

**DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK**

**NICARAGUA**

**INTEGRATED WATERSHED MANAGEMENT IN LAKES APANÁS AND ASTURIAS**

**(NI-X1005)**

**NON-REIMBURSABLE INVESTMENT GRANT PROPOSAL**

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## CONTENT

I.	DESCRIPTION AND RESULTS MONITORING.....	2
A.	Background, Problem Addressed, Justification.....	2
B.	Objective, Components and Cost .....	5
C.	Key Results Indicators.....	8
II.	FINANCING STRUCTURE AND MAIN RISKS .....	9
A.	Financing Instruments .....	9
B.	Environmental and Social Safeguard Risks .....	9
C.	Fiduciary Risk .....	10
D.	Other Key Issues and Risks .....	11
E.	Economic Viability.....	11
III.	IMPLEMENTATION AND MANAGEMENT PLAN .....	12
A.	Summary Implementation Arrangements.....	12
B.	Summary of Arrangements for Monitoring and Evaluating (M&E) Results..	14

ANNEXES	
ANNEX I	Development Effectiveness Matrix Summary
ANNEX II	Results Matrix
ANNEX III	Fiduciary Arrangements

ELECTRONIC LINKS	
1.	Plan of activities for first disbursement and the first 18 months of implementation <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35782181">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35782181</a>
2.	Procurement plan <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35791345">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35791345</a>
3.	Monitoring and evaluation arrangements <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35794155">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35794155</a>

OTHER ELECTRONIC LINKS	
1.	GEF Full Size Document <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35796126">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35796126</a>
2.	<i>Estudio del Ordenamiento Ambiental del Territorio y Manejo de la Cuenca Hídrica: Lagos Apanás y Asturias</i> <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35916966">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35916966</a>
3.	Component 1 Analysis and Design <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35453787">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35453787</a>
4.	Component 2 Analysis and Design <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35453836">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35453836</a>
5.	Component 3 Analysis and Design <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35453848">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35453848</a>
6.	Component 4 Analysis and Design <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35453809">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35453809</a>
7.	Economic Analysis <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35916916">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35916916</a>
8.	Map of Priority Project Intervention Areas <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35917610">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35917610</a>

## ABBREVIATIONS

ANA	<i>Autoridad Nacional del Agua</i> (Water National Authority)
AOP	Annual Operation Plan
CEPAL	Economic Commission for Latin America
ENEL	<i>Empresa Nicaragüense de Electricidad</i> (Nicaraguan Electricity Company)
eq	equivalent
ESMR	Environmental and Social Management Report
ESR	Environmental and Social Review
ESS	Environmental and Social Management Report
GEF	Global Environmental Facility
GHG	Greenhouse Gas
GIS	Geographic Information System
GGP	<i>Gerencia General de Proyectos</i>
ha	hectareas
ICAS	Institutional Capacity Assessment System
IDB	Inter-American Development Bank
INAFOR	<i>Instituto Nacional Forestal</i> (National Forestry Institute)
INETER	Institute of Territorial Studies
INH	Inhabitants
INIFOM	National Institute for Municipal Development
IRR	Internal Rate of Return
km <sup>2</sup>	square kilometers
LUIMP	Land Use and Integrated Management Plan for the Lake Apanás Watershed
LULUCF	Land Use, Land Use Change and Forestry
M&E	Monitoring and Evaluation
MAGFOR	<i>Ministerio Agropecuario y Forestal</i> (Ministry of Agriculture and Forestry)
MARENA	<i>Ministerio del Ambiente y los Recursos Naturales</i> (Ministry of Environment and Natural Resources)
MRV	Measurement, Reporting and Verification
MW	Megawatts
PES	Payment for Environmental Services
PEU	Project Execution Unit
PIR	Project Implementation Review
PlanEva	MARENA's Physical, Financial and Environmental Planning, Administration and Evaluation System

PNR	Private Nature Reserves
POD	Proposal for Operation Development
POSAP	Forestry Development Program
PSC	Project Steering Committee
SFML	Sustainable Forest and Land Management
SIGFOR	INAFOR's Forest Management and Administration Information System
SIMOSE	Monitoring, Follow-up and Evaluation Information System
SISCAT	Cadastre Information System
SSF	Safeguard and Screening Form for Screening and Classification of Projects

**PROJECT SUMMARY**  
**NICARAGUA**  
**INTEGRATED WATERSHED MANAGEMENT IN LAKES APANÁS AND ASTURIAS**  
**(NI-X1005)**

<b>Financial Terms and Conditions</b>		
<b>Beneficiary:</b> Republic of Nicaragua		
<b>Executing Agency:</b> <i>Empresa Nicaragüense de Electricidad (ENEL)</i> with the participation of <i>Autoridad Nacional del Agua (ANA)</i> , <i>Instituto Nacional Forestal (INAFOR)</i> and <i>Ministerio del Ambiente y los Recursos Naturales (MARENA)</i>		
<b>Disbursement Period:</b>		5 years
<b>Currency:</b>		US Dollars
<b>Source</b>	<b>Amount</b>	<b>Percentage</b>
IDB / GEF Non-Reimbursable	4,040,909	45%
Counterpart:	4,869,657	55%
<b>Total</b>	<b>8,910,566</b>	<b>100%</b>
<b>Project at a Glance</b>		
<b>Project Objective/Description:</b> The purpose of this project is to foster biodiversity conservation and climate change mitigation in the Lakes <i>Apanás</i> and <i>Asturias</i> 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 design and piloting of a scheme of Payment for Environmental 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.		
<b>Special contractual clauses:</b> Prior to first disbursement: (i) enter into an agreement between the Republic of Nicaragua and ENEL to transfer the resources of the contribution to ENEL for the execution of the project (see 3.1); (ii) establish the Project Execution Unit (PEU) with at least: a General Coordinator, a Procurement Specialist, and a Financial Specialist (see 3.1); (iii) select the Project Technical Coordinator (see 3.1); (iv) technical and operational support agreements for the execution of the project entered into between ENEL and INAFOR, MARENA and ANA (see 3.2); (v) establish the steering committee (see 3.3); and (vi) present a Project Operations Manual approved by ENEL and with non-objection by the Inter-American Development Bank (IDB) (see 3.5).		
<b>Exceptions to Bank policies:</b> None		
<b>Project qualifies for:</b> SEQ[ ] PTI[ X ] Sector[ ] Geographic[ ] Headcount[ ] Procurement: The procurement of works, goods and consulting services shall be carried out in accordance with the Procurement Policies and Procedures of the Bank pursuant to documents GN-2349-9 and GN-2350-9.		

## I. DESCRIPTION AND RESULTS MONITORING

### A. Background, Problem Addressed, Justification

- 1.1 The Apanás reservoir is located in the center of the Valley of Apanás and is fed by the Lake Apanás and Asturias watershed (hereinafter referred to as the Apanás Watershed). The Apanás Watershed has an area of 587.8-square kilometers (km<sup>2</sup>) and takes in water from six rivers (Jigüina, Jinotega, San Gabriel, Sisle, Mancotal, and Arenal), a network of smaller tributaries, and also from the diversion of waters from Lake Asturias, formed by the El Dorado dam. The Apanás Watershed is situated right in the center of the second most diverse region of the World,<sup>1</sup> the Mesoamerican Biological Corridor, and constitutes a fragile ecosystem that historically has allowed for the circulation of species. The upland parts of the Apanás Watershed are habitats for endangered species of flora and fauna as for example the mountain avocados, which are food for quetzales and bell birds (campana, or choguí birds), 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 Apanás Watershed. Furthermore, Lake Apanás is internationally recognized as a RAMSAR<sup>2</sup> site (Wetland no. 1137, Art. 2.1, International Convention on Wetlands).
- 1.2 In addition to its importance as a high-biodiversity ecosystem and the carbon content associated to it, the Apanás Watershed is of significant value for the water resources for hydropower production it supplies. Currently two hydroelectric plants depend largely on the flow of water supplied by the watershed, the Santa Bárbara Hydroelectric Plant and the Centroamérica Hydroelectric Plant, with a combined capacity of 100-Megawatts (MW), as well as 3 other hydroelectric power plants that are under construction/study in the Río Viejo Watershed (approximately 67-MW in total). The installed hydroelectric capacity in Nicaragua represents 10.9% of the country's total electricity generation capacity. This percentage is considerable in a country where approximately 76% of the installed electricity generation capacity is fossil-fuel based. The additional capacity of hydroelectric generation being developed in the Río Viejo Watershed will decrease GreenHouse Gas (GHG) emissions by substituting fossil-fuel based generation and by meeting growing energy demand with renewable sources.
- 1.3 In the last ten years there has not been significant immigration to the region; rather population movements happen on a seasonal basis (for example during the coffee harvest). However, 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

<sup>1</sup> Mittemeier et al, 1998. *Evaluación y conservación de Biodiversidad en paisajes fragmentados de Meso América*. Harvey A. Celia; Sáenz Joel C. INBio/ CATIE/UNA. 2008. Page 328.

<sup>2</sup> RAMSAR is a worldwide treaty which provides a non regulatory structure for the conservation of wetlands within a nation's border, in conjunction with international cooperation for the conservation and best practices for the use of wetlands and their resources.

population depends on the Apanás Watershed for varied uses such as crop irrigation, cattle feeding and watering, domestic water use, fishing and extraction of biomass for energy generation.

- 1.4 **The issue.**<sup>3</sup> The Apanás Watershed is being impacted by the disorderly and intensive use of its natural resources due to increased population density. The human population in the Apanás Watershed area amounts to 96,572 people, of which 50.6% are urban and the remaining 49.4% are rural. The rural area shows a high population density with 90 inhabitants (inh) per km<sup>2</sup>, compared to the national average of 72-inh/km<sup>2</sup>. Between 1984 and 2006 the population in the area increased 32%, and along with them subsistence annual crops cultivations grew 65% in the same period. Population movements towards the Lakes shore turned into permanent settlements and changed the land use from broad-leaved evergreen mixed forests to sun-coffee plantations (not shaded by forest cover) and agriculture accompanied by livestock farming, using 35% of the forested cover in the Apanás Watershed for this purposes.
- 1.5 Land use change has resulted in a high level of deforestation. At present, the Apanás Watershed has a forest cover of 7,057 hectares, which is approximately 13% of its original cover. The rate of deforestation to reforestation in the Apanás Watershed is 30:1, and on average only 50% of 21 forest species are being recovered, leaving other species at risk of future disappearance from the Apanás Watershed. The analysis of the historical use of land during the period 1984 to 2006 shows that forest vegetation has decreased 26%, which translates into an annual deforestation rate of 1.24%. This rate of deforestation represents a loss of 190.22 hectares per year. Deforestation has caused a decrease of carbon stocks, 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 plants. Increased fragmentation of the forests of the Apanás Watershed has diminished connectivity of forested areas, provoking the loss of biodiversity while increasing the isolation of the fragments and the key species. 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 Apanás Watershed disappear by 2017.<sup>4</sup>
- 1.6 The lack of sufficient institutional presence in the territories and inexistent coordination amongst the ones present limit the possibilities to enforce existing legislation regarding the protection of water and forest resources. Consequently, the opportunities for transferring useful technology packages for sustainable use of natural resources are limited. As an example, the successful Sustainable Forest and Land Management (SFLM) practices tested and implemented in other parts of

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<sup>3</sup> A complete diagnosis of the Apanás Watershed's situation can be found in the electronic link: *Estudio del Ordenamiento Ambiental del Territorio y Manejo de la Cuenca Hídrica: Lagos Apanás y Asturias*.

<sup>4</sup> CABAL, 2008, Estudio del Ordenamiento Ambiental del Territorio y Manejo de la Cuenca Hídrica: Lagos Apanás y Asturias. Page 9.



Nicaragua by the Socio Environmental and Forestry Development Programs (POSAF I and II) are not known and at best only partially used, and hence there is poor recognition of the positive effect, economically and environmentally, of the introduction of such natural resource management systems. In addition, there is limited cadastre and land use data of the Apanás Watershed, which hampers the proper implementation and evaluation of any intervention in the area.

- 1.7 Recognizing the serious environmental degradation of the watershed, in 2008 the *Empresa Nicaragüense de Electricidad* (ENEL), the Nicaraguan Electricity Company, financed an environmental and socioeconomic assessment in the Apanás 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 Apanás 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.
- 1.8 The proposed Global Environmental Facility (GEF) project supports ENEL's LUIMP initiative and will finance investments to build institutional capacity to manage the Apanás Watershed, enhance forest and biodiversity conservation and carbon sequestration and curb sedimentation affecting hydropower generation (the Project). The Project also includes the design and piloting of a mechanism of Payments for Environmental Services (PES) to sustain the management of the Apanás Watershed in the medium and long-term.<sup>5</sup>
- 1.9 Three micro-watersheds, of the rivers San Gabriel, Cuyalí (Corinto–Finca),<sup>6</sup> Sisle and the coastal areas of the reservoir within the Apanás Watershed have been carefully selected as priority project intervention areas ([see electronic link](#)) through a rigorous process lead by ENEL and the *Ministerio del Ambiente y los Recursos Naturales* (MARENA), the Ministry of Environment and Natural Resources. The selection process identified the most environmentally and

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<sup>5</sup> Ample literature demonstrates that the 4 main types of interventions that will be promoted through the Project are: (i) watershed management capacity building; (ii) enhancing financial sustainability of protected (private) areas; (iii) payment for ecosystem services; and (iv) transfer and adoption of sustainable land use and forestry practices are amongst the most cost-effective approaches for this type of intervention. References for PES in similar contexts include: Blackman, A., Woodward, R.T., User Financing in a national payments for environmental services program: Costa Rica hydropower, *Ecol. Econ.* (2010); Zapata, A., E. Murgueito et al., *Efecto del Pago por Servicios Ambientales en la adopción de sistemas silvopastoriles en paisajes gabaderos en la cuenca media del río de La Vieja*, Colombia. *Agroforestería en las Américas* No 45, 2007; Pagiola, S. et al., Paying for the environmental services of *silvopastoral* practices in Nicaragua. *Ecological Economics* 64 (2007) 374-385. On the soil and forestry conservation measures, as well as capacity building of local resource managers, the IDB has had a successful initiative in Nicaragua with the operation POSAF II. The results of the impact evaluation indicate that these types of measures, technological transfer and capacity building for farmers and land-managers can be effective in attaining conservation goals.

<sup>6</sup> ENEL y MARENA 2010 *Acta No 1 Selección de áreas prioritarias (Plan de Manejo de la Cuenca Hídrica Lago de Apanás- Asturias)*.

socially sensitive areas (*Áreas de Sensibilidad Ambiental*) with the highest potential for meeting the biodiversity conservation and climate change mitigation objectives (ENEL 2010<sup>7</sup>). These watersheds, primarily located in the municipality of Jinotega and to a lesser extent in the Municipality of San Rafael del Norte, cover a wide range of habitats.

- 1.10 The main beneficiaries of the Project will be: (i) the population in the prioritized areas, which will be able to implement SLFM practices and increase their income as a result of diversification of their economic activities (such as ecotourism); (ii) the municipalities that will have an improved institutional capacity to manage the Apanás Watershed; (iii) MARENA, *Instituto Nacional Forestal* (INAFOR), and *Autoridad Nacional del Agua* (ANA), which will be coordinated to carry on their mandate in the Apanás Watershed; and (iv) ENEL which will enjoy a continuous stream-flow for hydroelectric generation due to water conservation and regeneration, as well as reduced sedimentation attained through the activities supported by the Project.
- 1.11 **IDB's Country Strategy:** the project is consistent with the IDB's Country Strategy with Nicaragua 2008 to 2012, and specifically with two of its objectives: (i) to mitigate vulnerability to natural disasters and strengthen institutional management for disaster prevention; and (ii) to support the effort to develop alternative energy sources, including biofuels and renewable energy. The Project seeks to support a sustainable management of the Apanás Watershed with the two-fold intention of: (i) addressing issues like land degradation, land use change and deforestation, which increase the chances and impacts of natural disasters; and (ii) implement activities that help preserve water production in the Apanás Watershed, thus guaranteeing a stable source of water for the only two operating large scale hydroelectric plants in Nicaragua. Across components, the Project builds on local capacity to manage the Apanás Watershed and involve the population in the conservation of the Apanás Watershed's ecosystem.

## **B. Objective, Components and Cost**

- 1.12 The objective of the Project is to foster biodiversity conservation and climate change mitigation in the Apanás Watershed through: (i) the implementation of SFLM activities that will increase forest carbon sequestration, reduce GHG emissions and protect fragile ecosystems; and (ii) the design and piloting of a scheme of 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 Apanás Watershed.
- 1.13 **Component 1: Strengthening the institutional framework and local capacities for land-use planning, soil conservation practices, and integrated watershed management. GEF Financing: US\$1,117,759.** Activities under Component 1 are implemented by ENEL and aim at increasing the management capacity of local

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<sup>7</sup> ENEL Marzo 2010 *Estudio de Identificación de Áreas Sensibles Ambientalmente en la Sub-cuenca Hídrica de Apanás – Asturias*.

authorities, farmers and landowners at the watershed level through: (i) the development of land use planning instruments for local and national authorities; and (ii) a carbon and biodiversity monitoring system related to Land Use, Land Use Change and Forestry (LULUCF) implemented and in operation for the prioritized areas. These instruments will be tested and developed for the 3 selected micro-watersheds and are intended to become models for replication within the entire Apanás Watershed through local capacity building and strengthening.

- 1.14 The specific activities will comprise: (i) supporting the development of three (3) municipal ordinances to support the formation of micro-watershed plans and micro-watershed committees which will establish water management structures in the Apanás Watershed; (ii) development of one (1) tri-municipal ordinance to support the formation of the Apanás sub watershed committee, which should get certification from ANA; (iii) development of a carbon monitoring system that will monitor land use and existing carbon stocks at the ecosystem level in 100% of the intervention area and that will serve as reference for the development of needed capacities for Measurement, Reporting and Verification (MRV) of carbon in the basin which will be used by MARENA; and (iv) implementation of a Cadastre Information System (SISCAT) and compilation of digital and topographic information on the properties in the Rio San Gabriel, Corinto Finca, and Apanás coastline micro-watershed which will be used by ANA, INAFOR, MARENA, ENEL for the implementation of the Project and the Institute of Territorial Studies (INETER) and National Institute for Municipal Development (INIFOM) in their databases.
- 1.15 **Component 2: Implementation of sustainable land and forestry management practices enhancing biodiversity conservation and carbon sequestration. GEF Financing: US\$1,381,859.** Activities will be implemented by INAFOR and aim to augment and restore the forest cover along riparian buffer zones and in critical areas in the lower parts of the Apanás Watershed and along the Apanás Lake, as well as to implement SLFM practices in key farms and forested lands. Beyond the carbon and biodiversity benefits obtained through the implementation of such practices, the results of SLFM in the Apanás Watershed will improve superficial water runoff, as well as the conservation of water resources. Moreover, these practices will enhance the productive capacity of local farmers, increasing livelihood conditions of the population, which is a central dimension of the proposed strategy of sustainable land management. The beneficiaries of Component 2 will be chosen by INAFOR, on the basis of three main criteria: (i) situated within high priority areas (Mainly in Cuyalí and San Gabriel based on their ecological function as biological corridors; their level of fragmentation; and their sensitivity to sources of pressure); (ii) their interest and willingness to participate and invest (labor and land); and (iii) the possession of a formal land title, or a locally recognized and legitimate substitute of a land title. The operational details of the selection of beneficiaries will be defined in the Project's operational manual.

- 1.16 The following three approaches will define the technologies that will be promoted to selected landowners: (i) for pastures, a system incorporating trees and shrubs with parcel rotation and the control of animal charge per unit, applying a feeding strategy for the dry period to reduce the drought stress; (ii) a program of good practices in vegetable and coffee production areas to restore mismanaged soil through excessive use of pesticide and fertilizer; and (iii) the restoration of riparian forest on the micro-watersheds that are tributaries to the lakes. These practices have proved to be effective in previous Forestry Development Programs (POSAF I and II).
- 1.17 **Component 3: Conservation of the forest and biodiversity in Private Nature Reserves<sup>8</sup> (PNR) and the RAMSAR site. GEF Financing: US\$602,876.** The activities under Component 3 will be implemented by MARENA and pursue three strategic goals: (i) to articulate fragmented and disturbed forests in a landscape mosaic with the network of Private Nature Reserves (PNR) within the proposed biological corridors; (ii) to articulate agro-tourism circuits with small and medium producers in the Apanás Watersheds to increase the environmental sustainability of their farms and their interest in keeping conservation practices; and (iii) to strengthen the RAMSAR site management strategy with key stakeholders, including the design and implementation of a Biodiversity Monitoring System. At least 25 eligible landowners in the area with preserved forest patches will be selected by consultants for the delivery of rapid ecological assessments, business plans, biodiversity monitoring training and civil works. Specific deliverables comprise: (i) incorporation of 1,000-hectares (ha) of forest area into a network of PNRs, to be supported through a combination of investments and technical assistance; (ii) development of breeding centers for key local species; (iii) construction of ecotourism trails/circuits and training of tour guides; and (iv) implementation of a biodiversity monitoring system for 12 keystone species.
- 1.18 **Component 4: Design and implementation of the mechanism of Payments for Environmental Services (PES) in the Apanás Watershed; GEF Financing: US\$701,035.** The activities under Component 4 will be implemented by ANA. The establishment of a PES mechanism under the Project is conceived to assure long-term sustainability of the forest conservation and ecosystem-friendly activities to be promoted within the Apanás Watershed. The expected results of the activities to be financed by Component 4 include: (i) at least 75 PES contracts designed, negotiated and in operation with producers, and owners of PNRs and ecotourism farms; a mechanism to prepare and implement the PES will be established, including beneficiary eligibility criteria, opportunity costs, contractual conditions, and means of verification of compliance; (ii) at least 2,822-ha of forest under the PES scheme; and (iii) removal of at least 314,008 additional tons of CO<sub>2</sub> captured through the promotion of sustainable management practices. The three results of Component 4 will contribute to pave the way for viable mechanisms for sustainable financing to support biodiversity

8

Private nature serves are understood as privately held and protected areas of broad-leaved evergreen and / or mixed (cloudy forests, pine or oak) forests. In Nicaragua often referred to as *reservas silvestres privadas*.

conservation and carbon removal in Nicaragua. If successful, the methodology could then be replicated, up scaled and applied at other sites around Nicaragua. Finally, 10 dissemination workshops will be supported to promote the understanding and relevance of the PES mechanism amongst local stakeholders and potential beneficiaries, buyers and intermediaries. Under Component 4, these activities will be undertaken to pave the way for a functional PES as a mechanism for sustainable financing.

- 1.19 A preliminary assessment of PES potential participants (buyers and sellers of environmental services and intermediaries of the scheme) was carried out during Project preparation. The assessment indicates that: (i) the most likely buyer of the proposed PES scheme would be ENEL, as it operates the Centroamérica and Santa Barbara hydroelectric generation plants, which take up to 342 and 289 million cubic meters of water per year respectively for electricity generation (representing an annual net income for ENEL of approximately US\$18 million); (ii) farmers and land owners with forested or potentially forested areas within the prioritized areas, could be the primary providers of environmental services (an initial 15 farms that could participate under the PES scheme were identified, for a total of 581-ha); and (iii) potential intermediaries for the implementation of the scheme could be a decentralized municipal company, a fund or a dedicated account held by ENEL, if the Project decides to promote a more focused initiative primarily in the interest of the largest buyer. The final design of the PES scheme, including participating parties, financial structure, legal issues and impact evaluation plan will be developed in detail at the beginning of the execution of Component 4.
- 1.20 **Cost and Financing:** The total cost of the Project is US\$8,910,566 to be financed as follows: US\$4,040,909 will be financed with resources from the GEF which will be managed by the IDB as a GEF executing agency, and US\$4,869,657 will be provided by ENEL, MARENA, INAFOR and ANA as local counterpart resources for the Project. The total counterpart resources will be provided as follows: (i) ENEL will contribute an amount of US\$2,129,496 in kind and US\$285,760 in cash; and (ii) MARENA, INAFOR and ANA an in-kind contribution of US\$2,454,401. In addition to the resources, the IDB has already approved the loan operation Environmental Program for Disaster Risk and Climate Change Management (2415/BL-NI) from which up to US\$1,400,200 will be invested in standalone activities that will boost the Project's outcomes related to climate change adaptation under Component 2 (40 basic infrastructure works for retaining sediment). See Table 1.

### C. Key Results Indicators

- 1.21 The Project has a Results Matrix that includes result and outcome indicators with baseline and intermediate and final targets that will help monitor and evaluate the Project. The indicators were agreed with ENEL, MARENA, ANA and INAFOR, which will help monitor their fulfillment.

**Table 1. Summary Cost (US\$)**

<b>Component</b>	<b>GEF</b>	<b>Counterpart</b>	<b>Total</b>
	<b>(US\$)</b>	<b>(US\$)</b>	<b>(US\$)</b>
Component 1 - Strengthening the institutional framework and local capacities for land-use planning, soil conservation practices, and integrated watershed management	1,117,759	2,073,038	3,190,797
Component 2 - Implementation of sustainable land and forestry management practices enhancing biodiversity conservation and carbon sequestration	1,381,859	1,131,893	2,513,752
Component 3 - Conservation of the forest and biodiversity in Private Nature Reserves (PNR) and the RAMSAR site	602,876	703,394	1,306,270
Component 4 - Design and implementation of the mechanism of payments for environmental services (PES) in the Apanás Watershed	701,035	558,332	1,259,367
Project Management and Supervision	237,380	403,000	640,380
<b>TOTAL</b>	<b>4,040,909</b>	<b>4,869,657</b>	<b>8,910,566</b>
<b>Percentage</b>	<b>45%</b>	<b>55%</b>	<b>100%</b>

## II. FINANCING STRUCTURE AND MAIN RISKS

### A. Financing Instruments

- 2.1 This Project is structured as a non-reimbursable investment grant from the GEF as well as local counterpart contributions. An estimated disbursement schedule is reflected in Table 2.

**Table 2. Planned Disbursement Schedule**

	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>GEF</b>	400,000	800,000	1,640,000	800,000	400,909

### B. Environmental and Social Safeguard Risks

- 2.2 This Project will have positive environmental impacts since it aims at fostering sustainable forest and land management, conservation of a RAMSAR site, and biodiversity conservation in PNR in the Apanás Watershed, which are of great importance for hydroelectric power generation and reduction of CO<sub>2</sub> emissions. The Project will also support the design and implementation of a PES mechanism to sustain the local conservation and management of the Apanás Watershed.
- 2.3 The expected positive environmental and social impacts are related to issues such as: (i) extension of cadastral coverage and potential related conflicts particularly with respect to vulnerable groups; (ii) scoping of the PES component and its beneficiaries; (iii) land and forest management practices; (iv) influx of people due to ecotourism development or other income producing activities; and (v) stakeholder engagement and management of potential resource tenure or use conflicts.

- 2.4 The strategy to mitigate social risks in the area is embedded in all the components of the Project. As part of Component 1, the Project Executing Unit (PEU) will carry out 54 consultation and 15 training workshops on water management and carbon monitoring throughout the lifetime of the Project. Communities will be trained in hygiene, environmental education and the environmental regulatory framework for Component 2 as well as landowners and producers. Twenty workshops with stakeholders will also be carried out to coordinate the establishment of biological corridors, get feedback on SLFM practices and follow up on the Project's results. Stakeholders will also be engaged in more than 10 workshops to promote the PES scheme with landowners and the local governmental authorities.
- 2.5 The main environmental risks for the execution of the Project are: (i) the Apanás Watersheds are found to be exposed to natural hazards (meteorological phenomena) and risk to impacts of climate change; and (ii) institutional risks. The main mitigation measures for these impacts are the implementation of: (i) a land use plan; (ii) sustainable land and forest management practices; (iii) conservation in private nature reserves and conservation of a RAMSAR site; and (iv) planning, environmental education and coordination mechanisms.
- 2.6 Based on the IDB's Environmental and Safeguard Compliance Policy (OP-703), and taking into account the objectives, impacts and risks of this project, this operation is classified as Category C.

### **C. Fiduciary Risk**

- 2.7 The Project is going to be administered by ENEL, which has accrued extensive experience in the execution of IDB operations. ENEL is currently executing the Electricity Sector Support Program Second Loan, (1933/BL-NI-1) and one of the executors of the National Sustainable Electrification and Renewable Energy Program (PNESER), (2342/BL-NI). The financial and procurement fiduciary risks of ENEL have been assessed for the Project in July 2011 (see annex III). This assessment concluded that ENEL presents a low financial fiduciary risk and a satisfactory technical and professional capacity to organize, execute and control IDB projects.
- 2.8 Currently ENEL is implementing a series of recommendations made by the IDB fiduciary team in order to improve ENEL's fiduciary capacity. Some of the recommendations have already been accomplished and the remaining are scheduled to be fulfilled during the second semester of 2011. The IDB is performing evaluations of ENEL's fiduciary capacity every six months to monitor the progress on the improvement of their capabilities as a project executing agency.

## **D. Other Key Issues and Risks**

- 2.9 **Coordination Risk for Implementation of the LUIMP:** 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 risk should be mitigated by the existence of local watershed sub-committees, carefully planning the coordination mechanisms, dividing the efforts in basins and defined geographical areas, involving the communities and the disseminating the plan and its benefits. These actions 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, through the formation of micro-watershed committees to create trust and assure the subscription of long-term conservation contracts.
- 2.10 **Execution Coordination Risk:** the execution arrangement, as explained in the next section, defines that ENEL will do the administrative and financial execution of the Project with the technical and operational support from ANA, INAFOR and MARENA, who will be doing the implementation of Components 2, 3 and 4 respectively. This implies an important coordination effort among the agencies to process information and to carry out procurement processes in a timely and fluid manner. Additionally, a Project Steering Committee (PSC) integrated by representatives of the four institutions and two municipalities will be created. The PSC will help coordinate the interactions among stakeholders, plan activities and identify risks and corrective actions for issues that may affect the uninterrupted execution of the Project.

## **E. Economic Viability**

- 2.11 During the Project preparatory phase a cash flow analysis was carried out to evaluate the impact of the SFLM interventions contemplated for Component 2. These interventions reduce erosion losses, increase production output and provide additional income from alternative crops to producers which in the end translate in positive cash flows. Within a timeframe of 10 years, the Internal Rate of Return (IRR) was positive for each one of the interventions included in Component 2. Moreover, the establishment of sustainable agro-forestry systems, eco-forestry shade-grown coffee, sustainable silvopastoral systems, and the promotion of living barriers had a positive return in the first 5 years of implementation. This was not the case for plantations and agro-health techniques which took a longer term to produce positive net cash flows. Using a term of five years, an IRR of 19.3% was calculated for Component 2, which accounts for more than 1,800-ha of SFLM activities and includes investments, capacity building and management costs.
- 2.12 For Components 1, 3 and 4, the Project design incorporates a cost-effectiveness analysis in terms of selecting least cost options to attain the goal of watershed



conservation and carbon stocks enhancement. Activities under Component 1 of the Project will be closely linked and supported by existing institutions, on-going watershed management processes and national and local initiatives aimed at improving watershed management. Moreover, the Project will be cost-effective in that it will share the implementing unit for the IDB loan to ENEL (1933/BL-NI-1). Component 3 is taking advantage of already defined protected areas that landowners have voluntarily set aside or protected, to restore and enhance biological corridors in the area that will support the interconnectedness of ecosystems and functionality of the living organisms depending on them.

- 2.13 Finally, the PES scheme will undertake selection of participants and flexible payment regimes based on the value of environmental services provided under different land use types and the likelihood of these to be adopted or remain as such by landowners. The selection of measures to protect biodiversity in priority areas is based on the high conservation value and connectivity potential these measures could provide, while the selection of SFLM practices was done to be compatible with the economic activities and incentives prevalent within the region. In terms of climate change mitigation, Components 2 and 4 will contribute with more than 491,071 tons of CO<sub>2</sub>-equivalent (eq) directly sequestered or avoided (for the first 5 years) and 332,182 tons of CO<sub>2</sub>-eq indirectly sequestered or avoided (for years 5 to 10). GEF resources achieve a cost effectiveness of US\$4.20/tCO<sub>2</sub>, accounting only the tons of CO<sub>2</sub>-eq that will be directly sequestered, if considering both direct and indirect tons of CO<sub>2</sub>-eq sequestered this result is in the order of US\$2.50/tCO<sub>2</sub>.

### III. IMPLEMENTATION AND MANAGEMENT PLAN

#### A. Summary Implementation Arrangements

- 3.1 **Executing Agency.** The beneficiary of the Project is the Republic of Nicaragua and the executing agency will be ENEL through an ad-hoc PEU physically located in the project zone (Jinotega). **Evidence of the agreement between the Republic of Nicaragua and ENEL to transfer the resources of the contribution to ENEL for the execution of the Project will be condition prior to first disbursement.** The PEU will report to ENEL's *Gerencia General de Proyectos* (GGP) and will be composed by a general Coordinator, a Project Technical Coordinator, an Administrative Assistant, and a Financial and a Procurement Specialist provided by GGP. ENEL will also assign an Environmental Specialist for each of the four components. The PEU will be responsible for Project coordination, technical support for Project execution, Project administration, financial and accounting management, procurement of goods and services and the preparation of annual operating budgets, and monitoring and evaluation reports. Specific responsibilities include, but are not limited to: (i) technical support for Project execution; (ii) preparing and submitting disbursement requests to the IDB with the proper justification of eligible expenses and the Project's audited consolidated financial statements; (iii) undertake and supervise all procurement processes ensuring quality and

compliance with IDB policies; (iv) verifying the quality of the goods and services provided by contracted parties and making the corresponding payments; (v) preparing the required monitoring and evaluation reports, submitting them to the IDB, and making them available to the public; (vi) ensuring compliance with the conditions of the Project agreement with the IDB; and (vii) opening separate accounts to administer Project funds. **Evidence of the establishment of the PEU with at least a General Coordinator, a Procurement Specialist, and a Financial Specialist; and the selection of the Project Technical Coordinator, will be conditions prior to first disbursement.**

- 3.2 **Executing Arrangement.** ENEL will count with the operational and technical support of INAFOR, MARENA and ANA for the implementation of Components 2, 3 and 4 respectively. The activities under these components fall in the area of institutional responsibility and technical expertise of each of these agencies.<sup>9</sup> As executing agency, ENEL will receive and manage the Project funds as well as procure all goods and services for the different components. INAFOR, MARENA and ANA will implement the activities on the field and support all related procurement processes through technical advice and inputs. No funds will be transferred to INAFOR, MARENA and ANA and the operational costs of implementation will be covered through their counterpart contributions. ENEL will enter into operational and technical support agreements with each institution to establish the extent of their responsibilities and contribution to the Project. **As a condition prior to first disbursement technical and operational support agreements for the execution of the Project will have to be entered into between ENEL and INAFOR, MARENA and ANA.**
- 3.3 **Project Steering Committee (PSC).** In order to bring together all agencies and municipalities involved and/or affected by the Project an ad-hoc PSC will be created. The PSC will be composed by representatives from ANA, INAFOR, MARENA and the Municipalities of San Rafael del Norte and Jinotega. The PSC will be a forum to analyze the annual progress of the Project results and output indicators according to the Project Results Framework and its Monitoring and Evaluation (M&E) Plan, as well as to provide inputs for the Annual Operation Plan for the following year. The PSC will also discuss and provide inputs to the execution reports and monitoring progress of project execution (and beyond). The PSC will operate as standing committee, meaning that it will meet on a regular basis and is intrinsic to the integrated watershed management. **The establishment of the PSC will be a condition prior to first disbursement.**

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<sup>9</sup> INAFOR is a decentralized government agency under the *Ministerio Agropecuario y Forestal* (MAGFOR), Ministry of Agriculture and Forestry, created by Law No. 290 of 1998. Its function is to support, regulate and control the sustainable use of forest resources. MARENA was created by Decree No. 1-94 of 1994 and is in charge of the conservation, protection and sustainable use of Nicaragua's natural resources and environment. ANA was created by Law No. 620 of 2007 as a decentralized government agency under the executive branch to manage the water resource at the national level.

- 3.4 **Procurement.** Procurement of goods and services for the Project will be done according to IDB policy (GN-2350-9 for services, GN-2349-9 for goods and works) and following the provisions of the Project's Procurement Plan. A detailed Procurement Plan for the first eighteen months of execution has been prepared (see Annex of the POD). The Procurement Plan will be updated annually or when substantial changes are needed, subject to IDB approval. Ex-ante and ex-post reviews will be carried out as established in the Procurement Plan.
- 3.5 **Operations Manual.** A detailed Operations Manual will be finalized before the beginning of the implementation of the Project and will include special considerations on fiduciary issues with a detailed description of procurement procedures, administrative and accounting control procedures, reporting to the IDB and external auditing of the Project. **The Project Operations Manual will be prepared and approved by ENEL with non-objection by the IDB, as a condition prior to first disbursement.**

## **B. Summary of Arrangements for Monitoring and Evaluating (M&E) Results**

- 3.6 **Monitoring.** The monitoring of the Project outputs, outcomes and impacts, as well as the M&E of the day-to-day activities of the Project, will be supported by specific tools developed in each component: (i) a specialized carbon stock monitoring system; (ii) a land use monitoring system; (iii) a reference study on water surface elevation, water discharge, sediment concentration and stream flow in order to monitor the effect of the Project on water flow and sedimentation; and (iv) a biodiversity monitoring system for 12 keystone species. The cost of the monitoring tools and information acquisition is US\$380,386 distributed among the different components.
- 3.7 To ensure rigorous and objective analysis the M&E will be implemented by the PEU, building on existing watershed management information systems in Nicaragua, such as: the Monitoring, Follow-up and Evaluation Information System (SIMOSE) of the Natural Disaster Prevention, Adaptation and Mitigation project (POSAFII); MARENA's Physical, Financial and Environmental Planning, Administration and Evaluation System, (PlanEva); and INAFOR's Forest Management and Administration Information System (SIGFOR).
- 3.8 **Execution Reports.** Every six months the PEU will prepare and present a summary report to IDB and the PSC to inform on the progress made in the execution of the Annual Operation Plan. The execution report will summarize Project results including: (i) Project performance and, information on the progress towards Project objectives; (ii) main barriers for the execution; (iii) identification of constraints and unforeseen barriers to execution including those that could affect the achievement of objectives, the reasons for these constraints, and what is being done to overcome them; (v) expenditure reports; (vi) lessons learned; and (vii) recommendations for adaptive management of the Project strategy to optimize impact of the intervention.

- 3.9 **Annual Operation Plan (AOP).** At the beginning of each Project year, the PEU will elaborate an Annual Operation Plan (AOP) for the following year through a participatory process involving all partners in the management of the Project as represented in the PSC. The AOP will detail the activities plan for the following year, the required resources to execute them, the timeline for implementation, the disbursement projections, the progress indicators and the potential risks for the execution with the corresponding mitigation measures. The AOP will be shared with IDB and a summary will be made public (Internet site of ENEL). The designated IDB task manager, in collaboration with the IDB Country Office in Nicaragua, will eventually conduct administration missions to discuss the main findings of the AOP.
- 3.10 **GEF Project Implementation Review (PIR).** In addition to the Annual Project Report, the PEU will prepare the mandatory GEF Project Implementation Review (PIR), as well as the GEF tracking tools when required, in collaboration with the designated IDB task manager. These documents will be reviewed and analyzed by the IDB before it is sent to the GEF Secretariat.
- 3.11 **Reports and auditing.** The PEU will present to the IDB annual financial and accounting audit reports, made by an independent auditor acceptable to the IDB and according to terms of references and requirements previously agreed with the IDB. The audit report will make specific observations on the adequacy of internal PEU control procedures. Annual audit reports will be presented within 120 days after the closing of the annual fiscal cycle, and the final audit report will be presented within 120 days after the date of the final disbursement. Auditing costs will be financed by the Project.
- 3.12 **Evaluation.** An independent mid-term evaluation will take place after 24 months of Project execution from the date of disbursement eligibility, or once 35% of Project financing has been disbursed, whichever happens first. This timeframe is considered appropriate to allow consideration of adjustments in sufficient time for implementation. A final evaluation will be carried out six months before expected Project closing. Both evaluations will be contracted by independent consultants hired by IDB with resources from the agency fee provided by the GEF. The PEU will provide the necessary information needed to undertake such evaluations.
- 3.13 **Evaluation Methodology.** The Project results will be evaluated through a “Difference in Differences” methodology as explained in the Monitoring and Arrangements electronic link. This evaluation will include two components: (i) a quantitative analysis of the rate and intensity of adoption and de-adoption of land uses with higher environmental value (i.e., water, carbon sequestration, and habitat for biodiversity) promoted by the Project; and (ii) an impact assessment of the Project key indicators at the household level, including but not limited to, the agro-livestock net income. The budget allocated for this purpose amounts to US\$80,000, which will be covered with the GEF agency fee.

**INTEGRATED WATERSHED MANAGEMENT IN  
LAKES APANÁS AND ASTURIAS**

**NI-X1005**

**CERTIFICATION**

The Grants and Co-Financing Management Unit (VPC/GCM) certifies receipt of the GEF Council's Endorsement letter dated on July 19, 2011 for project Integrated Watershed Management in Lakes Apanás and Asturias (NI-X1005) for US\$4,040,909, chargeable against the GEF Trust Fund (GEFTF).

\_\_\_\_\_  
(Original Signed)

Marguerite S. Berger  
Chief  
Grants and Co-Financing  
Management Unit  
VPC/GCM

\_\_\_\_\_  
(08/08/11)

Date

Development Effectiveness Matrix			
Summary			
I. Strategic Alignment			
1. IDB Strategic Development Objectives	Aligned		
Lending Program	The intervention contributes to the lending program for small and vulnerable countries, poverty reduction and equity enhancement and support climate chance initiatives, renewable energy and environmental sustainability.		
Regional Development Goals	The intervention contributes to: i) Stabilization of CO2 equivalent emissions (metric tons per habitant), ii) Countries with planning capacity in mitigation and adaptation of climate change, and iii) Proportion of terrestrial and marine areas protected to total territorial area (%).		
Bank Output Contribution (as defined in Results Framework of IDB-9)	The intervention contributes to the following Bank outputs: i) Percentage of power generation capacity from low-carbon sources over total generation capacity funded by IDB, and ii) Number of projects with components contributing to improved management of terrestrial and marine protected areas.		
2. Country Strategy Development Objectives	Aligned		
Country Strategy Results Matrix	GN-2299	The project contributes to mitigate vulnerability to natural disasters and strenghten institutional management for disaster prevention as well as to support the quest for alternative energy sources.	
Country Program Results Matrix	GN-2617	The project is included in 2011 Country Program Document.	
Relevance of this project to country development challenges (If not aligned to country strategy or country program)			
II. Development Outcomes - Evaluability	Highly Evaluable	Weight	Maximum Score
	7.6		10
3. Evidence-based Assessment & Solution	9.5	25%	10
4. Ex ante Economic Analysis	7.0	25%	10
5. Monitoring and Evaluation	6.3	25%	10
6. Risks & Mitigation Monitoring Matrix	7.5	25%	10
Overall risks rate = magnitude of risks*likelihood	Medium		
Environmental & social risk classification	C		
III. IDB's Role - Additionality			
The project relies on the use of country systems (VPC/PDP criteria)			
The project uses another country system different from the ones above for implementing the program			
The IDB's involvement promotes improvements of the intended beneficiaries and/or public sector entity in the following dimensions:			
Gender Equality			
Labor			
Environment	Yes	The project will foster biodiversity conservation and climate change mitigation.	
Additional (to project preparation) technical assistance was provided to the public sector entity prior to approval to increase the likelihood of success of the project	Yes	The Bank has already approved the loan operation 2415/BL-NI that will invest in stand alone activities that will boost the project outcomes related to climate change adaptation under component 2.	
The ex-post impact evaluation of the project will produce evidence to close knowledge gaps in the sector that were identified in the project document and/or in the evaluation plan.	Yes	The impact evaluation should allow for an impact assessment of the project on key indicators at the household level	

This is an operation of the Global Environment Facility (GEF). The objective of the grant is to foster biodiversity conservation and climate change mitigation in the Lakes Apanas and Asturias Watershed. Specifically the operation focuses on (i) the implementation of sustainable forest and land management (SFLM) activities that will increase forest carbon sequestration, reduce greenhouse gas emissions and protect fragile ecosystems; and (ii) the design and piloting of a scheme of payment for environment 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.

The grant is accompanied by a good empirical diagnosis of the main problems of the sector, and its main causes, and the proposed solutions are appropriate. Indicators for outcomes, and outputs are SMART. A cost-benefit analysis was performed. The monitoring plan of the grant is specific about the activities to be conducted, includes information on responsibilities, timelines and includes a sound budget. An impact evaluation proposal is included with a non-experimental method, which should produce empirical evidence of the effectiveness of the operation. Finally, the grant has a risk matrix that identifies potential risks and mitigation measures.

## PROJECT RESULTS FRAMEWORK

Matrix of Result Indicators			
<b>Project Objective:</b> Foster biodiversity conservation and climate change mitigation in the Lakes Apanas 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 design and piloting of a scheme of Payment for Environmental 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.			
Indicator	Baseline	Goal	Means of Verification
1. Hectares under improved sustainable land and forest management practices increased	3325.8 ha	5220.8 ha	Land Use Monitoring and Evaluation system provided by INAFOR
2. Avoided/sequestered tons of CO <sub>2</sub> e of direct emissions from program activities	0 tons	491,151 tons	Information from the Carbon Monitoring System established by ENEL and MARENA
3. Annual tons of dragged sediments per prioritized micro watershed reduced	Annual tons of dragged sediments per prioritized micro watershed to be determined first year	Reduction of 20% of baseline value	Monitoring system on water sedimentation. Reports from ENEL
4. Hectares of forested area within the private nature reserve (PNR) network increased.	170 ha	1170 ha	Annually reported by MARENA
5. Hectares of forest protected under a PES mechanism increased	0 ha	2822 ha	Land use monitoring system reported by ANA

Components / Outputs	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Target	Means of Verification
<b>Component 1. Strengthening the institutional framework and local capacity for land use planning and watershed management.</b>								
Cadastre Information System, SISCAT	0	0	0	0	1	1	1	Confirmation of SISCAT implementation INIFOM
Carbon monitoring system	0	1	1	1	1	1	1	Annual reports of carbon stocks and local factors for calculations from MARENA and ENEL.
Trained personnel in monitoring, reporting and verification techniques for carbon inventories.	0	10	11	11	11	11	11	Reports provided by ENEL.
Hydrometric stations	0	0	2	2	2	2	2	Supervision visit to ENEL's facilities.
Reference study on water surface elevation, water discharge, sediment concentration, and stream flow	0	0	1	1	1	1	1	Report provided by ENEL.
LUIMP	0	0	1	1	1	1	1	Report and minutes of stakeholder engagement meetings.
Trained student leaders from local public schools in the use of watershed management content.	0	0	0	80	150	150	150	Report provided by ENEL and ANA.
Trained watershed committee members on watershed management tools.	0	0	30	30	30	30	30	Report and certification provided by ENEL and ANA.
<b>Component 2: Implementation of sustainable land and forestry management practices enhancing biodiversity conservation and carbon sequestration.</b>								
Agroforestry Systems (hectares)	0	72	145	217	290	363	363	Inspection report from INAFOR
Eco-forest shade coffee (hectares)	0	10	20	30	40	50	50	Inspection report from INAFOR
Gallery forest (hectares)	1152.8	1218	1320	1422	1524	1663.8	1663.8	Inspection report from INAFOR



Components / Outputs	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Target	Means of Verification
Sylvopastoral systems (hectares)	2104.4	2268	2432	2597	2761	2925.4	2925.4	Inspection report from INAFOR
Forest Plantations	68.6	68.6	118.6	168.6	218.6	218.6	218.6	Inspection report from INAFOR
Sustainable forestry management plans	0	30	60	60	60	60	60	Farm plan contracts supplied by INAFOR and ENEL
Trained communities in business plan development, sustainable forestry management and timber value chains	0	0	2	5	5	5	5	Reports by ENEL and INAFOR
Hectares of living barriers	0	50	120	190	260	300	300	Reports by ENEL and INAFOR. Site visits
Hectares of living barriers around crops	0	50	100	150	200	200	200	Reports by ENEL and INAFOR. Site visits
Hectares of vegetable gardens under Soil and Water Conservation Practices (SWCPs).	0	20	40	40	40	40	40	Reports by ENEL and INAFOR
Trained local producers on sustainable forestry	0	7.5%	15%	15%	15%	15%	15%	Reports by ENEL and INAFOR
Basic infrastructure works (7 along each of the 6 tributary rivers) for retaining sediment from point sources.	0	10	20	30	42	42	42	Site visits by ENEL and INAFOR
<b>Component 3. Biodiversity and forest conservation in private nature reserves (PNR) and RAMSAR site.</b>								
Management plans for Private Reserves	6	8	18	25	25	25	25	Monitored annually by MARENA and INAFOR
Biodiversity monitoring system for the RAMSAR site established.	0	0	0	1	1	1	1	Monitored annually by MARENA and the PEU
Biodiversity conservation farms (orchids, butterflies, frogs and iguanas)	0	0	7	25	35	35	35	Monitored annually by MARENA through site visits
Ecotourism business circuits plans	4	5	10	15	20	25	25	Monitored annually by MARENA with INTUR information

Components / Outputs	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Target	Means of Verification
Ecotourism lodging facilities	0	5	10	15	20	25	25	Monitored annually by MARENA with INTUR information
<b>Component 4. Design and implementation of an environmental services payment (ESP) mechanism in the Lakes Apanás and Asturias watershed</b>								
Economic valuation of ecosystem services within the watershed	No existing specific study of the area.	1	1	1	1	1	1	One study approved by ANA
PES scheme	No existing mechanism in the area.	1	1	1	1	1	1	One scheme monitored and implemented by ANA.
PES fund to promote forest plantations	0	0	1	1	1	1	1	ANA report on fund performance
Dissemination workshops on PES scheme	0	0	10	10	10	10	10	Monitored by ANA through workshop minutes
PES contracts	0	0	20	40	60	75	75	PEU and ANA reports and copy of contracts.

## **FIDUCIARY AGREEMENTS AND REQUIREMENTS**

**COUNTRY:** NICARAGUA

**PROJECT NUMBER:** NI-X1005

**NAME:** Integrated Watershed Management in Lakes Apanás and Asturias

**EXECUTING AGENCY:** Empresa Nicaragüense de Electricidad [Nicaraguan Electricity Company] (ENEL)

**PREPARED BY:** Brenda M. Alvarez Junco, Procurement Specialist (PDP/CNI); and Juan Carlos Lazo, Financial Management Specialist (PDP/CNI).

### **I. EXECUTIVE SUMMARY**

1. The fiduciary management assessment was based on the institutional capacity assessment reports on ENEL.
2. Nicaragua's fiduciary management situation is improving. Various steps must be taken to make it consistent with international best practices and Bank policies. The executing agency's (ENEL) fiduciary area has experience implementing Bank-financed projects and is currently executing loans 1933/BL-NI and 2342/BL-NI.
3. The project does not include financing from other multilateral organizations.

### **II. FIDUCIARY CONTEXT OF THE EXECUTING AGENCY**

The executing agency's central procurement division performs procurement operations. ENEL has implemented measures to prevent acts of fraud and corruption; however, none of these measures have been formalized. Procurement personnel are not executing agency staff, and therefore there is a risk of losing those experienced in executing Bank operations. The procurement procedures are consistent and in general comply with those required for Bank-financed operations.

The program executing agency has acceptable financial management capacity; however, there is still room for improvement in some basic areas. For this reason, at the outset disbursements will be reviewed ex ante. Following the first year of implementation, progress on the action plan will be evaluated, and a determination will be made regarding a transition to ex post disbursement reviews.

### **III. FIDUCIARY RISK ASSESSMENT AND MITIGATION MEASURES**

Based on the fiduciary aspect of the institutional capacity assessment reports completed during project preparation, the risk level assigned to ENEL's fiduciary units is low. Mitigation measures are included in the corresponding reports.<sup>1</sup>

### **IV. CONSIDERATIONS FOR THE SPECIAL CONDITIONS OF THE CONTRACT**

In order to facilitate the negotiation process for the project team, particularly the Legal Department (LEG), the agreements and requirements that will be provided for in the Special Conditions are listed below:

- a. No additional or altered considerations vis-à-vis those addressed in PNESER I (NI-L1040) will be included.
- b. The Bank will not process Direct Payments (DPS) to suppliers based in Nicaragua.
- c. Procurement is governed by the Bank policies contained in documents GN-2349-9 and GN-2350-9.
- d. No exception to the application of Bank policies is anticipated.
- e. Thresholds for international publicity for works, goods, consulting, and nonconsulting services will be consistent with the country thresholds established by the Operations Procurement Office (PDP).
- f. Procurement supervision will combine ex ante and ex post arrangements, based on a procurement-related institutional capacity assessment of the executing agency, and may be adjusted at the Bank's discretion based on the results observed.
- g. Following the initial procurement plan developed in coordination with the Bank, once the operation has been approved, the first procurement plan will be developed using the Procurement Plan Execution System (SEPA).
- h. Ex post reviews will initially be conducted every six months.

### **V. AGREEMENTS AND REQUIREMENTS FOR PROCUREMENT EXECUTION**

The procurement-related fiduciary agreements and requirements establish the applicable provisions for all procurements required under the project.

#### **1. Procurement execution**

ENEL will be responsible for project procurements, which will be carried out in accordance with the provisions of the policies contained in the documents GN-2349-9

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<sup>1</sup> For the Ministry of Energy and Mines (MEM): 25085161, 35794291; for ENEL: 25085833, 35794228; and Empresa Nacional de Transmisión Eléctrica (ENATREL): 25085833, 35794257.

“Policies for the Procurement of Goods and Works Financed by the Inter-American Development Bank” and GN-2350-9 “Policies for the Selection and Contracting of Consultants Financed by the Inter-American Development Bank.”

The operation does not call for other mechanisms for third-party procurement processes.

- a. Procurement of works, goods, and nonconsulting services: Contracts for works, goods, and nonconsulting services<sup>2</sup> generated under the project will be included in the initial procurement plan. Those subject to international competitive bidding (ICB) will use the Bank’s standard bidding documents (SBDs). Those subject to national competitive bidding (NCB) will use national bidding documents agreed upon with the Bank. The project’s sector specialist will be responsible for reviewing the technical specifications for procurement during preparation of the selection process. Direct contracting for works and nonconsulting services and single-source selection of goods are not anticipated. The types of works, services, and goods to be procured appear not to pose complexities that would warrant direct contracting, as initially planned.
- b. Selection and contracting of consultants: Contracts for consulting services generated under the project will be included in the initial procurement plan and will use the standard request for proposals (RFP) issued by the Bank or agreed upon with the Bank. The project’s sector specialist will be responsible for reviewing the terms of reference for contracting consulting services. Direct contracting of individual consultants is not anticipated because the profiles and areas of expertise of individual consultants allow for competitive processes, and as such do not warrant direct contracting.
  - Individual consultant selection: Consultants will be selected based on how qualified they are to do the job, comparing the qualifications of at least three candidates;
  - Training: National individual consultant selection based on qualifications (NICQ) will be used if the project team leader determines that training will be provided by an individual consultant, or quality- and cost-based selection (QCBS) if a firm is to be hired.
- c. Recurring expenses: These are operating and maintenance expenses required to make the project operational during its useful life, and cover: rental car fees for supervision tasks, communication expenses, office equipment and supplies, publicity fees, photocopies, etc., financed by the project from the annual Bank-approved budget. These expenditures will be made in accordance with Bank procurement policies. Operating costs do not include civil servant salaries.

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<sup>2</sup> Policies for the Procurement of Goods and Works Financed by the Inter-American Development Bank (document GN-2349-9), paragraph 1.1: Nonconsulting services are treated similarly to goods.

- d. Advance procurement: During the design phase of the project it was determined that a technical coordinator for the project needed to be hired in advance as long as the Executing Agency followed the Bank's procurement policies, in particular the provisions of paragraph 1.12 of the GN-2350-9; whereas, the general coordinator, procurement specialist, and financial specialist will be provided by ENEL.
- e. National preference: Not applicable.

## 2. Threshold amounts table (US\$000)

Expense category	Amount (US\$000)	Procurement method	IDB review
Works	$\geq 1,500$	ICB	Ex ante for all processes
	$< 1,500 \geq 150$	NCB	Ex post for all processes
	$< 150$	Shopping	Ex post for all processes
Goods	$\geq 150$	ICB	Ex ante for all processes
	$< 150 > 25$	NCB	Ex post for all processes
	$\leq 25$	Shopping	Ex post for all processes
Nonconsulting services	$\geq 150$	ICB	Ex ante for all processes
	$< 150 > 25$	NCB	Ex post for all processes
	$\leq 25$	Shopping	Ex post for all processes
Consulting firms	$> 200$	International shortlist	Ex ante for all processes
	$\leq 200$	National shortlist	
Individual consultants	See Section 5, Policy document GN-2350-9		Ex ante for all processes, for any case in excess of US\$25,000

## 3. Initial Procurement Plan

Description of planned procurement	Estimated amount US\$000	Procurement method	Prequalification Yes - No
<b>GOODS</b>			
Office facilities (component III)	36,747	Shopping	No
Materials for the establishment of SFLM	806,291	ICB - NCB	No
Office equipment and materials for installation of breeding centers	80,934	NCB	No
<b>WORKS</b>			
Infrastructure works to establish living barriers, SWCWs, and agro-health techniques	171,960	NCB	No
Infrastructure works to establish breeding centers and a monitoring facility	164,292	NCB	No
<b>NONCONSULTING SERVICES</b>			
Workshops on watershed management and environmental awareness	161,019	Shopping	No
Workshops and promotion of PES	92,667	Shopping	No
<b>CONSULTING SERVICES</b>			
Designing, developing, and implementing the carbon monitoring system	150,000	QCBS	No

Description of planned procurement	Estimated amount US\$000	Procurement method	Prequalification Yes - No
Developing the LUIMP and field studies research	132,000	CQS - QCBS	No
Designing the system to monitor and evaluate environmental practices with a watershed approach	215,048	CQS - QCBS	No
Building capacity related to biodiversity	116,000	CQS - QCBS	No
<b>INDIVIDUALS</b>			
Local monitoring of carbon stocks	92,400	CQS	No
Biodiversity monitoring system, SIG, and economic assessment	88,250	CQS	No
Technical, economic, and legal advice	70,167	CQS	No
Management and field implementation of PES	127,200	CQS	No

#### 4. Procurement supervision

The review method (ex ante or ex post) will be determined for each selection process.<sup>3</sup> Ex post reviews will be conducted every six months in accordance with the project's supervision plan. Ex post review reports will include at least one physical inspection visit,<sup>4</sup> selected from among the procurement processes subject to ex post review. No fewer than 10% of the contracts reviewed will be inspected physically.

#### 5. Special provisions

##### a. Measures to reduce the likelihood of corruption

Coordination should be strengthened between the central area responsible for the operation, located in Managua, and the unit responsible for the operation's contracting procedures, physically located in Jinotega. In particular, ENEL is expected to implement control points during the different stages of contracting procedures.

##### b. Records and files

The project executing unit will be responsible for the safe-keeping and management of contract files and will appoint an employee specifically for this task.

### VI. FINANCIAL MANAGEMENT

#### a. Financial management system

ENEL's financial management system has been evaluated and is acceptable to the Bank. ENEL works with VAN, but in the medium term could also migrate to SIGFA-PRO.

<sup>3</sup> The methodology described in the document [Ex post review guide for procurement processes](#) will be used.

<sup>4</sup> The inspection verifies that the procurement took place, leaving verification of quality and compliance with specifications to the sector specialist.

**b. Disbursements and cash flow**

The operation will have a single account for managing funds. Given that it is a new operation, and in accordance with the fiduciary reform, disbursements will be made mainly in the form of advances, in accordance with the provisions of Bank guidelines and policies.

**c. Accounting and financial reports**

Annual audited financial statements will be required in accordance with the provisions of Bank guidelines and policies.

**d. Internal control and internal audit**

The executing agency has an internal audit unit and mechanisms for maintaining an acceptable environment for internal control. Nevertheless, in practice, these mechanisms are frequently not employed due to the limited capacity of the internal audit unit, which lacks both material and human resources. It is also important to establish risk analysis methodologies. These shortcomings have been identified in the institutional capacity assessments, and actions have been programmed and deadlines set for improving the situation.

**e. External control**

An independent auditing firm acceptable to the Bank will need to be hired. The current terms of reference should be modified to broaden the scope of the work and include the new operation.



DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-\_\_\_/11

Nicaragua. GRT/FM-\_\_\_\_\_-NI. Nonreimbursable Investment Financing of the  
Global Environment Facility (GEF) for Integrated Watershed  
Management in Lakes Apanás and Asturias

The Board of Executive Directors

RESOLVES:

1. That the President of the Inter-American Development Bank, or such representative as he shall designate, is authorized in the name and on behalf of the Bank, as Administrator of the IADB/GEF Fund, to enter into such agreement or agreements as may be necessary with the Republic of Nicaragua, as Beneficiary, and to adopt such other measures as may be pertinent for the execution of the project proposal contained in document \_\_\_\_-\_\_\_\_\_ with respect to a nonreimbursable investment financing of the Global Environment Facility (GEF) for Integrated Watershed Management In Lakes Apanás and Asturias.

2. That up to the sum of US\$4,040,909 is authorized for the purposes of this resolution chargeable to the resources of the IADB/GEF Fund.

3. That the above-mentioned sum is to be provided on a nonreimbursable basis.

(Adopted on \_\_ \_\_\_\_\_ 2011)