha</b>, resulting in:</p> <ul style="list-style-type: none"> <li>- Improved connectivity between 352,874ha of existing PAs</li> </ul>				
<p><b>Component 3:</b> Conservation compatible production systems in threatened mountain ecosystems and conservation corridors leading down to the coast</p>	TA	<p><b>Direct reduction in pressure on natural ecosystems</b> in sensitive areas, manifest in</p> <ul style="list-style-type: none"> <li>- <b>Increase in forest cover in areas affected by fragmentation</b>, from 675,378ha at present to include an additional 98,000ha (40,000ha of water protection strips and 58,000ha of rehabilitated connectivity zones)</li> <li>- <b>Reduction in sediment load</b> and improvement of reef health in marine areas adjoining target areas (baseline and targets tbd)</li> <li>- <b>25% increase in indices of water quality and flow</b> (incorporating variables of BOD, sediment load, aquatic invertebrate indicator species and flow variability) in major water courses in the target areas (variables and precise targets tbd)</li> <li>- <b>Reduction in frequency and intensity of runaway wildfires</b> in target areas (baseline and targets tbd)</li> </ul> <p><b>Increased adoption of BD-friendly production systems</b>, as indicated by:</p> <ul style="list-style-type: none"> <li>- <b>Application of agroforestry systems</b> and silvo-pastoral systems over 138,975ha and 38,250ha respectively, resulting in <b>reduced soil erosion rates</b> in areas under improved management (from 30t/ha/year to 10t/ha/year) and increased <b>biological connectivity</b> (indices and targets to be defined during PPG phase)</li> <li>- Maintenance of the <b>proportion of coffee that is managed under shade</b> in the project areas at 30%, contributing to biological connectivity</li> <li>- Increase in the proportion of <b>pig production and coffee depulping units using clean technology</b> for management of organic wastes, to 30%, thereby reducing contamination of water courses</li> </ul>	<p><b>3.1 Institutional capabilities for technology development and transfer</b>, enabling farmers to implement resource management practices that generate BD benefits ecosystem- and landscape-wide, including:</p> <ul style="list-style-type: none"> <li>- <b>Integrated training and extension modules for producers and decision-makers applied</b> in cooperatives and other producer organizations, focusing on BD-friendly production practices and environmental considerations, to be delivered by the Soils Institute and the Institute of Agroforestry Research.</li> <li>- <b>Integrated Forest Farms</b> promoting biological connectivity in key areas and functioning as foci for the demonstration and replication of BD-friendly productive options and integrated approaches to natural resource management, with strategies for BD management, replication and training</li> <li>- <b>Demonstration farms/ production units</b> (e.g. pig production and coffee depulping units) functioning as demonstrations of options for clean production compatible with BD conservation such as biogas production and ‘ecological depulping’</li> </ul> <p><b>3.2 Institutional capabilities for ensuring compliance</b> with the provisions of environmental regulations and land use plans, including:</p> <ul style="list-style-type: none"> <li>- <b>Remote sensing and Geographical Information Systems applied to target areas</b> to detect unauthorized changes of land use</li> <li>- <b>Platforms for collaboration in monitoring and enforcement</b>, involving Government institutions and community-based organizations</li> </ul> <p><b>3.3 Integrated fire management applied to the target areas</b> including:</p> <ul style="list-style-type: none"> <li>- <b>Prescribed burning</b>, supported by technical training and equipment</li> <li>- <b>Fire readiness</b> across land holdings, backed up by farm-level plans and technical support</li> </ul>		3,150,259	15,496,098
<b>Sub-Total</b>					7,125,647	38,893,600
Project Management Cost			GEFTF		356,297	1,900,000

<b>Total Project Costs</b>		7,481,944	40,793,600
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### C. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME IF AVAILABLE, (\$)

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount (\$)
National Government	Ministry of Agriculture (MINAG)	Grant	17,900,000
National Government	Ministry of Science, Technology and Environment (CITMA)	Grant	22,000,000
GEF Agency	UNEP	Grant	93,600
GEF Agency	UNDP	Grant	800,000
<b>Total Co-financing</b>			<b>40,793,600</b>

### D. GEF/LDCF/SCCF RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY

GEF Agency	Type of Trust Fund	Focal Area	Country Name/Global	Grant Amount (a)	Agency Fee (b)	Total c=a+b
UNDP	GEF TF	BD	Cuba	7,481,944	748,194	8,230,138
<b>Total Grant Resources</b>				7,481,944	748,194	8,230,138

## PART II: PROJECT JUSTIFICATION

### A. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

#### A.1. THE GEF FOCAL AREA STRATEGIES:

- This project will make a paradigm shift in biodiversity conservation and protected area management in Cuba, from a site based approach to a landscape approach that integrates PAs into the surrounding areas. This is necessary in order to protect core refugia for biodiversity, while addressing fragmentation from production practices in the landscape as a whole, and countering threats such as fire and pollution which have their origins in the practices employed in the production landscape. Hence, the strategic landscape approach supported through this project will constitute an innovative approach and contribute to strengthen the management effectiveness of the PA system. The project will focus on threatened mountain ecosystems located in the principal mountain ranges of the country, which are legally considered as Special Sustainable Development Regions (REDS) and managed by Mountain Organisms (multi-institutional entities directed by a Tripartite Commission composed by the Ministry of Agriculture MINAG, the Ministry of Science, Technology and Environment CITMA, and the Ministry of the Armed Forces (MINFAR). It will work across altitudinal gradients reaching from mountain ridges to foothills in order to maintain functional connectivity. The project will take a combined BD SO 1 and SO 2 approach, to strengthen the management of PAs, expand PA coverage and ensure the compatibility of PA management with the conservation of BD in production sectors and landscapes.
- The project will contribute to the following Aichi Biodiversity Targets<sup>1</sup>:
  - *Strategic Goal A (address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society):* Target 4 on the implementation of plans for sustainable production and consumption.
  - *Strategic Goal B (reduce the direct pressures on biodiversity and promote sustainable use):* Target 5 on reducing the rates of loss, degradation and fragmentation of natural habitats; Target 7 on sustainable management of agriculture and forestry, ensuring conservation of biodiversity; Target 8 on reduction of pollution; Target 9 on invasive alien species; and Target 10 on anthropogenic pressures on coral reefs.
  - *Strategic Goal C (improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity):* Target 11 on conservation of terrestrial and inland waters through area-based conservation measures, and Target 12 on improving the conservation status of threatened species and preventing extinctions.
  - *Strategic Goal D (enhance the benefits to all from biodiversity and ecosystem services):* Target 14 on restoring and safeguarding ecosystems that provide essential services, and Target 15 on enhancing ecosystem resilience and the contribution of biodiversity to carbon stocks.

#### A.2. NATIONAL STRATEGIES AND PLANS OR REPORTS AND ASSESSMENTS UNDER RELEVANT CONVENTIONS:

- Cuba ratified the United Nations Convention on Biological Diversity on 3<sup>rd</sup> August 1994. This project is consistent with the following national priorities and plans: the National Environment Strategy (NES), the principles of which include the application of an ecosystem-based approach to environmental management, with particular emphasis on the relations between watershed management and coastal zones. Cuba is currently executing the National Biodiversity Strategy and Action Plan (NBSAP) 2006-2010 and is in the process of developing an updated NBSAP for the period 2011-2015. Both

<sup>1</sup> <http://www.cbd.int/sp/targets/>

the NES and the NBSAP propose the establishment of action plans for the conservation and sustainable use of priority ecosystems, the development of methodologies and instruments for the evaluation and economic valuation of BD, the integrated management of BD, the implementation of the National System of Environmental Monitoring, the filling in of information gaps, and the improvement of environmental education and communication regarding BD, all of which are areas that will be addressed in this project.

- The project will also contribute to the goals of a number of programmes of the Ministry of Agriculture (MINAG), including the National Forestry Programme, which will continue updating forestry inventory and planning to cover 29.4% of the country's forested land by 2015, and the Turquino Plan, which is conceived as a Programme for the Sustainable Development of Mountains and aims to promote sustainable use practices, the development and protection of forests, soil conservation, the recycling of wastes and the application of agrosilvopastoral practices in order to increase food production and achieve the sustainability of local communities. The project will help to implement actions of the Turquino Plan and strengthen the component of biodiversity and actions compatible with conservation, with a landscape focus.

## B. PROJECT OVERVIEW

### B.1. DESCRIBE THE BASELINE PROJECT AND THE PROBLEM THAT IT SEEKS TO ADDRESS:

- With a total area of 109,886km<sup>2</sup>, Cuba is the largest and biologically richest archipelago in the Caribbean basin. The country contains a wide diversity of ecosystems, ranging from semideserts and dry forests to tropical rainforest. Cuba is classified as a biogeographical province and contains the global centres of diversity of a number of plant and animal taxa. 997 species of vascular flora in Cuba (around 14% of the total) are listed as Critically Endangered (CR), Endangered (EN) or Vulnerable (VU) on the IUCN Red List; there are 1089 known endemic vascular plant species of which 817 (75%) are Endangered; and there are 21 mono-specific genera. There are an estimated 11,690 taxa of fauna, including 4,825 endemics.
- Mountains and foothills account for around 35% of the national territory. The country's five mountain ranges are critical repositories of globally significant biodiversity, in their role as refuges whose isolation has led to the formation of large numbers of endemic species<sup>2</sup>. Rodríguez et al 2010, for example, has shown the importance of the mountain ranges of eastern Cuba (corresponding to the Sierra Maestra and Nipe-Sagua-Baracoa areas) as refugia for the *Eleutherodactylus auriculatus* species group of frogs, facilitating their diversification (four out of the five species in this group are endemic to these eastern mountains – these species are very sensitive to microclimatic changes and are therefore valuable indicators of climate change). Cuban forests are extremely important wintering areas for Neotropical species, equal to the richest sites that have been surveyed elsewhere in the Caribbean and Mexico. The Turquino-Bayamesa Important Bird Area, for example, is important for migrants such as *Dendroica caerulescens*, *D. fusca*, *D. coronata*, *D. magnolia*, *D. tigrina*, *Mniotilta varia*, *Setophaga ruticilla*, *Parula americana* and *Seiurus motacilla*<sup>3</sup>.
- The project will promote a landscape approach to the conservation of threatened ecosystems that will benefit all the mountain ranges of the country. It will specifically promote field interventions in 4 landscapes although the final number of sites will be confirmed during the PPG phase : 1) the Guaniguanico Massif in the extreme west of the country; 2) the Guamuhaya Massif and 3) the Bamburanao Mountains in the centre; and 4) the Nipe-Sagua-Baracoa Range in the east. These areas have been identified as containing particularly high levels of biodiversity of global importance, generating environmental goods and services of national importance, and being vulnerable to a number of threats of both anthropic and natural origin. Each of these areas contains a wide diversity of ecosystems, stretching from the coast up to the summits of the country's most important mountain ranges. Between them, these areas cover around 13% of the national territory, span 8 provinces, and are home to around 878,842 people or approximately 8% of the national population. They also include around 70% of the country's endemic species (the most important areas in this regard being the Nipe Sagua Baracoa range), 500,035ha of natural forest cover (around 20,5% of the national total) and 175,928 ha of forest plantations (around 25,2% of the national total), and they coincide with six of the nine most important water catchments in the country, covering a total of 9,225km<sup>2</sup>. These areas are also of major importance for coffee production, which constitutes the mainstay of the local economy.

8.

**Table 1. Details of project target landscapes**

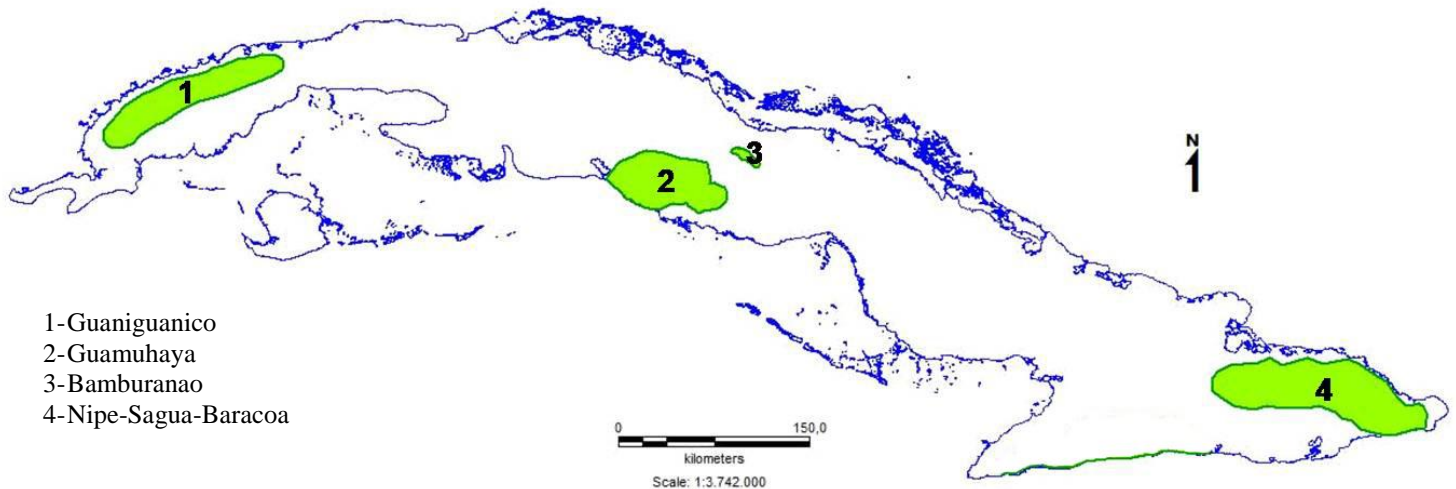
Mountainous massifs	Area (km <sup>2</sup> )	Protected areas		Globally important biodiversity
		Number	Area (km <sup>2</sup> )	
1. Guaniguanico	4,460	6	539	<b>Ecosystems:</b> Evergreen and semideciduous mesophyllous forest, Mogotes vegetation complex (featuring the endemic <i>Bombacopsis cubensis</i> ), <i>Pinus caribaea</i>

<sup>2</sup> Biogeographic origin and radiation of Cuban *Eleutherodactylus* frogs of the *auriculatus* species group, inferred from mitochondrial and nuclear gene sequences. Rodríguez A, Vences M, Nevado B, Machordom A and Verheyen E (2010), *Molecular Phylogenetics and Evolution* 54 (2010) 179–186

<sup>3</sup> <http://www.birdlife.org/datazone/sitefactsheet.php?id=19802>

Mountainous massifs	Area (km <sup>2</sup> )	Protected areas		Globally important biodiversity
		Number	Area (km <sup>2</sup> )	
				forests, xerophytic thorn scrub, <i>P. tropicalis</i> forests on white sands, and white sand savannas. <b>Globally important species:</b> 1,098 known endemic species and 181 strict endemics, including the IUCN CR cycad <i>Microcycas callocoma</i> (estimated total population around 600 individuals), and the CR amphibian <i>Eleutherodactylus symingtoni</i> (estimated total population around 250 individuals).
2. Guamahaya	6,300	5	321	<b>Ecosystems:</b> Montane rainforest, microphyllous evergreen vegetation, cloud forest, xerophytic coastal scrub, Mogotes vegetation complex. <b>Globally important species:</b> 325 endemic and 83 strict endemic flora species, 61 endemic vertebrate species and 249 endemic invertebrates. Bird species include <i>Accipiter gundlachi</i> (EN) and <i>Geotrygon caniceps</i> and <i>Aratinga euops</i> (both VU).
3. Bamburanao	782	2	60	<b>Ecosystems:</b> Fragments of mesophyllous semi-deciduous forest and the Mogotes vegetation complex. <b>Globally important species:</b> Endemics including <i>Hemithrinax ekmaniana</i> and <i>Aralia rex</i> (both CR), <i>Philodendrom scaberulum</i> , <i>Comocladia platyphylla</i> , <i>Tabernaemontana amblyocarpa</i> , <i>Cassia insularis</i> , <i>Dyospiros halesioides</i> , <i>Jacquinia aculeata</i> , <i>Ateleia apetala</i> , <i>Hebestigma cubense</i> .
4. Nipe-Sagua-Baracoa	29,460	5	2325	<b>Ecosystems:</b> Tropical rainforest, <i>P. cubensis</i> pine forest and sub-thorny xerophytic scrub. <b>Globally important species:</b> Greatest reptile diversity in the country and greatest floristic richness of the insular Caribbean, with 1,951 endemic and 479 strict endemic species. 95 endemic vertebrate species and 189 endemic invertebrates.

#### Location of target areas



9. The biodiversity of these areas, and their capacity to generate environmental services, are subject to a wide range of threats. These threats are likely to be non-static in nature and magnitude in coming years, due to the probable, but uncertain, changes that are expected in the climatic, demographic, economic and productive conditions of the target areas. The target mountain landscapes are likely to be particularly vulnerable to such changes due to their inherently fragile nature, which is a function of their steep slopes, thin soils and degraded vegetation. **Uncontrolled fires** set by farmers, in order to clear vegetation and clear weeds and pests in pastures, lead to the degradation of the structure of ecosystems and the reduction of their value as habitat for globally important species, particularly in dry ecosystems such as the xerophytic coastal scrub of Guamahaya and the *Pinus caribaea* forests of Guaniguanico. The freshwater ecosystems of the mountain areas, and the coastal and marine ecosystems into which they drain, are subject to **contamination** from a range of sources, including organic wastes from coffee depulping plants (there are 15 such plants in the target areas), pig production units (2 in Guaniguanico and 2 in Guamahaya), sugar mills, and domestic sewage systems. The application of **inappropriate agricultural and ranching practices** in steep areas, without the application of adequate measures for soil protection, is leading to soil erosion and the generation of high levels of sediment load in watercourses, which in turn affect the health of the coral reefs in the coastal areas into which they drain (a total area of 234,426ha is affected by severe erosion, and erosion rates in cropping areas in Guamahaya are estimated at 4.3t/ha/year). These practices include the alignment of crop furrows

perpendicular to the contours, the grazing of cattle on steep and fragile slopes, the elimination of trees within fields and the degradation of streamside vegetation. These poor soil and vegetation management practices also result in reduced levels of water infiltration in mountain catchments, affecting the availability and reliability of the hydrological flows on which downstream populations depend for consumption and irrigation. Furthermore, in the Nipe-Sagua-Baracoa area **open-cast mining** has led to the destruction and fragmentation of natural ecosystems; the environmental mitigation measures taken by the mining companies (which are joint ventures between the State and foreign companies), in the form of the establishment of forest plantations, have not been adequate to restore ecological functions and connectivity in these areas.

10. These threats are compounded by changes over time in the significance of a number of natural phenomena, related to human-induced climate change. **Hurricanes and extreme rainfall events** result periodically in major peaks of erosion and run-off, with negative impacts for example on coral reefs; the loss of forest cover, particularly in upper catchments, is increasing the vulnerability of the areas to such events. Changes in temperature and rainfall regimes have direct impacts on the conservation status of natural ecosystems, modifying their ecology and geographical extent, and on specific species, with amphibians being particularly sensitive. **Drought events**, meanwhile, increase the vulnerability of natural ecosystems and forest plantations to fire; while the loss of soil organic matter due to poor soil and vegetation management is increasing the vulnerability of natural ecosystems and agricultural production systems to moisture stress during such events.
11. Cuba's National Protected Areas System (NPAS), includes 263 sites (155 terrestrial and 108 marine and coastal), encompassing approximately 22% of the national territory. The NPAS is coordinated by the National Council of Protected Areas (CNAP), a dependency of the Ministry of Science, Technology and Environment (CITMA). The CNAP is supported at the national level by a NPAS Coordinating Body, which is composed of numerous agencies<sup>4</sup>.
12. A ministerial resolution has been issued to declare large parts of each of the 4 target areas identified in Table 1 as 'Special Regions for Sustainable Development' (REDS). Each REDS is managed by a group of three institutions known in Spanish as the : *Organo de Montaña* ("Mountain Organism"): The three institutions are: CITMA, MINAG and MINFAR. These form part of the NPAS, and are defined in PA legislation<sup>5</sup> as "extensive regions where, due to the fragility of ecosystems and their economic and social importance, structural measures are to be taken at national level in pursuit of the objectives of conservation and sustainable development". The protected areas law allows for REDS to contain conventional PAs of other categories within their boundaries (this is the case in the areas targeted by this project, see Table 1), and for them to include buffer zones, depending on their specific values and objectives. The specific objectives of REDS include the following: a) to make local production practices rational and sustainable; b) to improve the conditions of life of the rural population; c) to protect soils, controlling the activities or process that cause erosion, sedimentation and other degradation processes; d) to conserve water resources; e) increasing reforestation and the use of non-timber forest products; f) to protect flora and fauna, ecosystems and landscapes, conserving biodiversity in general; g) to promote sites with historical and cultural values; h) to enable and promote environmental education and interpretation; i) to enable and promote recreation and tourism; and j) to protect coasts against processes of erosion and other factors related to global climate change.
13. The project will build upon the following **baseline** investments, with an estimated combined value of US\$ 80 million over the life of the project:
  - The Biological Diversity Programme and Environmental Protection and Sustainable Development Programme of CITMA. The areas of research that have been prioritized by these programmes are: detection and reduction of impacts, environmental monitoring and protection, biodiversity-economy/social, water resources, and endangered species.
  - The National Forestry Programme, under which the Government will continue updating forestry inventory and planning to cover 29.4% of the country's forested land by 2015, and the establishment of 872,000ha of plantations with a survival rate of at least 85%, through its National Forest Development Fund (FONADEF).
  - The Turquino Plan, which is conceived as a Programme for the Sustainable Development of Mountains, and through which CITMA will promote sustainable use practices, the development and protection of forests, soil conservation, the recycling of wastes and the application of agrosilvopastoral practices in order to increase food production and achieve the sustainability of local communities.
  - The National Programme for Soil Improvement and Conservation, through which MINAG will support the reduction of soil degradation and the rehabilitation of soils (especially in areas prioritized for water catchment and with priority crops), and the updating of the inventory of areas affected by degradation and to train farmers.

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<sup>4</sup> National Office of the Environment (DMA), the Center for Environmental Inspection (CICA), the Ministry of Science, Technology and Environment (CITMA), the National Service for the Protection of Flora and Fauna (ENPFF), the State Forest Service (SEF), the Ministry of Agriculture (MINAG), the Park Rangers Corps (CGB), the Ministry of the Interior (MININT), the National Offices of Fisheries Regulation and Inspection (ONIP and ORP), and the Ministry of Fishing.

<sup>5</sup> Decree-Law 201 (<http://www.magon.cu/websites/umass/Contenido/Legislacion/Decreto%20Ley/Decreto%20Ley%20201.pdf>)

- The EU-funded project “Environmental bases for local food security” (BASAL), which aims to reduce vulnerabilities to climate change in the agricultural sector in Cuba through the inclusion of climate change adaptation measures in local and national agricultural development plans.
14. The baseline projects are not sufficient to achieve the **long-term solution** to the threats affecting the biodiversity of priority mountainous areas in Cuba, which will involve a paradigm shift from a site based approach to a landscape- and ecosystem-based approach that integrates PAs into the surrounding areas, protecting core refugia while addressing fragmentation from production practices in the landscape as a whole, and promoting connectivity at landscape level.
  15. The following **barriers** remain to the achievement of this solution:

<p>1. Inadequate management framework for mountain ecosystems.</p>	<p>Maps, databases and geographical information systems exist covering a range of variables. Despite this, the institutions responsible for the planning and management of the natural resources in the target areas do not have access to the complete, reliable, updated and integrated information on the biophysical and social characteristics of their ecosystems that they require to carry out their mandates effectively, taking into landscape level processes, ecosystem functions and the interactions between productive, social and environmental factors. Much of the information, in the form of maps, databases and research results is dispersed between different sector institutions. The geographical coverage of some maps and databases is incomplete and the information on certain variables, such as soils and vegetation types, is in many cases obsolete. The mapping of ecosystem fragmentation carried out at national level by the Institute of Ecology and Systematics (IES) did not directly address the issue of biological connectivity, making it difficult to prioritize and plan in an objective manner the location, design and management of biological corridors. There are also some specific gaps in knowledge, for example regarding micro- and mesofauna, the population dynamics of priority species and fire ecology, which hinder the development of appropriate resource management strategies. Furthermore, the technicians in many institutions lack the technical knowledge required to allow them to use the information available to support management decisions.</p> <p>The Institute of Physical Planning has carried out a comprehensive nationwide programme of land use zoning (<i>ordenamiento territorial</i>), defining for example lands which are suitable for agricultural or forestry use on the basis of soil and topographical conditions; this zoning is legally binding. It remains, however, “broad brush” in nature and only includes a limited number of variables: to date the more detailed process of “environmental land use planning” (<i>ordenamiento ambiental</i>), developed by the Environment Agency (AMA) of Ministry of Environment (CITMA), remains to be widely applied, resulting in some cases in the sub-optimal location of productive activities in relation to environmental variables such as biodiversity and connectivity. Likewise, the IIAF has made major advances in silvicultural research, but the criteria for the selection of sites for reforestation, and the corresponding species to be established, do not as yet adequately take into account edaphic parameters such as the physical, hydrophysical and chemical properties of soils, relief and climate.</p> <p>Although diverse entities of the Government provide producers with high levels of extension support, of excellent quality, this tends to focus on principally productive issues and pays little attention to broader issues of environmental sustainability and resilience, the production of ecosystem goods and services and the compatibility of productive practices with BD conservation. This is due in part to the nature of the training that the extension agents themselves receive and in part due to the limited technical visions of the institutions for which they work. The implication of this is that producers in turn have limited awareness of the environmental implications of their productive systems or of the options that exist for modifying them.</p> <p>The relevance, effectiveness and sustainability of the application of the landscape-wide approach proposed under the project is also dependent on effective local participation: while mechanisms already exist for participation of actors at village level in decisions related to natural resource management, there is as yet little experience or technical capacity at this level in addressing broader environmental and landscape-wide issues.</p>
<p>2. Limitations in design and management effectiveness of PAs.</p>	<p>The effective conservation of biodiversity in threatened mountainous ecosystems requires that management practices in the production landscapes are complemented by core zones, with a higher protection status, that will function as refugia. The target areas include a wide diversity of PA categories, some of which permit high levels of productive activity within their boundaries and others of which entail strict protection. Although all of the PAs in the project intervention areas have management plans, developed on the basis of biophysical and socioeconomic studies, the design of the PAs (including their external boundaries and their internal zoning) and the provisions of their management plans do not necessarily take into account larger-scale considerations of connectivity and ecosystem services, and this limits their effectiveness as refugia complementing conservation efforts in the broader landscape..</p>
<p>3. Farmers do not have access to productive practices that are</p>	<p>The institutions responsible for forestry and agricultural extension under the umbrella of MINAG, such as the Institute for Agroforestry Research and the Soils Institute, have a tendency to focus predominantly on technical issues in their extension messages, failing to take adequately into account the interactions</p>



compatible with biodiversity conservation	<p>between technical, social and environmental aspects such as the impacts of agricultural production on livelihood sustainability and biodiversity, or the importance of social and biological factors in underpinning productive sustainability.</p> <p>The acceptance of the messages of these institutions at local level is further limited by the fact that they are typically developed and transmitted in a highly vertical manner, with limit levels of real participation by local people. This contrasts with the approach of CNAP, which has made major advances in promoting local participation in the planning and management of protected areas.</p> <p>Finally, capacities are limited within Government agencies for ensuring that productive sector activities are in compliance with environmental regulations and land use plans. Key areas of weakness include the monitoring of land use changes, due to limited access to tools for remote sensing and information management (GIS), and collaboration between Government institutions and community-based organizations in monitoring and enforcement.</p>
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## **B. 2. INCREMENTAL COST REASONING AND THE ASSOCIATED GLOBAL ENVIRONMENTAL BENEFITS:**

16. The activities of the project, aimed at removing these barriers, will be structured within the following three components.
17. ***Component 1: Systemic landscape management framework.*** Activities under this component will focus on making the REDS (comprising the PAs and the landscapes that surround them) operational, through the establishment of a supportive institutional framework, effective decision-making structures and mechanisms for engaging communities in sustainable natural resource management.
18. **Output 1.1: Decision making tools for planning and enforcement.** The project will ensure that natural resource management in the project areas is subject to a coherent planning framework that is guided by solid science and permits the application of an integrated landscape-wide, inter-sector and interinstitutional approach. To this end, it will support the strengthening of the information bases and information management systems of each of the collaborating institutions, where necessary updating the information that is available, and developing systems for interinstitutional collaboration that will ensure that staff of different sector institutions have access to information on the full range of variables needed to guide their planning processes in a coherent and integrated manner.
19. As a complement to the land use planning processes carried out by the Institute of Physical Planning (which has the legal prerogative for defining land use categories), the project will support the Environment Ministry CITMA in defining environmental land use plans (*planes de ordenamiento ambiental*), using methodologies that have already been tried and tested in Cuba, defining priority areas for conservation and connectivity and the range of specific uses and management regimes appropriate to different site types. Existing criteria for the spatial planning of natural resource management will be reviewed and fine tuned in order to ensure that land uses and management practices are compatible with biophysical and socioeconomic conditions at local level. The project will also support improvements to the planning of forestry and agroforestry initiatives, in order to maximize their potential to contribute to the habitat connectivity and value of the landscape, for example through review and refinement of the criteria used for the selection of sites and species used for reforestation and the definition of appropriate silvicultural prescriptions.
20. The project will support improvements to the planning of forestry and agroforestry initiatives, in order to maximize their potential to contribute to the habitat connectivity and value of the landscape, for example through review and refinement of the criteria used for the selection of sites and species used for reforestation and the definition of appropriate silvicultural prescriptions. The project will also support the realization of Strategic Environmental Assessments of the impacts of programmes of infrastructural or productive development, and the development of lasting institutional capacities to carry out SEA in the future.
21. Community involvement will be promoted through the generation of community-based environmental plans derived from participatory analyses of resource management options and zoning options. Finally, the project will support the definition of proscriptions of certain land uses in sensitive areas, based on analyses of the biological characteristics of the areas and the likely impacts on them of alternative land uses.
22. Systems will be developed for providing early warning of fires, and for planning management and control responses in the case of outbreaks occurring. Management responses to fire outbreaks will be defined, and resources allocated, in advance on the basis of characterizations of the relative levels of susceptibility of different ecosystems to fire (determined by factors such vegetation type and proximity to agricultural areas, settlements and roads) and their vulnerability and responses to its effects (determined by their ecological characteristics).
23. **Output 1.2: Extension support system,** to guide land holders/ users to adapt production practices: integrated training modules will be developed and delivered for extension agents, resulting in more effective and participatory delivery of

extension services and the incorporation into extension messages of environmental issues including sustainability, resilience, production of ecosystem goods and services and the compatibility of productive practices with BD conservation.

24. **Output 1.3: Platforms for cross sectoral institutional support and participation** in for planning, implementation, enforcement and monitoring. The model proposed by the project assumes the integration and reconciliation of productive sector and environmental issues, and therefore collaboration between the diverse institutions with responsibilities for these issues. To this end, the project will raise awareness among national stakeholders regarding the integrated, inter-institutional and landscape-wide approach that is proposed, and assist them to work together on its implementation. This will result in concrete benefits in terms of the nature and magnitude of the impacts generated by these institutions at field level. This awareness raising is of fundamental importance given the novelty of the approach proposed, which contrasts with the sector-based and vertical approaches that have tended to dominate to date.
25. The adoption of the approach by the institutions in question (including MININT, MINFAR, MINAG, MINBAS, MINTUR, MINCONS and CITMA), and their commitment to inter-institutional collaboration, will be formalized by ensuring that this is incorporated into their strategic planning documents, which constitute multi-annual frameworks for their institutional actions. This will be complemented by more specific training of local and technical staff of these institutions on how to put the concepts promoted by the project into practice.
26. Concrete mechanisms will be established for putting these commitments to communication and collaboration into practice, in the form of platforms or committees for the joint planning of institutional actions in key areas such as monitoring and enforcement. These will result in the establishment of integrated interinstitutional programmes for monitoring and evaluation and for enforcement that will pool resources, and link and harmonize the existing programmes of each of the major institutions involved, particularly CITMA and MINAG.
27. **Output 1.4: Local participation mechanisms** (popular councils) with increased capacities in relation to the design and implementation of plans and programmes on the conservation and sustainable use of BD and the solution of priority environmental programmes. The project will promote the role and capacities of existing village level participation mechanisms (popular councils) in the design and implementation of plans and programmes on the conservation and sustainable use of BD and the solution of priority environmental programmes, in order to maximize the relevance, local acceptance and therefore social sustainability of these.
28. **Component 2: Management effectiveness for core PAs and their areas of influence in threatened mountain ecosystems**  
The existence of well-functioning PAs is a central element of the model to be promoted by the project. These will act as core refugia for metapopulations of species of high global conservation priority, from and between which the species will be able to migrate and interact across the landscape as a whole, taking advantage of the increasing hospitability and connectivity of the landscape that will result from the project's interventions under Components 1 and 3.
29. **Output 2.1: Institutional capabilities for PA management functions.** CNAP has already defined the locations of the PAs that are required within the target areas, taking into account biological and socioeconomic considerations. The project will complement this by supporting the validation of their design (their external boundaries and internal zoning) and their management and financial plans, in order to ensure that they adequately take into account landscape-wide considerations of connectivity and flows of environmental goods and services, allocate resources correspondingly and make appropriate provision for financial sustainability, and by supporting the development and implementation of systems and equipment for monitoring, surveillance, enforcement and reporting..
30. **Output 2.2: Expansion of PAs to encompass threatened unprotected ecosystems.** In addition to the consolidation of existing PAs, the project will support CNAP in establishing additional PAs in order to fill in ecosystem coverage gaps. Project resources will be used for the development of management plans for these PAs, which will take into account their interactions with the broader landscapes that surround them, for the administrative processes leading to their formal gazettal, and for the installation of the infrastructure and equipment required for their effective management.
31. **Component 3: Conservation compatible production systems in threatened mountain ecosystems and conservation corridors leading down to the coast.** The support to be provided by the project under this component will be focused specifically in the 4 areas shown in Table 1.
32. **Output 3.1: Institutional capabilities for technology development and transfer,** enabling farmers to implement resource management practices that generate BD benefits ecosystem- and landscape-wide. The project will support the compilation of a menu of alternative BD-friendly productive options, adapted to the range of biophysical, socioeconomic and productive conditions in the target areas, for promotion among producers and by extension agents. A range of methods will be used to define these productive options, including systematization exercises involving members of institutions involved in agricultural development, natural resource management and conservation, as well as representatives of producer organizations, and reviews of academic and grey literature from both Cuba and overseas. These productive options may include, for example, diverse agroforestry and silvo-pastoral systems (including multi-storey perennial crops such as shade

coffee and cocoa) that contribute to the stability and productivity of farming systems by fixing nitrogen, recycling nutrients, physically stabilizing soils, as well as generating multiple tree products and contributing to the habitat and connectivity value of the farming landscape; and ecotourism or agro-tourism, which have the potential to provide direct economic incentives to farmers for managing the land in ways that deliver environmental benefits.

33. The project will support the development of integrated training and extension modules for producers and decision-makers in cooperatives and other producer organizations, focusing on BD-friendly production practices such as those presented above and on environmental considerations in more general terms, to be delivered by the Soils Institute and the Institute of Agroforestry Research, which are responsible for agricultural and agroforestry extension. This support to producers will result in high levels of immediate impact: more significantly in terms of sustainability and long term impact, the project will also invest in 'training the trainers', by developing integrated training modules and materials for the extension agents themselves, resulting in more effective and participatory delivery of extension services and the incorporation into extension messages of environmental issues including sustainability, resilience, production of ecosystem goods and services and the compatibility of productive practices with BD conservation. Another key element of the project's strategy for ensuring the scaling up and sustainability of impact will be the consolidation and expansion of Integrated Forest Farms (IFFs) throughout the target areas: IFFs are a well-proven model in Cuba and the project will focus on developing them into foci for the demonstration and replication of BD-friendly productive options and integrated approaches to natural resource management, with clear and effective plans for training and outreach to the producers in their respective catchment areas. The IFFs will also deliver biodiversity benefits directly as they will be strategically located in relation to areas of importance for biological connectivity, to which they will contribute by virtue of their high concentrations of trees in fields and restored habitats. The project will in addition address the threats to water quality and aquatic biodiversity posed by the discharge of organic wastes from pig production and coffee depulping units, by supporting the introduction of clean technologies such as '*beneficios ecológicos*' (in which coffee pulp is composted and the discharge of waste waters is avoided), and biogas production units in pig farms (which avoid aquatic pollution and methane emissions, while generating electricity and compost): in both cases opportunities will be taken wherever possible to demonstrate how to integrate these clean technologies into overall farm management systems.
34. **Output 3.2: Institutional capabilities for ensuring compliance** with the provisions of environmental regulations and land use plans. The effective and sustained delivery of environmental benefits depends on the above strategies, related to decision-making, communication and technology transfer, being backed up by adequate provisions for enforcement. Project resources will be used to support the Government in this regard, through the installation of physical and technical capacities for the detection of unauthorized changes of land use, in the form of remote sensing and Geographical Information Systems, and through facilitating the formation of platforms for collaboration in monitoring and enforcement, involving Government institutions and community-based organizations.
35. **Output 3.3: Capacities for integrated fire management**: the project will provide local forest fire brigades with training in integrated fire management and prescribed burning, backed up by equipment such as pumps and mobile water tanks, resulting in the reduction of the area affected by wildfires. This will be complemented by investments in promoting fire readiness across land holdings, such as farm-level plans and technical support.
36. This support to be provided by the project is particularly timely as it coincides with processes of discussion at policy level in the country of alternative economic and institutional modalities, with potential positive implications for the feasibility and sustainability of natural resource management and conservation strategies. Close attention will be paid during the PPG phase to the evolution of these policy discussions, and the strategies of the full project will be tailored accordingly. In addition to the overall conceptual model promoted by the project, this awareness raising will address specific strategic options such as environmental service payment schemes (building on the initial systematization processes carried out by the GEF/UNDP Sabana Camaguey project) and market-based instruments such as coffee certification.
37. The project will generate major global environmental benefits over 4 mountainous massifs covering a combined area of 41,000km<sup>2</sup>. The four areas on which the project will focus are among the most important, in terms of the numbers of globally rare and threatened species and ecosystems which they contain, in this highly biodiverse country. The project will deliver BD benefits in the form of improvements in the conservation status of the numerous globally important and endangered species listed in paragraph 6, which include a large number of endemic species such as *Bombacopsis cubensis*, *Microcycas callocoma* (CR), *Eleutherodactylus symingtoni* (CR) and *Magnolia cubensis* (EN). The project will also result in effective conservation of the rare and high diversity ecosystems which contain these species, such as montane rainforest, microphyllous evergreen vegetation, cloud forest, xerophytic coastal scrub and the Mogotes vegetation complex, by addressing threats at landscape, rather than site-specific level. The support to be provided by the project to the design, planning and management of PAs within the REDS will result in improvements in their functioning as core refugia for biodiversity, in 17 locations covering 3,571km<sup>2</sup>. The benefits generated through improved management and conservation of these ecosystems and the production landscapes that surround them will extend beyond the boundaries of the terrestrial and coastal areas where the project will work directly: reduced runoff of sediments and aquatic pollutants in the numerous water

courses that drain from the target areas into the sea will result in improvements in the health of the country's coral reef system, on which fisheries resources of regional importance depend.

38. The project will also generate benefits for other GEF focal areas, including sustainable land management (by helping to maintain the productive potential and ecological functioning of anthropogenic ecosystems) and climate change (by contributing to increases in carbon stocks in restored ecosystems and reducing GHG emissions from pig production units). Of particular importance will be its contribution to the resilience of natural ecosystems to climate change by maintaining functional connectivity, allowing plants and animals to migrate and disperse and to thereby to adapt to the pressures of changing habitat conditions and climate.

**Table 2. Alternatives to be put in place to counter threats to biodiversity**

Current practices	Alternatives to be put in place by the project	Expected global benefits
Uncontrolled fires set by farmers, in order to clear vegetation and clear weeds and pests in pastures	<ul style="list-style-type: none"> <li>- Integrated fire management plans</li> <li>- Strengthening of institutional capacities for prediction, detection and control</li> <li>- Collaboration with local communities</li> </ul>	Reduced degradation of ecosystem structure and habitat value, particularly in dry ecosystems
Contamination due to discharges of organic wastes and waste water from pig rearing units, sugar cane mills and coffee depulping facilities into streams, affecting aquatic biodiversity.	<ul style="list-style-type: none"> <li>- Conversion of organic wastes from pig production units into biogas in order to reduce water contamination, motivated by economic benefits in terms of energy generation and facilitated through the provision of technical and financial support.</li> <li>- Ecological coffee depulping facilities which reduce water use and convert pulp into compost, with financial support in the form of donations or loans, technical assistance, and motivated by the possibility of gaining access to premium markets for environmentally-friendly coffee (through national or international certification schemes).</li> </ul>	Reduced impacts on aquatic biodiversity in freshwater and coastal habitats
Inappropriate agricultural and ranching practices, including conversion of fallow land in mountain areas to annual crops, and grazing and cultivation on slopes without adequate soil conservation measures	<ul style="list-style-type: none"> <li>- Forestry and shade coffee, promoted through price support to coffee, direct incentives for forestry through FONADEF, and income generation opportunities such as eco- and agricultural tourism,</li> <li>- Agroforestry and silvo-pastoral systems, motivated by their potential to increase productivity and profitability, the provision of direct support in the form of agricultural inputs, training and extension support.</li> <li>- Improved enforcement through the provision of training and equipment to the responsible authorities and improved collaboration with local communities</li> </ul>	Increased biological connectivity, habitat value and provision of environmental services such as water supply and the reduction of soil erosion
Open-cast mining	<ul style="list-style-type: none"> <li>- Improvements in regulatory capacities</li> <li>- Spatial planning to minimize impacts on ecologically sensitive areas</li> </ul>	Reductions in the destruction and fragmentation of natural ecosystems

**B.3. SOCIOECONOMIC BENEFITS TO BE DELIVERED BY THE PROJECT INCLUDING GENDER DIMENSIONS:**

39. In line with BD2 guidance, an essential feature of the project's approach is the integration of the objectives of biodiversity conservation and sustainable livelihood support. The productive practices to be promoted by the project will therefore be selected on the basis of criteria including their productive potential and their compatibility with the customs, needs and aspirations of farmers in the target areas. The promotion of agroforestry systems in particular has the potential to increase and diversify farm incomes and food security in the medium to long terms. Improved ecosystem management and restoration will furthermore contribute to the generation of stable flows of environmental goods and services, such as sustainably-harvested tree products and stabilized water flows from reforested catchments, and reduced levels of sediment impact on coral reefs and the economically important fisheries on which they depend. Increases in the extent and improvements in the quality of vegetation cover will also result in reductions in the vulnerability of the population to environmental shocks such as hurricanes and droughts. These changes will be accompanied by increased employment opportunities (particularly for women), improvements in human and social capital (for example strengthened individual capacities and awareness), improved living conditions and reductions in rural-urban migration. Cuba has favorable conditions with regard to gender equity; women participate strongly in social and productive areas, making up 50% of the labor force and 60% of technical personnel, including in the agricultural sector.

**Institutional and financial sustainability:**

40. Institutional sustainability will be ensured by the fact that the project will be implemented by well-established institutions of national Government, working in close collaboration with their counterparts and dependencies at provincial and municipal level and with well-developed farmer organizations with which they already have close institutional links.

Project resources will be used to strengthen further the capacities of these institutions and to consolidate their abilities to give continuity to the impacts achieved by the project. Those involved in the project will be in-house members of these institutions, a model which is much more favourable for institutional ownership and sustainability than the creation of a discrete project implementation unit.

41. Financial sustainability will be promoted through the provision of direct financial inputs to producers and local institutions from permanent incentive schemes such as FONADEF and Local Development Funds (which are managed at the discretion of local authorities and are intended to promote decentralized sustainable development). Furthermore (and subject to emerging policy guidance from central Government), the project will explore opportunities for promoting alternative market-based strategies for promoting the financial sustainability of environmentally sustainable and BD-friendly production, such as the certification of sustainably-produced crops and the introduction of schemes for the payment of environmental services. Finally the project will benefit from the larger baseline programmes such as the Turquino plan which are going to be complemented to better address biodiversity conservation needs.

#### B.4. INDICATE RISKS, INCLUDING CLIMATE CHANGE RISKS AND MEASURES THAT ADDRESS THESE RISKS:

Risk	Rating	Risk Mitigation Strategy
Increase in projected threats above the anticipated levels, exceeding the coping range of the strategies	Medium	The project will promote implement an effective and wide-ranging monitoring system which will enable trends in threats to be detected, and will apply an adaptive management approach, featuring constant innovation and experimentation, which will allow the proposed strategies to be modified, expanded or complemented by others as necessary in the face of changing conditions or the recognition of flaws in underlying assumptions.
Conflicts of interest between productive and environmental sectors	Medium	The project will promote mechanisms for conflict resolution and will invest in education, training and awareness raising regarding the potential for synergies between productive and environmental considerations.
Institutional dynamics conflicting with paradigm shift promoted by project	Medium	The project will promote early on a multistakeholder dialogue where the need and priorities of all the actors involved will be identified and joint planning and problem solving will be encouraged. The project will also invest in training and awareness raising.
Extreme natural events	Medium	Emphasis on promoting the diversity and resilience of natural and productive ecosystems to extreme natural events.
Climate change undermines BD values	Medium	Generation of capacities and systems for taking into account, in planning instruments, the implications of alternative climate change scenarios for BD status, such spatial migration and fragmentation of ecosystems, changes in reproductive biology of target biota and increases in the frequency of forest fires.

#### B.5. KEY STAKEHOLDERS INVOLVED IN THE PROJECT:

Stakeholders	Project Implementation Role
Ministry of Science, Technology and the Environment (CITMA)	GEF focal point and environmental sector head. Responsible for directing, executing and controlling environmental policy, furthering its contribution to sustainable development.
Ministry of Agriculture (MINAG) and its provincial delegations.	Organism responsible for directing, executing and controlling State and Government policy in relation to the use, conservation and improvement of soils, the conservation, management, rational use of the forest estate and the conservation of wild fauna and flora.
Institute of Ecology and Systematics – dependency of CITMA	Project proponent: contributes to biodiversity knowledge through systematic and ecological studies.
National Centre for Protected Areas (CNAP) – dependency of CITMA	Project proponent: lead Entity regarding the planning of Protected Areas in Cuba, including Special Regions for Sustainable Development (REDS).
Institute for Agroforestry Research (IIAF) – dependency of MINAG	Project proponent: responsible for forestry and agroforestry research and for the promotion of Integrated Forest Farms.
Environment Agency (AMA) – dependency of CITMA	Responsible for developing the scientific and technological bases for environmental management and generating integrated solutions that guarantee the sustainable management of natural resources. Responsible for the development and application of environmental land use planning” ( <i>ordenamiento ambiental</i> ).
Centre for Environmental	Direction, control and promotion of environmental management aimed at the sound

Information, Management and Research (CIGEA) – dependency of CITMA	use of natural resources, the protection and conservation of ecosystems and the reduction of pollution. Environmental education, dissemination and the management of data and information on the environment.
National Forestry Directorate and offices of Forestry Services at provincial and municipal levels (MINAG)	Responsible for ensuring compliance with the Forestry Law (#85) and its regulations, ensure the appropriate use of FONADEF, approve projects submitted to FONADEF for the forestry estate and wildlife and carry out certifications of resource holders in forests and protected areas.
State Forest Service (MINAG)	Promotion of the sustainable use of forest resources and the conservation of ecosystems and biodiversity.
Environment Units. Provincial Delegations of CITMA.	Control and supervision of environmental management in the provinces. Coordinators of Provincial steering committees. Methodological control, coordination and supervision of provincial protected area systems.
Representatives of local government (Local Organisms of Popular Power: Councils of Municipal Administration; Popular Councils)	Control and administer resources at local level: will play a vital role in the definition of priorities for local development and the validation of proposals of natural resource management strategies within their areas of jurisdiction.
National Association of Small Farmers (ANAP)	Represents small farmers: will participate in the definition of the productive options to be promoted and will act as a channel for extension messages to small farmers.

#### B.6. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES:

42. The project will add value to a solid baseline of existing programmes and related initiatives by incorporating a landscape-wide and inter-sector approach to the management of PAs and of natural resources in mountain areas, in which the diverse issues addressed by the baseline investments will be addressed in an integrated manner. In particular this project will coordinate with, complement and build upon and add value to a number of GEF initiatives that coincide geographically with its area of influence, including the following:

- The GEF-UNDP project “**Mainstreaming and Sustaining Biodiversity Conservation in Three Productive Sectors of the Sabana Camaguey Ecosystem**”, from which lessons will be learnt regarding the incorporation of BD considerations into the agriculture, forestry and tourism sectors in landscapes characterized by ecological vulnerability and productive importance;
- The GEF **Small Grants Programme (SGP)** which is managed by UNDP and from which lessons will be learnt on working with local communities in the management of globally important and fragile ecosystems.
- The GEF-UNDP **marine and coastal PA project**, which will generate data on coral reef health which will serve as indicators of the effectiveness of the present project in reducing the sediment load discharged into coastal waters (specifically, in the southern Pinar del Río, Tunas de Zaza Fauna Reserve and Turquino and Bayamesa National Parks). The project will also serve as a source of lessons with regard to financial planning and integrating conservation initiatives with productive sectors.
- The GEF-UNDP on “**Enhancing the Prevention, Control and Management of Invasive Alien Species in Vulnerable Ecosystems**”, which will build capacity at the systemic level to prevent, detect, control, and manage the spread of IAS, which are a threat to BD and production systems in the target areas as well as in other areas of Cuba (this project coincides with two of the areas covered by the IAS project, the south coast of Cienfuegos-Zona de Trinidad and Topes de Collantes, and the Cauto Delta).
- The GEF-UNDP **Country Pilot Partnership (CPP) on Sustainable Land Management** (with which the Guamuhaya, Sierra Maestra and Nipe-Sagua-Baracoa target areas of this project overlap to some extent), which will generate practical models of land management capable of maintaining productive sustainability, while the present project will generate lessons for the CPP on mainstreaming BD considerations into productive systems. The actions proposed in the CPP areas that overlap with this project are focused on improved SLM techniques in pre-mountainous ecosystems, with emphasis on dry forest and livestock (Villa Clara); the sustainable management of dry forest resources, integrated forest farms and water management (Cauto); and halting land degradation and rehabilitating salinized and eroded areas in dry lands and xeric scrub regions (Guantánamo). Coordination between this project and the CPP will be facilitated by the fact that a number of key institutions are involved in both projects, such as the Ministry of Environment CITMA and its dependency CITMA, the Ministry of Agriculture and its dependencies the Institute of Soils and the Institute of Agroforestry Research, national and provincial coordinating authorities and the National Association of Small Producers (ANAP).

43. In addition the project will also coordinate with the following initiatives:

- The UNEP project on “**Creation of capacities for national planning for food security**”, which aims to strengthen national capacities for identifying the ecosystem degradation and other environmental impacts associated with food production

systems, in India and Cuba, and which will generate lessons in the Cuyaguaje and Hanabanilla National Priority Watersheds (both of which fall within the area of influence of this project) on the characterization and quantification of tradeoffs between food production and ecosystem services in terms of ecosystem resilience, economic development and human development.

- **Birdlife International projects** supporting Important Bird Areas and sustainable development in the Turquino y Bayamesa and Cauto Delta Wildlife Refuge in the Sierra Maestra Range, the results of which will constitute reference points for the current project in relation to the management and use of forest resources and the control of invasive species.

**C. DESCRIBE THE GEF AGENCY’S COMPARATIVE ADVANTAGE TO IMPLEMENT THIS PROJECT:**

44. The approach adopted by the project is in line with UNDP comparative advantage, as it addresses multiple productive sectors and the environment sector, with a landscape-wide perspective. The project corresponds to the particular focus of UNDP as development organization: UNDP focuses on mainstreaming BD across multiple sectors at the landscape level, building capacities in national institutions (on issues such as governance, vulnerability reduction, markets and finance) and addressing market as well as vulnerability issues, all of which are key elements of this initiative. This project is also aligned with the UNDP signature programme that focuses on unleashing the economic potential of Protected Areas so that they are better able to fulfil their management functions, are sustainably financed, and contribute to sustainable development. Currently, UNDP is supporting GEF financed and other initiatives aimed at strengthening PA management effectiveness, and PA financial sustainability in some 1000 PAs globally with a combined area of 130 million hectares. UNDP will ensure that lessons learned from this work are channelled to the Government of Cuba

**C.1. INDICATE THE CO-FINANCING AMOUNT THE GEF AGENCY IS BRINGING TO THE PROJECT:**

45. UNDP is committing US\$800,000 of co-financing to the project.


**C.2. HOW DOES THE PROJECT FIT INTO THE GEF AGENCY’S PROGRAM AND STAFF CAPACITY IN THE COUNTRY TO FOLLOW UP PROJECT IMPLEMENTATION:**

**PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)**

**A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):** (Please attach the Operational Focal Point endorsement letter(s) with this template).

NAME	POSITION	MINISTRY	DATE (MM/dd/yyyy)
Enrique Moret Hernández	Director/ Cuba GEF Political and Operational Focal Point	Ministry of Science, Technology and Environment, Department for International Affairs	MARCH 1, 2012

**B. GEF AGENCY(IES) CERTIFICATION**

This request has been prepared in accordance with GEF/LDCF/SCCF policies and procedures and meets the GEF/LDCF/SCCF criteria for project identification and preparation.					
Agency Coordinator, Agency name	Signature	Date (MM/DD/YYYY)	Project Contact Person	Telephone	Email Address
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