



PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: FSP
THE GEF TRUST FUND

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PART I: PROJECT IDENTIFICATION

GEF PROJECT ID: 3981 PROJECT DURATION: 5 years
GEF AGENCY PROJECT ID: NI-X1005
COUNTRY(IES): Nicaragua
PROJECT TITLE: Integrated Watershed Management in Lakes Apanás and Asturias
GEF AGENCY(IES): IADB
OTHER EXECUTING PARTNER(S): ENEL, MARENA, MAGFOR, INAFOR¹
GEF FOCAL AREA (S): Biodiversity, Climate Change
GEF-4 STRATEGIC PROGRAM(S): BD- SP3 and SP5, CC-SP6
NAME OF PARENT PROGRAM/UMBRELLA PROJECT (if applicable):N/A

INDICATIVE CALENDAR*	
Milestones	Expected Dates mm/dd/yyyy
Work Program (for FSP)	Mar 2010
CEO Endorsement/Approval	Aug 2010
Agency Approval Date	Sep 2010
Implementation Start	Dec 2010
Mid-term Evaluation	Dec 2012
Project Closing Date	Dec 2015

* See guidelines for definition of milestones.

A. PROJECT FRAMEWORK

Project Objective: Foster biodiversity conservation and climate change mitigation in the Lakes Apanás and Asturias Watershed through: (i) the implementation of sustainable forest and land management (SFLM) activities that will increase forest carbon sequestration, reduce greenhouse gas (GHG) emissions, and protect fragile ecosystems; and (ii) the establishment of a scheme of payment for ecosystem services (PES) directed to farmers and/or private owners of forested reserves to be financed by the compensation for water use to be made by the hydroelectric power within the watershed.

Project Components	Investment, TA, or STA ^b	Expected Outcomes	Expected Outputs	Indicative GEF Financing ^a		Indicative Co-Financing ^a		Total (\$'000) c = a + b
				(\$'000) a	%	(\$'000) b	%	
1. Strengthening the institutional framework and local capacity for land use planning and watershed management.	TA, STA	1.1 Increased management capacity of local authorities, farmers and land owners at the watershed level to adequately monitor land use and land use changes and its consequences on carbon stocks and biodiversity. 1.2 An information and monitoring system of identified environmental services operating to make viable the implementation of the PES mechanism.	- Land use planning instruments and regulation mainstreamed in the sector policies and plans, particularly the Land Use and Integrated Management Plan (LUIMP), taking into account climate change and biodiversity impacts and opportunities of land use and land use change (LULUCF). - A carbon monitoring system related to Land Use, Land Use Change and Forestry (LULUCF) implemented and in operation for the Lakes Apanás and Asturias Watershed. - 20% to 40 % increase in cadastral coverage of municipalities associated to the watershed, - Cadastral information actively used for land use management and monitoring purposes. - Installation of a network of 2 hydrometric stations linked to the	1,290.9 CC: 75% BD: 25%	54	1,100	46	2,390.9

¹ Nicaraguan Electricity Company, Ministry of Environment and Natural Resources, Ministry of Agriculture and Forestry, Nicaraguan Forestry Institute

		<p>1.3 Watershed interventions by sector and local government institutions are coordinated and in line with the Land Use and Integrated Management Plan for the Lakes Apanás and Asturias watershed (LUIMP).</p> <p>1.4 Communities and municipalities situated in the priority sub-watersheds have organizational and managerial capacities for integrated management of the sub-watersheds.</p>	<p>national INETER network generating information on water surface elevation, water discharge, sediment concentration, and stream flow.</p> <ul style="list-style-type: none"> - A baseline study on hydrological balance, bathymetry, sedimentation runoff, streamflow and flow recharge. - An inter-institutional coordination committee to support the implementation of the LUIMP, including the POA (Annual Activity Plan). - 6 sub-watershed community committees established with management plans for their respective sub-watershed in line with municipal development plans. - 5 communities trained in implementation of the sub-watershed Management Plans, zoning and specific land use regulation in line with the LUIMP. - A sensibilization and capacity-building campaign through environmental education in primary and secondary schools and community organizations. 					
2. Implementation of sustainable land and forestry management practices enhancing biodiversity conservation and carbon sequestration.	IT and TA	<p>2.1 2,400 hectares under agroforestry systems, restored/reforested riparian buffers or forested lands applying sustainable land and forest management practices.</p> <p>2.2 At least 195,000 tons of CO2 of direct emissions from reforestation or restoration activities.</p> <p>2.3 Sedimentation levels in 6 tributary rivers of Lake Apanás watershed reduced 20% to 50%.</p>	<ul style="list-style-type: none"> - 400-600 producers trained in soil conservation practices along the 6 sub-watersheds. - 30 sustainable forestry management plans approved by the Nicaraguan Forestry Institute (INAFOR). - 517 hectares of additional gallery and permanent forest at the 200 meter line of the shore of Lake Apanás. - 200 hectares planted with commercial tree species for future legal timber extraction and commercialization. - 5 communities receiving technical assistance in business plan development, sustainable forestry management certification, and strengthening timber value chains. - 5-15 % of local producers receiving certification on sustainable forestry. 	1,360 CC: 100%	41	2,000	59	3,360

			- 42 basic infrastructure works (7 along each of the 6 tributary rivers) for retaining sediment from point sources. ²					
3. Forest and biodiversity conservation in Private Nature Reserves (PNR) and RAMSAR site.	TA	<p>3.1 4,000 ha incorporated into in the PNR.</p> <p>3.2 Management capacity of the RAMSAR site strengthened and biodiversity stock increased (as per key species indicators).</p>	<p>- A total of 15-25 PNR management plans designed and implemented, with approval of the Ministry of Environment (MARENA) and INAFOR.</p> <p>-A network of PNR established within the protected areas of the watershed and strengthened to enable cross-sharing experiences and information amongst watershed stakeholders and forest owners.</p> <p>- 75 ecotourism circuits and business plans developed and in implementation.</p> <p>- 40km-60 km of gallery forest restored in the tributary rivers within the PNR.</p> <p>- Inter-institutional strategy for implementing the management Plan agreed upon.</p> <p>- A biodiversity monitoring system for the RAMSAR area established and in operation.</p>	560 BD: 100%	58	400	42	960
4. Design and implementation of the mechanism of payments for environmental services (PES) in the Apanás watershed.	TA, STA	<p>4.1 75-100 PES contracts implemented and farmers/ PNRs owners compensated for environmental services.</p> <p>4.2 7,500 ha of forest protected under the PES scheme.</p> <p>4.3 255,743 tons of CO2 emissions avoided deforestation or degradation from forested areas.</p>	<p>- An economic valuation study of the water, biodiversity and carbon sequestration ecosystem services generated within the watershed area, and of opportunity costs associated to the economic activities within the watershed.</p> <p>- PES mechanism designed and implemented, including the criteria for eligibility of beneficiaries, contract conditions and means of verification of compliance as a pilot experience.</p> <p>- An analysis of the legal and regulatory framework needed for establishing a PES scheme and compilation of PES experiences from other countries in the region.</p> <p>- 75-100 PES contracts prepared with farmers and owners of PNRs.</p> <p>- 10 socialization workshop with local and sector government, hydroelectric company and with watershed land owners to present the results of the</p>	630 BD: 84% CC: 16%	39	1,000	61	1,630

² These works will be financed with co-financing resources from IDB's "Environmental management of natural disasters & climate change" Program, 9 (NI-L1048).

		environmental services evaluation study, existing PES schemes and legal and regulatory framework					
5. Project Management			200	33	400	67	600
Total project costs			4,040.9	46	4,900	54	8,940.9

^a List the \$ by project components. The percentage is the share of GEF and Co-financing respectively of the total amount for the component.

^b TA = Technical Assistance; STA = Scientific & Technical Analysis.

B. INDICATIVE Co-financing FOR THE PROJECT BY SOURCE and by NAME (in parenthesis) if available, (\$)

Sources of Co-financing	Type of Co-financing	Project
Project Government Contribution	In-kind	200,000
GEF Agency (NI-L1048)	Loan	1,000,000
Bilateral Aid Agency(ies) (AECID)	Grant	2,000,000
Private Sector (ENEL)	Cash	700,000
Private Sector (ENEL)	In-kind	1,000,000
Total Co-financing		4,900,000

C. INDICATIVE FINANCING PLAN SUMMARY FOR THE PROJECT (\$)

	Previous Project Preparation Amount (a) ³	Project (b)	Total c = a + b	Agency Fee
GEF financing		4,040,900	4,040,900	404,090
Co-financing		4,900,000	4,900,000	
Total		8,940,900	8,940,900	404,090

D. GEF RESOURCES REQUESTED BY AGENCY (IES), FOCAL AREA(S) AND COUNTRY(IES)¹

GEF Agency	Focal Area	Country Name/ Global	(in \$)		
			Project (a)	Agency Fee (b) ²	Total c=a+b
IADB	Biodiversity	Nicaragua	1,440,900	144,090	1,584,990
IADB	Climate Change	Nicaragua	2,600,000	260,000	2,860,000
Total GEF Resources			4,040,900	404,090	4,444,990

¹ No need to provide information for this table if it is a single focal area, single country and single GEF Agency project.

² Relates to the project and any previous project preparation funding that have been provided and for which no Agency fee has been requested from Trustee.

PART II: PROJECT JUSTIFICATION

A. STATE THE ISSUE, HOW THE PROJECT SEEKS TO ADDRESS IT, AND GLOBAL ENVIRONMENTAL BENEFITS:

The Apanás reservoir is located in the center of the Valley of Apanás and is fed by the Lakes Apanás and Asturias watershed (hereinafter referred to as the Apanás watershed). It has an area of 587.81 km² of water surface, and it takes in water from six rivers (Jigüina, Jinotega, San Gabriel, Sisle, Mancotal, Arenal), a network of smaller tributaries, and also from the diversion of waters from Lake Asturias, formed by the El Dorado dam. The watershed is situated in the Mesoamerican Biological Corridor and constitutes a fragile ecosystem that historically has allowed for the circulation of species. The upland parts of the watershed are habitats for endangered species of flora and fauna as for example the mountain avocados, which are food for quetzales and bell birds (*pájaros campana*, or *choguú*), which may become extinct if the habitat disappears. Mammals such as the Nicaraguan Pocket Gopher (*Orthogeomys matagalpae*) and other migratory and local birds are among the endangered species that can be found in the watershed. Furthermore, Lake Apanás is internationally recognized as a RAMSAR site (Wetland no. 1137, Art. 2.1, International Convention on Wetlands).

The watershed is located mostly in the municipality of Jinotega and to a lesser extent in San Rafael del Norte, Pantasma and Matagalpa. The population in the watershed area amounts to 96,572 people, of which 50.6% are urban

³ Include project preparation funds that were previously approved but exclude PPGs that are awaiting approval.

and the remaining 49.5% are rural. The rural area shows a high population density with 90 inh/km², compared to the national average of 72 inh/km². In the last ten years there has not been significant immigration to the region, instead population movements happen on a seasonal basis (for example when the coffee cut is due). However, in the period 1984 – 2006, human settlements increased 332%, and along with them subsistence annual crops cultivations grew 65% in the same period. Coffee growing is the most important economic activity in the region followed by production of basic grain crops, vegetables, fruits, herbs and flowers and sparse fishing and livestock activities. The population depends on the watershed for varied uses such as crop irrigation, cattle feeding and watering, domestic water use, fishing and extraction of biomass for energy generation.

In addition to its importance as a high-biodiversity ecosystem, this watershed is of significant value for the water resources for hydropower production. Currently two hydroelectric plants depend exclusively on the flow of water supplied by the watershed- Santa Bárbara and Centroamérica (100MW), as well as 3 others that are under construction in the Río Viejo watershed (around 50MW in total). The installed hydroelectric capacity in Nicaragua represents 11.5% of the country's total electricity generation. This percentage is considerable in a country where approximately 60% of the installed electricity generation capacity is fossil fuel based. Besides, the additional capacity of hydroelectric generation being developed will decrease greenhouse gas emissions by substituting fossil fuel based generation and by meeting growing energy demand with renewable sources.

The issue: The watershed is being impacted by the disorderly and intensive use of its natural resources due to increased population density and the particular physiographic characteristics it presents. In addition, the watershed presents a growing problem of vegetation cover loss and land use change. The fragile soil characteristics exacerbate the likelihood of soil grounds to erode and produce landslides in mountainous landscapes. For instance, in over 35% of the forested cover in the watershed, intensive cattle ranching and agriculture has led to severe environmental degradation of the watershed in recent years, causing continuous loss of soil fertility, biodiversity and water for human consumption in the wells in rural communities. These conditions have led to a severe alteration of the environment and the living conditions of local populations. Estimates indicate that the two main tributary rivers, Jiguina and San Gabriel, drag about 3,504.9 tons/year of sediments into the watershed affecting water level and its availability for human consumption and electricity generation. Sedimentation has also impacted on water quality and the equilibrium of the watershed's ecosystem and biodiversity.

Moreover, a recent analysis of the historic record of land use change shows that 26% of the forest cover was lost during the period from 1984 to 2006, resulting in an annual loss of 190.22 forested hectares, or 1.24% each year. At present the watershed has a forest cover of 7,057 hectares, or 13.23% of its original cover, while the change in land use from forestry to livestock-raising and farming has increased 65% annually. These phenomena have resulted in a decrease of carbon stocks, an increased sedimentation of the reservoir, reduced extension of natural ecosystems and less availability of water resource with a consequent negative impact on the generation of renewable energy from the hydroelectric plant. The rate of deforestation to reforestation in the watershed is 30:1, and on average only 50% of forest species are being recovered, leaving other species at risk of future disappearance from the watershed. With an estimated biomass supply for timber and fuelwood of approximately 7,811.83 m³/year, and a demand is the order of 9,361 m³/year of firewood and 11,624 m³/year in timber wood, the threat of deforestation is imminent. Under these circumstances, it is estimated that if no mitigation measures are taken, under the current excessive demand for forest resources and the low reforestation efforts it is probable that the remaining forests in the watershed disappear by 2017.

In summary, the current management and intensive use of the watershed use is putting at risk its capacity to continue providing local and global environmental services such as carbon stocks, forest and non-forest products, biodiversity habitat and water supply for consumption and energy generation.

Proposed Solution: Recognizing the serious environmental situation of the watershed, in 2008 *Empresa Nacional de Electricidad* (National Electricity Company) ENEL financed an environmental and socioeconomic assessment in the watershed and the participatory preparation of the "Land Use and Integrated Management Plan for the Lake Apanás Watershed" (LUIMP). The purpose of the LUIMP is to: (i) mitigate and address the vulnerability of water resources, (ii) protect the biodiversity of the watershed, (iii) ensure the sustainable use of water for generating hydroelectric power; and (iv) engage in the orderly and sustainable exploitation of the natural resources, seeking to support the right to socioeconomic development for the local population. The proposed GEF Project will support the initial

implementation of the LUIMP resolving threats of immediate urgency, and establishing a mechanism of Payments for Environmental Services (PES) to sustain the management of the watershed in the medium and long term. The PES mechanism will be supported by investments to curb sedimentation affecting the hydropower generation and enhance the plant's efficiency. These power generation efficiency gains will justify the power plant's willingness to pay to sustain the mechanism and obtain a continuous stream-flow for hydroelectric generation.

The management of the watershed will be supported through four components: (i) strengthening the institutional framework and local capacities for land-use planning, soil conservation practices, and integrated watershed management; (ii) augmentation and restoration of forested cover along riparian buffer zones and in critical areas in the lower parts of the watershed and along the Apanás lake, and implementation of sustainable land and forest management (SLFM) practices in key farm and forested lands; (iii) conservation of the forest and biodiversity in Private Nature Reserves (PNR) and the RAMSAR site; and (iv) design and implementation of the mechanism of Payment for Environmental Services (PES) to support maintenance of forested cover in the upper part of the watershed defined as a forest conservation zone. With these activities, the GEF project will supplement current efforts to diminish sedimentation, recover carbon stocks and establish long-term sustainable management of the forest cover. At the same time, the project seeks to contribute to link improvement of the economic conditions of the local population to sustainable environmental services in the medium and long term.

Global Environmental Benefits: The implementation of the LUIMP in the watershed will allow for conservation of biodiversity, water, and soil, including conservation in PNRs, through an approach highly focused on sustainable forest and land management in the agricultural and silvo-pastoral activities in the watershed. In the medium and long term the project will contribute to LULUCF related avoided GHG emission and carbon sequestration, preserve globally important biodiversity in forest habitats and wetlands, regulate local hydrological and aquatic systems, and abate land degradation. The specific environmental benefits will be: (i) 255,743 tons of CO₂ avoided and due to land use change, REDD and sustainable forestry activities; (ii) 140 farms with agricultural and agroforestry production applying SLFM, and 2,400 hectares under sustainable forestry or land management practices; (iii) increased production of water by 1,000,000 liters/ha/year sustaining the efficiency of the hydroelectric power production and as such the PES mechanism; (iv) 4,000 hectares of habitats for endangered flora and fauna species conserved in PNRs with Management Plan in implementation approved by the Nicaraguan Forestry Institute (INAFOR) and MARENA; (v) habitat of migratory birds in RAMSAR site preserved. Similarly, this project seeks to show that the sustainable management of the watershed can provide a continuous flow of revenues to the producer through the introduction of a PES and increase the value of the forestry resource base in the watershed. In addition, the project seeks to improve producers' income generation through increased productivity of land, forest and water resources based on their integrated management with the participation of the local governments.

B. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH NATIONAL/REGIONAL PRIORITIES/PLANS:

The project is consistent with government priorities that have been set forth in public policies and strategic economic priorities, as explained below. It will improve the socioeconomic and environmental conditions of the watershed, thereby contributing to Nicaragua's sustainable development.

First National Communication to UNFCCC and National Action Plan on Climate Change: Nicaragua's First National Communication to the UNFCCC and National Action Plan on Climate Change emphasizes the need to implement a plan for watershed conservation and management in the areas most vulnerable to climate change, highlighting the need to protect watersheds with hydroelectric potential, the Apanás watershed being the most important. The sustainability of the watershed will help meet the growing energy demand through a renewable source, which in turn will reduce GHG emissions. The latter is consistent with Nicaragua's ratification of the Kyoto Protocol and being party to UNFCCC.

Convention on Biodiversity/National Biodiversity Strategy: The project activities are consistent with Nicaragua's National Biodiversity Strategy, which was formulated based on Nicaragua's ratification of the UN Convention of Biodiversity in 1995. Specifically, Component 3 aims to strengthen biodiversity conservation and the sustainable use of natural resources (Line of Action No.1) through the design and implementation of Management Plans in PNR. The National Biodiversity Strategy also promotes the design of Payment for Environmental Services schemes (Line of Action No.2), which is the main objective of Component 4.

General Policy for Land Use Management: Nicaragua is implementing a process for land-use planning to promote sustainable land use through the General Policy for Land Use Management and a series of supplemental statutes and

decrees. The policy establishes as one of the fundamental land-use management aspects the adequate management of watersheds and associated landscapes. At the same time the policy is seeking to strengthen and highlight the relationship between the use of natural resources and the population's standard of living.

General Law on the Environment: The General Law on the Environment establishes environmental law as a national priority, and Executive Decree 78-2002 defines land-use management as a “planning process aimed at evaluating and guiding land use under a conservation and sustainable use of resources policy framework, taking into account the characteristics, potential, and limitations of natural resources, economic activities, human settlements, and developments expectations in the territory”.

Law on National Waters and others: Other statutes and decrees, such as the Law on National Waters, seek to involve various branches of national and local authorities, as well as sectors of society, in the conservation of watersheds, including the creation of Watershed Committees as supported by the proposed project.

National Reforestation Program: The Government of Nicaragua launched this Program in June 2008 and it is planned to conclude in 2012. The program's objective is to annually reforest an area of 60.000 hectares (with a total of 30 million trees) throughout Nicaragua under the responsibility of the Nicaraguan Forestry Institute (INAFOR). In February 2009, the first phase of the program ended, with 25,164 hectares reforested in 40 municipalities including Jinotega where the Lake Apanás is located.

C. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH **GEF STRATEGIES** AND STRATEGIC PROGRAMS:

The project is to be carried out under the focal areas of Biodiversity (BD-SP3 and BD-SP5) and Climate Change (CC-SP6) as follows:

- **BD-SP3 Strengthening terrestrial PA networks**, by supporting the network of PNRs in the watershed to: (i) design and implement Management Plans, (ii) strengthen the network of PNR owners, (iii) provide technical assistance in designing and implementing ecotourism circuits and business plans for PNR, and (iv) implementing the RAMSAR Site Management Plan.
- **BD-SP5 Fostering markets for biodiversity goods and services.** The project will contribute to: (i) establish a PES mechanism that compensates producers and owners of PNR for preserving forested with high-yields of ecosystem services, such as soil conservation, water regulation and quality, carbon retention, and biodiversity protection in the watershed and (ii) assist forestry producers in sustainable forest management, obtaining certification for timber products, linking farmers to markets, and thereby strengthening the timber value chain.
- **CC-SP6 Management of land use, land-use change and forestry as a means to protect carbon stocks and reduce GHG emissions**, by supporting the implementation of the LUIMP as part of a strategy involving communities and local governments in the zoning and rules for land use, sustainable forestry and land management the project seeks to establish a land use system that contributes to greater carbon sequestration in forests and soils, and thereby mitigating GHG emissions. In addition, the project will establish a system to monitor carbon fluxes and sequestration induced by land use change in the watershed.

D. JUSTIFY THE TYPE OF FINANCING SUPPORT PROVIDED WITH THE GEF RESOURCES:

GEF funding will be essential to constitute a sound institutional and financial foundation for addressing increasing threats to ecosystem services provided within the Apanás watershed. Without the interventions to be financed by this project, the opportunity to implement the LUIMP, create the network of natural protected areas, establish institutional capacity and strengthen local communities for improved watershed management, and reduce the increasing stress on land use, soil and water resources will be overpassed. Given the limited funding capacity of the national and local governments to invest in this kind of activities, the GEF financial resources will be crucial to overcome the financial and institutional barriers embedded in natural resource management in low-income regions. Furthermore, GEF financing will be used as seed capital for introducing the PES mechanism in the watershed management, which ultimately will provide the incentive scheme necessary to ensure long-term viability of the implemented conservation efforts. Additionally, the project will help create other alternative economic activities for watershed inhabitants, such as ecotourism, forestation for future timber extraction and carbon financing. Considering the multiplicity of watershed stakeholders and the diversity of interests and economic incentives, establishing the institutional and financial

framework for sound management and mainstreaming biodiversity and climate change mitigation in the watershed would be unviable without GEF financing.

E. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES:

The proposed GEF project is part of an IDB program supporting the development of the energy sector in Nicaragua. Supported by different sources of financing, this program addresses the issues facing the electricity sector including the sustainability and efficiency of hydroelectric generation. The proposed GEF project is part of the effort to introduce sustainable energy management and enhanced hydropower generation capacity through sound watershed management and long-lived ecosystem management schemes to sustain water provision services in areas of interest. Hydroelectric generation is a strategic source of energy for countries like Nicaragua with abundant water resources, thus making it a key investment for future economic growth of the country. Based on this, in December 2008, the IDB approved a US\$40 million loan to rehabilitate and/or upgrade the electro mechanic equipment of the hydroelectric plants in the Apanás watershed (Electricity Sector Support Program, NI-L1022), which will allow for increased efficiency and revenue of the plants from their current scenario. Yet, a key aspect of these investments is the growing interest from the National Electricity Company (ENEL) to implement and support a PES mechanism that will help maintain and enhance the watershed conditions to assure an adequate flow of high-quality and quantity of water. As a big user of a primary environmental service from the watershed, ENEL has identified the need to sustain biodiversity and carbon stock conservation in the watershed in the long term, and support the institutional strengthening and local capacity for watershed management and conservation to maintain the hydrological services associated to it. With this effort, ENEL aims to increase energy generation from the two hydroelectric plants by 10 to 15%. This initiative will also allow for the creation of an executing agency that will be in charge of the development of the rehabilitation program and the activities associated to the sustainable management of Lake Apanás watershed, including the support to the PES scheme.

Also, component 1 of the proposed project will benefit from co-financing from the IADB Environmental Management of Natural Disasters and Climate Change (NI-L1048) loan under preparation. Similarly, the project will contribute to the attain the environmental objectives of IDB loan programs supporting sustainable agriculture and forestry in Nicaragua, including the Social Environmental Program for Forestry Development II, NI-L0141 executed by MARENA; and the Program to Support Agrifood Production, NI-L1020 executed by MAGFOR.

The proposed GEF project will also seek coordination with INAFOR in order to maximize the complementarities with the National Reforestation Program; MARENA regarding the Integrated Watershed Management and water and Sanitation Project (PIMCHAS) supported by the Canadian International Development Agency (CIDA) and the implementation of the RAMSAR Management Plan; and MAGFOR/AECID regarding the support of sustainable coffee production practices in the watershed also contributing with co-financing to the GEF project. The design of the proposed project will build on lessons learned from the GEF/UNEP/CATIE project Sustainable Management of the Degraded Lands that Drain into the Gulf of Fonseca (El Salvador, Honduras, and Nicaragua).

F. DISCUSS THE VALUE-ADDED OF GEF INVOLVEMENT IN THE PROJECT DEMONSTRATED THROUGH [INCREMENTAL REASONING](#) :

The Apanás watershed is highly valuable for the ecosystem services provided for important economic activities for Nicaragua, including the production of hydroelectric power and agriculture. It also has a remarkable potential for additional revenues from carbon finance and ecotourism, which would be associated with the preservation of forests and sustainable land use practices. As such, it is of national interest to foster an ecosystem-based management approach of the watershed, so that it can continue to provide environmental goods and services without compromising the local socioeconomic development goals. The environmental situation of the watershed is currently at peril due to serious land and forest degradation processes impacting biodiversity, carbon stocks in soil and forest, and water availability. In recognition of this opportunity to reverse the degradation in the watershed, ENEL has financed the participatory elaboration of the LUIMP including a proposal on specific rules for zoning and a Forest Investment Plan. Other institutions are carrying out various interventions to improve the conservation of the watershed as mentioned in sections II B and E. However, these interventions suffer from poor coordination and the lack of an integrated vision for the development and management of the watershed. Moreover, there is no financial mechanism to sustain in the medium and long term the integrated land use planning and management of the watershed with strong local involvement of resource users. Under this scenario, it is expected that the watershed will most likely continue its

current deterioration and further stress onto the remaining protected areas for agriculture and timber extraction in spite of the efforts being carried out in the area.

With the proposed GEF financing a framework for long-term local and inter-institutional coordination will be established and capacities for integrated watershed management will be strengthened, allowing for a coordinated implementation of activities in line with the LUIMP. Furthermore, the project will embrace the opportunity that the IDB's financed investments in hydropower efficiency gains and the environmental awareness of the sponsoring company represent for the creation of a payment scheme that assures the protection of the watershed for water flow services, while sustaining the medium and long term biodiversity and carbon stocks conservation in the watershed through SLFM carried out by local producers and PNR owners. Finally, the GEF involvement will contribute to global environmental benefits through climate change mitigation related to LULUCF, and conservation of the RAMSAR site in the reservoir.

G. INDICATE RISKS, INCLUDING CLIMATE CHANGE RISKS, THAT MIGHT PREVENT THE PROJECT OBJECTIVE(S) FROM BEING ACHIEVED, AND IF POSSIBLE INCLUDING RISK MITIGATION MEASURES THAT WILL BE TAKEN:

There are two types of risks for the implementation of the project: natural risks and institutional risks. The natural risks are associated with the effects of climate change and the vulnerability of the zone to uncontrollable climate factors such as drought or flooding, and to unstable slopes that can lead to cave-ins, landslides, and surface landslides. Due to its location, Nicaragua faces on the greatest risks of natural disasters in the region, primarily from hurricanes. In terms of gradual climate change, the watershed is characterized by great vulnerability given the grave degradation of land, biodiversity loss, and inefficient and uncontrolled use of resources that reduces the resilience of ecosystems to recover from extreme events such as flooding or drought. Ecosystem fractioning can also hamper the ability of key species to migrate and survive when their territories are being under stress. In addition, the prognosis of climate change for Nicaragua indicates that the level of precipitation will diminish in the future, which will cause problems, especially for agricultural production in the Apanás watershed, which is almost exclusively rain-fed. The project's emphasis on sustainable forest management, increasing protected ecosystem areas, enhanced land use and soil conservation practices, watershed mitigation infrastructure development, and sound community engagement in SLFM will raise the resilience of the watershed to the effects of climate change. At the local level, the technical and environmental management trainings on, for example, conservation farming, silvo-pastoral, and agroforestry practices are aimed at strengthening the awareness and knowledge of the local population on climate change and the current unsustainable use of resources. Thus, the project aspires to make a pilot effort in terms of sensitizing the authorities and the local beneficiaries about the need to mitigate climate change and to create a base of activities to reduce local vulnerability.

As for the institutional risks, there may be a risk of coordination among the many national, local, and sectoral agencies involved in the LUIMP, as well as with regard to the medium- and long-term commitment of the participants engaged in the PES scheme, including the hydropower plants. This should be mitigated by the existence of the inter-institutional coordination committee and the local watershed sub-committees. Also, the involvement of the communities and the dissemination of the plan and its benefits should support the work of the entities that implement the LUIMP. Furthermore, to have a broad adoption of the PES scheme, significant emphasis will be made throughout the project to educate, inform and engage local communities, farmers, municipalities and the hydropower plant actors, to create trust and assure the subscription of long-term conservation contracts.

H. DESCRIBE, IF POSSIBLE, THE EXPECTED COST-EFFECTIVENESS OF THE PROJECT:

Activities under component 1 of the project will be closely linked and supported by existing processes and local capacity related to watershed management. In addition, the project will be cost-effective in that it will share the implementing unit with the loan provided by the Bank, assuring that a majority of its management costs will be covered by IDB's NI-L1022. The cost-effectiveness will also be favored from the fact that the basic assessments for implementing the LUIMP (including risk analysis, prioritization for institutional interventions, and coordination needs) have already been prepared. Based on a rough assessment of the following project-specific carbon emissions reductions, the project's cost-effectiveness is in the order of 11.18 \$/tCO₂. If compared to average estimated forestry based carbon prices in the regulated market, the cost of these avoided emissions is quite competitive. More detailed studies will be done during project preparation to reduce uncertainty of carbon reduction potentials and cost-effectiveness, including: (1) cost-effectiveness analysis of sustainable forest and land management technologies and practices supported by the project; (2) cost-effectiveness in terms of GHG emissions avoided by \$ invested in project for each type of land-use related activities; and (3) a cost-effectiveness and sustainability analysis of the introduction

of Payment for Environmental Services in the watershed based on similar experiences in other countries. In addition, the project team and implementing unit have identified several projects and/or programs relevant to the proposed project (see Section F), and the information generated by them will be used.

I. JUSTIFY THE COMPARATIVE ADVANTAGE OF GEF AGENCY:

The IDB has the potential to make a significant contribution to the implementation of the Project due to its involvement in the development of the hydroelectric, forestry, and agricultural sectors, and its contribution to the largest share of the co-financing for this project. Its experience in the region and its technical knowledge in multiple sectors constitute an asset available to the Republic of Nicaragua when it comes to addressing management of the watershed as an issue with cross-cutting impacts. Among others, the Bank has supported watershed management in Nicaragua through the POSAF I and II Programs (NI-L0025; NI-L0141) and the Stormwater Drainage and Development Management SubWatershed III Managua (NI-L1010). The Bank also has extensive experience designing and carrying out watershed management programs in several countries of the region, including IDB-GEF LULUCF project for Haiti's upper watersheds of southwestern Haiti (GEF ID 3132), and can contribute its technical capacity in accompanying and monitoring the implementation of the LUIMP. In addition, the Bank has a historical engagement in the country that facilitates its interaction with government officials and key sectors, which is extremely important in this project due to the multiplicity of actors and economic and social interests involved. The carbon monitoring design experience in the Haiti project will be highly valuable in the proposed project where an important innovative element is not only to set up a LULUCF related carbon monitoring system but also to analyze and define how carbon sequestration and stock conservation services can be included in a PES mechanism.

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

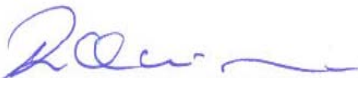
A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT(S) ON BEHALF OF THE GOVERNMENT(S):

(Please attach the [country endorsement letter\(s\)](#) or [regional endorsement letter\(s\)](#) with this template).

NAME	POSITION	MINISTRY	DATE
Juanita Argeñal	Minister of Environment and Natural Resources	Ministry of Environment and Natural Resources (MARENA)	September 14, 2009

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for project identification and preparation.

Agency Coordinator, Agency name	Signature	Date (Month, day, year)	Project Contact Person
Ricardo Quiroga, IADB		10/26/09	José ramon Gomez +1-202-623-1886 joser@iadb.org