AFB/PPRC.1/7
May 26, 2010

Adaptation Fund Board
Project and Programme Review Committee
First Meeting
Bonn, June 14, 2010

PROJECT/PROGRAMME PROPOSAL FOR NICARAGUA

I. Background

1. The Operational Policies and Guidelines for Parties to Access Resources from the Adaptation Fund, adopted by the Adaptation Fund Board, state in paragraph 41 that regular adaptation project and programme proposals, i.e. those that request funding exceeding US$ 1 million, would undergo either a one-step, or a two-step approval process. In case of the one-step process, the proponent would directly submit a fully-developed project proposal. In the two-step process, the proponent would first submit a brief project concept, which would be reviewed by the Project and Programme Review Committee (PPRC) and would have to receive the approval by the Board. In the second step, the fully-developed project/programme document would be reviewed by the PPRC, and would finally require Board's approval.

2. The Templates Approved by the Adaptation Fund Board (Operational Policies and Guidelines for Parties to Access Resources from the Adaptation Fund, Annex 3) do not include a separate template for project and programme concepts but provide that these are to be submitted using the project and programme proposal template. The section on Adaptation Fund Project Review Criteria states:

> *For regular projects using the two-step approval process, only the first four criteria will be applied when reviewing the 1st step for regular project concept. In addition, the information provided in the 1st step approval process with respect to the review criteria for the regular project concept could be less detailed than the information in the request for approval template submitted at the 2nd step approval process. Furthermore, a final project document is required for regular projects for the 2nd step approval, in addition to the approval template.*

3. The first four criteria mentioned above are:
   1. Country Eligibility,
   2. Project Eligibility,
   3. Resource Availability, and
   4. Eligibility of NIE/MIE.

4. Based on the Adaptation Fund Board Decision B.9/2, the first call for project and programme proposals was issued and an invitation letter to eligible Parties to submit project and programme proposals to the Adaptation Fund was sent out on April 8, 2010.

5. According to the paragraph 41 of the operational policies and guidelines, a project or programme proposal needs to be received by the secretariat not less than seven weeks before a Board meeting, in order to be considered by the Board in that meeting.

6. The following project concept titled "Reduction of risks and vulnerability from floods and droughts in the Estero Real watershed" was submitted by the United Nations Development Programme (UNDP), which is a Multilateral Implementing Entity of the Adaptation Fund. It was received by the secretariat before the closing date for consideration of projects in the 10th Adaptation Fund Board meeting. The secretariat has carried out a technical review of the project concept and assigned to it the diary number AFB/MIE/Water/2010/1, and is submitting to the Project and Programme Review Committee the following documents:

   1. Summary of the project, prepared by the secretariat.
   2. The technical review sheet, filled in by the secretariat.
   3. The original concept, as submitted (in Annex).

II. Recommendation

7. The PPRC may want to consider and recommend to the Board

a) To endorse the project concept, contained in the Annex; and

b) To communicate to UNDP a list of specific issues that would need to be clarified within the project proposal. A list of such issues, suggested by the secretariat, is included in the technical review sheet.

1. Project Summary

Nicaragua – Reduction of risks and vulnerability from floods and droughts in the Estero Real watershed
Implementing Entity: *UNDP*
Executing Entity: *Ministry of Environment and Natural Resources)*

Project execution cost: USD 450,000
Total project cost (execution included): USD 5,000,000
UNDP management fee: USD 500,000 (10%)
Total amount of financing requested: USD 5,500,000

Project Background and Context: Climatic variability results in long droughts that lead to significant losses affecting the agricultural sector which provides employment for over 60% of the population. Floods devastate crops, infrastructure, and housing during the wet season. Current variability will be aggravated by climatic trends. The areas of Chinandega and León, where the proposal will be sited, will be among the areas that will be most affected by climate change. In these areas, deforestation and poor land management techniques have resulted in high erosion and sedimentation rates. In the watershed, a high level of rural poverty exists and the situation is exacerbated by the reduced surface water sources for irrigation demands. The objective of the project is to reduce the risks from floods and drought generated by climate change and variability in the Estero Real watershed.

Component 1: Broad range of investments and technology assistance in water harvesting reduces the impacts of water stress and drought (USD 2,300,000)

The expected outcome of this component is the reduction of risk from flooding and droughts through the storage of rainwater in reservoirs and other mechanisms in the upper and mid watershed regions of the Aquespalapa-Grande River. Two micro-dams will be constructed under this component to collect excessive rainfall during the west season for irrigation during the dry season. Three small reservoirs will be built in the upper watershed as well. Investments in infiltration ditches will be undertaken to enhance recharge rates of aquifers in the mid and upper watershed. Pilot demonstration activities in climate resilient water harvesting and storage mechanisms will also be undertaken

Component 2: Demonstration of best practices in climate resilient agricultural and livestock production enhances food security in the mid and upper watershed of the Rio Grande (USD 1,250,000)

The expected outcome of this component is the demonstration of best practices in climate resilient agricultural and livestock production to enhance food security in the mid and upper watershed of the rivers. In this area, practices will be promoted that contribute to catchment protection in order to stop erosive processes. In the mid watershed, resilience will be enhanced through agricultural, agroforestry and livestock practices which include the adoption of higher value climate resilient crops, changes in crop cycles, climate resilient irrigation approaches, use of leguminous forage trees, and improved livestock feed storage facilities. This component also includes reduction of the use of agrochemicals.

Component 3: Institutional and community capacities for addressing water resource management and climate change adaptation issues through normative and regulatory frameworks strengthened (USD 500,000)

The expected outcome of this component is the strengthening of normative and regulatory frameworks to develop the capacity to address water resource management and climate change adaptation issues. A supportive enabling environment will be created to incentivize adaptation at the community level through policy changes and capacity development initiatives. Targeted municipal adaptation plans will be developed. Municipalities will be supported to incorporate climate change considerations into their existing development and investment plans. Municipal staff capacities will be strengthened to enable them to act as trainers on climate change issues and response measures.

Component 4: Knowledge management, dissemination of lessons learned and best practices (USD 500,000).

A monitoring and information system will be developed to monitor the impact of project activities. Capacity development will be undertaken with the local stakeholders to enable them to understand and track climate variability. The component will also build upon already developed early warning systems to incorporate climate change variability.

ADAPTATION FUND

2. ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT CATEGORY: **REGULAR-SIZED PROJECT CONCEPT**

Country/Region: **Nicaragua**
Project Title: **Reduction of risks and vulnerability from floods and droughts in the Estero Real watershed**
AF Project ID: **AFB/MIE/Water/2010/1**
NIE/MIE Project ID: **74925** Requested Financing from Adaptation Fund (US Dollars): **5,500,000**
Regular Project Concept Approval Date (if applicable): **n/a** Anticipated Submission of final RP document (if applicable):
AFB Secretariat Screening Manager:**Mikko Ollikainen** NIE/MIE Contact Person: **Paula Caballero**

Review Criteria	Questions	Comments
Country Eligibility	1. Is the country party to the Kyoto Protocol?	Yes.
	2. Is the country a developing country particularly vulnerable to the adverse effects of climate change?	Yes.
Project Eligibility	1. Has the designated government authority for the Adaptation Fund endorsed the project?	Yes (letter from DA dated April 21, 2010).
	2. Does the project / programme support concrete adaptation actions to assist the country in addressing adaptive capacity to the adverse effects of climate change and build in climate resilience?	Yes. Two of the four project components (1&2) support direct adaptation measures, and represent majority of the budget. These include: - A broad range of investments (2 dams, 3 reservoirs) and technology assistance in water storage and water harvesting to reduce vulnerability to water stress and drought - Community-based forestry, agricultural and livestock practices to protect local agriculture against climate uncertainties. However, the proponent should explain in more detail how these interventions in component 2, especially its activities in the mid and upper watershed, address adaptation issues beyond “development as usual” land degradation issues. The project objective is to reduce risks from floods and droughts: the proponent should explain how risks are assessed before and over the course of the project, and how the risk levels are linked to vulnerability.

	3. Does the project / programme provide economic, social and environmental benefits, particularly to vulnerable communities?	Yes. The project would target poor communities in a seriously degraded watershed, and aim to bring about economic, social and environmental benefits. The project will deliver: - Economic benefits: water harvesting and irrigation would guarantee at least one full harvest a year (whereas today, erratic and insufficient rainfall results in low yields). Access to credits will be bolstered. - Social benefits: vulnerability of population to water stress and drought will be decreased, and food security will be improved. - Indirect environmental benefits (the project may reduce land degradation; reforestation may sequester carbon).
	4. Is the project / programme cost effective?	Requires clarification. The project would target a situation where a new Water Law provides a solid institutional starting point for concrete actions, and the activities would potentially yield high returns compared to the investment. The planned investment of USD 1 million to capacity building and knowledge management seems high and would require clarification. "During the project formulation phase, cost-effectiveness of the proposed project outcomes, including consideration of alternative approaches, will be evaluated."
	5. Is the project / programme consistent with national or sub-national sustainable development strategies, national or sub-national development plans, poverty reduction strategies, national communications and adaptation programs of action and other relevant instruments?	Yes. "The Second National Communication, the National Plan for Human Development and other sectoral development plans prioritize the agricultural and water sectors as the most vulnerable to climate change."
	6. Does the project / programme meet the relevant national technical standards, where applicable?	Yes but requires clarification. The concept claims that it will but "Additional details will be spelt out in the full project proposal".

	7. Is there duplication of project / programme with other funding sources?	Requires clarification. The concept mentions two existing projects in the same area that would be "fully complementary to the proposed project" but it does not clearly explain what achievements of those projects this proposed project could build on, and how overlap would be avoided, considering both geographical and operational dimensions. The GEF-UNDP Land Degradation project "Sustainable Land Management in Drought Prone Areas of Nicaragua" ($3M) is executed by MARENA and will target 7+5 municipalities in the North of León, Chinandega and Managua. It will develop the following activities: - Adoption of new and indigenous Technologies to mitigate drought and maintain the ecosystem integrity. - Strengthening of community organizational structures and development of territorial management plan in the municipalities. The CANADA-DANIDA project targets the headwater of the Estero Real, also targeted by the AF project. It will develop the capacity of municipalities' technical units to plan and improve production methods, soil and water conservation, and agro-forestry.
	8. Does the project / programme have a learning and knowledge management component to capture and feedback lessons?	Yes, but the current formulation is somewhat general, and should be specified further to justify such considerable budget (US$500,000).
	9. Is the requested financing justified on the basis of full cost of adaptation reasoning?	This requires further clarification and more specific budget breakdown, especially regarding quantification of the expected results, and what additional to the existing initiatives the project would produce. Component 2 mentions activities to reduce "use of agrochemicals that are polluting groundwater resources". The proponent should explain how this is an adaptation goal.
Resource Availability	1. Is the requested project / programme funding within the cap of the country?	n/a (No cap decided yet)
Eligibility of NIE/MIE	2. Is the project submitted through an eligible NIE/MIE that has been accredited by the Board?	Yes.
Implementation Arrangement	1. Is there adequate arrangement for project / programme management?	n/a (Not required in Project Concept phase) (The basic structure of project management is provided. The project is planned to use a Direct National Execution (NEX) modality, where functions and responsibility would be delegated to the executing entity. The compliance with such structure with AF guidelines regarding the division of roles and responsibilities between IE and EE should be explained. The level of the management fee should be considered in conjunction with such explanation.)

	2. Are there measures for financial and project risk management?	n/a (Not required in Project Concept phase) (A short risk management description is provided but would need to be detailed.)
	3. Are arrangements for monitoring and evaluation clearly defined, including budgeted M&E plans?	n/a (Not required in Project Concept phase) (A basic budgeted M&E plan is provided. "It is important to note that the Results Framework, together with the impact indicators and means of verification, will be fine-tuned during project formulation.")
	4. Is a results framework included?	n/a (Not required in Project Concept phase) (No. "This will be outlined in the full project proposal to be submitted to the Adaptation Fund for approval.")

Technical Summary	"The objective of the Project is to reduce the risks from [floods and] drought generated by climate change and variability in the Estero Real watershed. A coordinated set of key results that encompasses capacity building, long-term planning, development of public policies, and targeted investments will be relied upon to reach the objective. The project will have four components: 1. Risks from flooding and drought reduced through storage of rainwater in reservoirs and other mechanisms in the upper and mid watershed of the Aquespalapa –Grande Rivers, US$2,300,000. 2. Demonstration of best practices in climate resilient agricultural and livestock production enhances food security in the mid and upper watershed of the Río Grande, US$1,250,000. 3. Institutional and community capacities for addressing water resource management and climate change adaptation issues through normative and regulatory frameworks strengthened, US$500,000. 4. Knowledge management, dissemination of lessons learned and best practices, US$500,000. The adaptation case the concept makes sounds plausible, and the components would potentially fit together well. The main concerns are about the justification of the high budget to components 3 and 4, and avoiding duplication with existing initiatives. Main concerns: 1. The projects should elaborate on the link with the two other on-going projects that seem to encompass some common activities. 2. Component 2 should be better described, especially regarding the adaptation issue it addresses, and its cost should be better justified. 3. The planned investment of USD 1 million to capacity building and knowledge management seems high and needs to be clarified. 4. The project will need to clearly identify which technical standards will be followed and the measures undertaken to ensure that these standards are met. MARENA has technical capacity but how will it be augmented?
Date:	May 26, 2010

ADAPTATION FUND

DATE OF RECEIPT:
ADAPTATION FUND PROJECT ID:
(For Adaptation Fund Board Secretariat Use Only)

PROJECT/PROGRAMME PROPOSAL

PART I: PROJECT/PROGRAMME INFORMATION

PROJECT/PROGRAMME CATEGORY**: Regular**
COUNTRY/IES**: Nicaragua**
TITLE OF PROJECT/PROGRAMME: **Reduction of risks and vulnerability from floods and droughts in the Estero Real watershed (PIMS ID 4448, Atlas IDs – Proposal 59776, Project 74925)**
TYPE OF IMPLEMENTING ENTITY: **Multilateral Implementing Entity**
IMPLEMENTING ENTITY**: United Nations Development Program**
EXECUTING ENTITY/IES**: Ministry of Environment and Natural Resources (MARENA)**
AMOUNT OF FINANCING REQUESTED**: $5,500,000**

PROJECT / PROGRAMME BACKGROUND AND CONTEXT:

Nicaragua faces severe impacts from disasters related to extreme natural phenomena. Combined with already significant climatic variability, socio-economic impacts are magnified by the incidence of high levels of poverty. Climatic variability, especially during ENSO episodes, results in long droughts that lead to significant losses, especially affecting the agricultural sector which provides employment for over 60% of the population and on which food security[1]. During the wet season, devastating floods destroy crops, infrastructure and housing.[2] In a predominantly sub-humid tropical climate with strong inter-annual variability, climate change

[1] Episodes of severe drought which have had important impacts at a national level have occurred at least in 1972, 1977, 1991, 1997 and 2003.
[2] Significant floods occurred in (hurricane Juana; Bluefields), 1991 (El Rama), 1993 (tropical storms Pert and Bret), 1995 (tropical waves), y 2008 (tropical storm Alma). Catastrophic landslides and torrential flows (lahares) have also been registered such as in Posoltega (Casita volcano) during Hurricane Mitch (1998), which struck Central America leaving a wake of destruction.

trends pose a growing threat to continued development and to the wellbeing of poor rural communities in many areas. Current variability will be aggravated by climatic trends.

There is limited data and information on climate change projections that is developed at the national level, and both the First and Second National Communications (FNC and the SNC, respectively)relied heavily on extrapolations from global models and regional studies to define likely climate trends in the country. The FNC concluded that mean annual temperature could increase between 1.6 and 2.1° by 2050, with more severe changes of between 2.3°-3.7° by 2100. This was later reconfirmed by the SNC, which notes that over 2020-2029 average temperatures could increase by 0.5° to 1.0° under the A2 and B1 scenarios. A recent study[3] on climatic extremes in Latin America concluded that temperature ranges and the variability between these is changing in the region. With regards to precipitation, there is significant uncertainty. According to the SNC there are notable discrepancies between models over both temporal and spatial scales. Some models register a slight decrease in precipitation under A2 and B2 scenarios in the near term, with more profound reductions in total annual precipitation of -8.20% (B2) and -11.49% (A2), towards the latter half of the century. Yet other models predict different scenarios. There are also constraints in that the calibration of climate change projection models that are used at present may not accurately reflect current and emerging conditions in the so-called dry zones of Nicaragua, regions that are already experiencing high levels of water stress. The SNC notes that during El Niño events that have triggered severe drought, annual precipitation in the departments of Chinandega and León has decreased on average between 19% (270mm) and 35% (516 mm). During La Niña events, river levels can rise significantly especially in October where mean flows can surpass historic averages by over 500%.

The Pacific region, where over 65% of the population lives, is the most vulnerable, with strong demographic trends, high levels of extreme rural poverty, and low precipitation rates. The areas that will be most affected by climate change are those currently classified as dry zones, such as the northern region of Nicaragua and the municipalities in the departments of Chinandega and León where the current proposal would be sited. In these areas, higher temperatures and increasing variability in precipitation combined with more intense events, will aggravate current conditions of water scarcity and extreme poverty. Under conditions of a changed climate, it is estimated that these areas will receive an average of 500mm annually of rainfall, which will have significant repercussions for agricultural and livestock activities, and affect both water quantity as well as quality.

In Chinandega and León, the Estero Real watershed (3,690 km2), and in particular the sub-watershed of the Rio Grande -or Aquespalapa[4] (1,550 km2), is emblematic of the combined impacts of poor development models and strong climatic variability. Deforestation and inadequate land management practices, particularly in the upper and mid watershed, result in high erosion and sedimentation rates which have already undermined agricultural productivity and threaten food security. In the wet season, landslides in the mid watershed and heavy flooding in the mid and lower watershed are common, aggravated by extreme events such as hurricanes or storms leading to heavy losses of crops, human lives, domestic animals, damage to infrastructure, and progressive deterioration of local economies. In the dry season, many superficial sources dry up and insufficient rainfall limits access to water and

[3] Aguilar, E., et Al., 2005: Changes in precipitation and temperatures in Central America and Northern South America, 1961-2003

[4] In Nahual the term means “river of many fish” - an indication of the abundance that characterized this watershed in earlier times.

reduces productivity, even when there is not an outright drought. Given that the region is characterized by high levels of rural poverty – in the lower watershed, for example, over 46% of the population lives in extreme rural poverty – coping capacities are minimal.

This difficult situation is aggravated by the reduced surface water sources as well as the unsustainable extraction of groundwater which is the main water source for meeting demands, of which 74.4% are for irrigation. According to the SNC, during droughts aquifer levels can decrease by 50%, exceeding recharge and increasing vulnerabilities in the region. This is severe future risk given that drought events are expected to be more prolonged.

Diverse and growing demands for water augur future conflicts over water, given increasing demands from urban areas and intensive agricultural production, as well as smallholder efforts to improve productivity. This situation is rendered more complex by the limited knowledge and application of land and water use practices that would promote more efficient use of water, the absence of reservoirs to manage water supply in times of drought, as well as targeted efforts to manage groundwater recharge areas.

PROJECT / PROGRAMME OBJECTIVES:

The objective of the Project is to reduce the risks from [floods and] drought generated by climate change and variability in the Estero Real watershed. A coordinated set of key results that encompasses capacity building, long-term planning, development of public policies, and targeted investments will be relied upon to reach the objective. The project will have four components:

1. Investments in infrastructure for storing rainwater in the mid and upper watershed of the Aquespalapa/Grande River. This is expected to meet water demand needs for small scale domestic and productive uses, and a micro-watershed management approach will be relied upon to achieve this key result.
2. Adaptive capacity of communities in the mid and upper watershed of the Aquespalapa/Grande River will be strengthened through pilot activities that promote climate resilient land and water management practices.
3. An enabling environment will be advanced to integrate climate change risks into policy and planning processes in the Estero Real basin, underpinned by increased institutional and community capacities; this will be a pilot for incorporating climate change considerations into the recently approved National Water Law.
4. Lessons learned and best practices from pilot activities, capacity development initiatives and policy changes will be disseminated; regional environmental information systems will be strengthened to include climate change variables.

PROJECT COMPONENTS AND FINANCING:

PROJECT COMPONENTS	EXPECTED CONCRETE OUTPUTS	EXPECTED OUTCOMES	AMOUNT (US$)

1. Broad range of investments and technology assistance in water storage and water harvesting reduces the impacts of water stress and drought	- Reservoirs and water storage facilities mitigate impacts from severe droughts and provide water supplies for human and animal consumption, as well as for productive processes -Agricultural producers organized to implement and jointly monitor efficient allocation of water - Food security risks faced by vulnerable communities in the upper watershed of the Río Estero Real are diminished	- Risks from flooding and drought reduced through storage of rainwater in reservoirs and other mechanisms in the upper and mid watershed of the Aquespalapa/ Grande rivers	2,300,000
2. Communities adopt agricultural and agroforestry practices that contribute to enhancing productive and ecosystem resilience to climate change	- Agricultural and agroforestry practices implemented to protect agricultural yields against climate uncertainties and promote more efficient water use - Agricultural and agroforestry practices implemented to enhance water infiltration rates and protect groundwater recharge areas - Communities understand how sustainable land and water management practices contribute to enhancing productive and ecosystem resilience to climate change	- Demonstration of best practices in climate resilient agricultural and livestock production enhances food security in the mid and upper watershed of the Aquespalapa/ Grande rivers	1,250,000
3. Communities and local authorities better able to respond to climate change and variability through targeted capacity development programs and mainstreaming of climate change into municipal and watershed policies	- Enhanced capacity of municipal and local stakeholders to plan, manage and implement climate change adaptation measures - 9 municipalities in the watershed develop land use, investment and water use plans that incorporate climate change adaptation responses and requirements - Land use guidelines and norms at the watershed level provide for an integrated landscape approach that addresses differing impacts and trade-offs, and ensures coherent responses that reduce overall climatic risk - Watershed level norms developed for mainstreaming climate change issues into integrated water resource management approaches, including regulations on irrigation practices, contribute to the implementation of the recently approved Law No. 620 – General Law for National Water and Regulations	- Institutional and community capacities for addressing water resource management and climate change adaptation issues through normative and regulatory frameworks strengthened	500,000

4. Information and knowledge management systems assist in disseminating lessons learned, capacity development efforts, and climate resilient productive practices	- Improved information systems for consolidating data and information on climate change and variability at municipal, departmental and national levels -Development and dissemination of lessons learned for policy makers and for communities throughout the project -Training plan developed and implemented for relevant stakeholders for uptake of lessons learned and engagement in the various project components	- Knowledge management, dissemination of lessons learned and best practices	500,000
5. Project/Programme Execution cost (management)			450,000
6. Total Project/Programme Cost			5,000,000
7. Project Cycle Management Fee charged by the Implementing Entity			500,000
Amount of Financing Requested			5,500,000

PROJECTED CALENDAR:

Indicate the dates of the following milestones for the proposed project/programme

MILESTONE	EXPECTED DATES
Start of Project/Programme Implementation	February 2011
Mid-term Review (if planned)	February 2013
Project/Programme Closing	February 2015
Terminal Evaluation	March 2015

PART II: PROJECT JUSTIFICATION

A. Describe the project components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience

The proposed project aims to reduce the risks and vulnerability posed by climate change and variability on socioeconomic development in the departments of Chinandega and León in the western region of Nicaragua. The project proposes to accomplish this through infrastructure and technological responses that increase water supplies, piloting of climate resilient land and water use practices that reduce water demand, and monitoring and information systems at all levels strengthened to include climate change variables. Cross-cutting capacity development of local stakeholders will underpin this effort, as will the establishment of enabling

policy and institutional frameworks at municipal, watershed and national levels.

Component 1 - Risks from flooding and drought reduced through storage of rainwater in reservoirs and other mechanisms in the upper and mid watershed of the Aquespalapa –Grande Rivers

Investment in local infrastructure to harvest rain water in the mid and upper watershed of the Aquespalapa – Grande River, in the municipalities of Achuapa, El Sauce and Villanueva will increase water availability for domestic and productive uses during the dry season, as well as during the dry season when rains fail at critical times during the crop cycle. Severe water stress is the norm during the dry season, and drought is a recurrent threat particularly during ENSO events.

Two micro-dams will be constructed to collect excessive rainfall during the wet season for irrigation during the dry season in the mid watershed of the Rio Grande. In addition to these at least three small reservoirs will also be built in the upper watershed to provide water for human and animal consumption. Complete feasibility studies for the two micro-dams have already been completed[5], and extensive consultations undertaken with local communities. The implications of expected water flow into these reservoirs in light of anticipated changes in flow due to climate change over the lifetime of the investment will be considered during the design phase of this project. As a result of consultations, two irrigation organizations that will be established have already been defined, and including agreement over future water rights. Through these investments, water scarcity resulting from climatic variability will be mitigated, and infrastructure will be in place to support informed management of scarce water resources based on long-term climate change trends. Stored water will enable communities to better satisfy water demand for human and animal consumption, and irrigation, thus also contributing to reducing high levels of rural poverty. In addition to the construction of reservoirs and community water storage facilities, other works will be undertaken – including investments in infiltration ditches - to enhance recharge rates of aquifers in the mid and upper watershed. Pilot demonstration activities in climate resilient water harvesting and storage mechanisms will also be developed. Through these investments and technological applications, the coping range of highly vulnerable rural communities will be strengthened.

Local communities will provide all labor needed for construction as they understand these infrastructure investments as critical for their wellbeing. This contribution indicates a strong commitment to ensuring adequate maintenance for the construction works.

Component 2 - Demonstration of best practices in climate resilient agricultural and livestock production enhances food security in the mid and upper watershed of the Río Grande

Given that dry areas in Nicaragua face recurrent threats of water stress and drought from climate variability, which is expected to increase as a result of climate change, in addition to improving water availability through investments, it is also necessary to promote more efficient water use in all production processes. The project therefore proposes to pilot a range of adaptation measures at the community level. In the mid and upper watershed, practices will be promoted that contribute to catchment protection ranging from promotion of natural regeneration to maximizing vegetative cover in individual parcels, in order to halt erosive processes which have

[5] The USAID Millennium Challenge Fund lead and completed these studies in 2009

reduced groundwater infiltration and increased the risk of devastating landslides. In the mid-watershed, resilience to climate change and variability will be enhanced through agricultural, agroforestry and livestock practices which include adoption of higher value climate resilient crops, changes in crop cycles, climate resilient irrigation approaches, use of leguminous forage trees, and improved livestock feed storage facilities. Activities will also focus on reducing use of agrochemicals that are polluting groundwater resources. Ongoing efforts by local authorities to prevent and reduce forest fires will be supported. The project will sensitize communities and policy makers regarding climate change adaptation benefits to be attained through climate resilient land and water use management practices.

Component 3 - Institutional and community capacities for addressing water resource management and climate change adaptation issues through normative and regulatory frameworks strengthened

The project aims to create a supportive enabling environment for incentives to adapt at the community level through policy changes and capacity development initiatives that integrate climate change risks into planning and programming processes at the watershed level and in municipalities. As a pilot experience, these developments will be taken up at national level to inform development of national development strategies and framework policies such as the Water Law. For example, the project will develop regulations for irrigation districts that explicitly incorporate requirements for responding to climate change risks. Targeted municipal adaptation plans will be developed that will feed into an overarching adaptation strategy for the watershed, based on downscaled information and scenarios, thus ensuring effective climate risk response measures throughout the watershed that effectively address differing impacts from natural phenomena and climate change in the lower, mid and upper watershed, overall trade-offs, as well as opportunities for joint actions and investments. In addition to this, municipalities will be supported to incorporate climate change considerations into their existing development and investment plans. Capacities of municipal staff will be strengthened to enable them to act as trainers on climate change issues and response measures for local stakeholders throughout the watershed.

Component 4 - Knowledge management, dissemination of lessons learned and best practices

A participatory monitoring and information system will be developed to monitor the impact of project activities throughout the watershed, as well as a select suite of indicators that serve to track a suite of climate-related variables. Capacity development efforts will be undertaken with local stakeholders to enable them to understand and track these changes- for example in regime flows, erosion rates, and other variables so that they incorporate environmental and climate change issues into their own decision-making processes. Flow of information will be ensured by working through all levels of governance from local institutions up to the Watershed Committee. As a pilot exercise, the project will build upon the early warning systems already developed and incorporate climate change and variability indicators, in order to disseminate information and diagnostic studies to the Citizen Power Councils for production and socio-environmental issues. Given that information from the municipal level is transferred to the regional Node, the proposed local information system constitutes an important knowledge management tool that will strength the National Environmental Information System's (SINIA) capacity to incorporate climate change information and issues at national level.

B. Describe how the project provides economic, social and environmental benefits, with particular reference to the most vulnerable communities.

The agricultural practices in the Estero Real watershed, where over 46% of the population is classified as living in extreme rural poverty, have undermined the resiliency of the productive landscape. Although efforts to promote more sustainable land management approaches have been advanced through a series of projects, farmers' vision is focused on short-term gains with no understanding of current risks from climate variability nor long-term threats from climate change. Water stress is constant during the dry season and drought, related to recurring El Niño-La Niña (ENSO) events, affects agricultural production and food security. Significant levels of famine characterized the droughts in 1972, 1977, 1991, 1997 and 2003. Surface water availability is uneven given high variability in the region, and there are indications that groundwater is being unsustainably exploited. Extraction of groundwater resources does not take into account recharge rates, and highly compacted soils and deforestation limit groundwater infiltration. During the wet season, torrential rains lead to recurrent flooding and increased run-off that progressively sweeps away remaining productive soils.

The project would provide environmental, economic and social benefits to communities in the Estero Real watershed, in particular in the sub-watershed of the Grande/Aquespalapa river. Investments in reservoirs to respond to a range of water demands (human and animal consumption, irrigation) will expand the coping range of communities' to water stress and drought, not only improving their collective wellbeing but bolstering their long-term survival in the face of the decreased precipitation and increased temperatures predicted by long-term climate change scenarios. These communities area already being decimated by high levels of migration that leave an increasingly vulnerable population at home. Even though there are many wellsprings, streams and semi-permanent or permanent rivers (like the Aquespalapa River), that could be harnessed for consumption or small scale irrigation, no investments have been undertaken. Irrigation would guarantee at least one full harvest a year in a region where just over a decade ago two yearly harvests were traditionally programmed. However, due to climate change trends, only one harvest per year is viable, and increasingly this single harvest has low yields due to erratic and insufficient rainfall. If farmers can demonstrate that at least one harvest a year is assured, their access to credit will also be bolstered, thus overcoming a critical barrier to improving socioeconomic resilience. Other technologies for storing excess rainfall to overcome supply limitations during the dry season will also be promoted, thus enhancing communities' ability to address critical water stress situations, and improve overall food security.

In parallel to increased water supplies, land and water techniques will be piloted to protect agricultural yields and livestock from climate uncertainty. These range from activities to promote climate resilient practices which will diminish climate variability and climate change impacts on production, to actions that seek to improve ecosystem resiliency through reforestation, promotion of natural revegetation, and increased vegetative cover in individual parcels. Efforts have been made over the past years by other initiatives in the region to advance sustainable land management approaches, but these have not mainstreamed climate change considerations and most farmers are still largely focused on improving short-term yields. The project will sensitize communities and policy makers regarding climate change adaptation benefits to be attained through enhanced land and water use management practices thus furthering efforts to reduce both ecosystem and productive vulnerabilities.

C. Describe or provide an analysis of the cost-effectiveness of the proposed project programme

The proposed project will be designed nad implemented within an integrated watershed management approach, as required by the new Water Law. To date, climate change considerations have been largely absent from productive processes as well as from

normative or development approaches, a situation compounded by the fact that decisions at all levels have had a short term horizon both spatially and temporally. There is limited understanding of interdependencies along the basin as well as of differentiated impacts and socioeconomic interests that could be aggravated by climatic stress and which will require targeted responses that will address spillover effects, trade-offs and build upon common problems and ecosystem level synergies. Climate change response measures will be mainstreamed through the Project at all levels: municipal adaptation strategies and development/investment plans will be articulated at the watershed level, and will in turn inform the implementation and practical application of the new Water Law at national level. These feedback loops promise to make this a particularly rich pilot experience for Nicaragua, that will bolster capacities and provide and validate tools and guidelines needed for effective long.-term responses to climate change impacts.

Given that the agricultural and water sectors have been identified as the most vulnerable to climate change, the project aims to promote integrated responses to climate change. From a productive perspective, the proposed intervention strategy addresses not only water supply but also water demand issues. In addition to targeted investments and application of technologies for water harvesting and storage, land and water use practices will aim to both rationalize water demand and also contribute to increased water supply through approaches that include protection for groundwater recharge areas, and activities to improve water infiltration in the productive landscape. The project intervention strategy is therefore quite comprehensive, addressing requirements for effective responses to climate change at local and watershed levels on a range of critical fronts.

During the project formulation phase, cost-effectiveness of the proposed project outcomes, including consideration of alternative approaches, will be evaluated. They will be outlined in the final project document that is submitted for Board approval.

D. Describe how the project is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub- national development plans, poverty reduction strategies, national communications or national adaptation programs of action, or other relevant instruments, where they exist

The Government of Reconciliation and National Unity promotes a model termed "Citizen Power"6 which aims to involve stakeholders at all levels in ensuring sound environmental management, fighting poverty, and sound economic management, including through the reduction of vulnerability to the climate change and recent natural disasters. The Second National Communication, the National Plan for Human Development and other sectoral development plans prioritize the agricultural and water sectors as the most vulnerable to climate change. The former moreover, in addition to being a mainstay of food security, provides employment and livelihood to over 60% of the population. The National Plan against Drought also underscores the need to reduce vulnerability to climate change.

[6] National Plan of Human Development, Government of Reconstruction and National Unity, October 2009.

The 2007 General National Water Law, promotes the development of plans and instruments to advance integrated water resource approaches. It confirms that access to water is a human right. In particular it assigns high importance to management at the watershed level, as a platform for coordinating and articulating a wide range of interests and differentiated impacts. However the Law does not include climate change issues, a gap that the Government is now keen to redress and for which pilot experiences are needed. Other national policies that are currently being formulated and which will incorporate climate change issues include the National Plan of Water Resources and the Rational and Productive Use of Water. The proposed project would provide concrete inputs for the development of these norms.

E. ***Describe how the project meets relevant national technical standards, where applicable***

The Project will ensure that the national standards for infrastructure construction will be respected and consistently applied. National construction norms as well as environmental impact assessments will be applied, even though the latter may not be required given the small scale of the proposed works. Complete feasibility studies have already been undertaken for the two micro-dams to be constructed.

The project will be consistent with all national social and environmental safeguards and standards. As a UNDP supported project, all project activities must be in keeping with national and UN standards. Additional details will be spelt out in the full project proposal when it is submitted to the Adaptation Fund Board for final approval.

F. Describe if there is duplication of project with other funding sources, if any

In the project area several initiatives are ongoing that are relevant to this proposed project's objectives, of which two are particularly noteworthy: the GEF-UNDP project on sustainable land management and the CANADA-DANIDA project on integrated watershed management approaches. The latter is strengthening governance approaches along the watershed and has also established a fund for small and medium producers. The former is promoting more sustainable production systems and has been so successful that five municipalities, in addition to the initial seven, are now participating in it. Both projects are bolstering the capacity of municipal authorities to address environmental issues. In addition to these, other projects lead by the Nicaraguan Institute for Agricultural Technology (INTA), the National Forestry Institute (INAFOR) and the Agriculture and Forestry Ministry (MAGFOR) seek to enhance food security in the project area. These projects are fully complementary to the proposed project, and constitute the development baseline upon which this project will build.

G. ***If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned***

Lessons from the implementation of climate change adaptation projects that pilot new approaches will be documented, as they constitute a basis for future response measures and thus contribute to enhancing overall adaptive capacity. A comprehensive learning component is foreseen so that pilot expreiences can be replicated and lessons for public policy development taken up at the national level. Linkages will be made to UNDP-GEF's Adaptation Learning Mechanism to ensure that lessons from this project will reach a

broader audience in Central America and beyond, as well as other donors and agencies likely to be engaged in similar initiatives in other countries.

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation.

Initially, consultations were undertaken with the municipal governments of El Sauce and Achuapa in order to lay out the objectives and scope of the proposed project. Consultations were then undertaken with community leaders in the areas (*comarcas*) of the Las Mercedes and Salale rivers, to idnetify potntial water use conflicts along the watershed. Hydrological studies were carried out to determine the available water supply. These served to inform the feasibility study carried out for the two proposed micro-dams. This process also lead to the establishment of the Association of Irrigation Users for Salale and Las Mercedes. The public consultations were held to review the final design of the proposed micro-dams in order to obtain the construction permit and the environmental icense. A similar process will be replicated during the preparatory phase of the project, through consultations with the municipalities that will participate in the project. Consultations will be carried out with producers' organizations, Citizen Councils for productive, social and environmental issues, *comarca* leaders, as well as Citizen Power Councils.

I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning

Component 1

Investment in local infrastructure to harvest rain water in the mid and upper watershed of the Aquespalapa – Grande River, in the municipalities of Achuapa, El Sauce and Villanueva will increase water availability for domestic and productive uses during the dry season. Severe water stress is the norm during this season, and drought is a recurrent threat particularly during ENSO events. Climate scenarios indicate a progressive reduction in rainfall and increased variability. Farmers have already been forced to limit their production to a single annual harvest given that longer dry seasons and increasingly erratic rainfall consistently lead to the loss of a second crop. However, that single harvest is also increasingly under threat, with decreasing yields over the past years, thereby exacerbating threats to food security, and increasing the exposure of highly vulnerable poor communities.

The proposed investments, which are critical for ensuring improved access to water during the dry season and even during the wet season when rainfall fails at critical moments, cannot be undertaken without external support. Climate change scenarios indicate rising temperatures and decreasing precipitation levels, which mean that the survival *in situ* of already water stressed communities, may not be viable. These targeted investments, which are part of a comprehensive watershed approach that also addresses productive practices and an enabling capacity, institutional and policy framework, are moreover pilots that could be replicated by other donors in other highly vulnerable areas of Nicaragua and Central America.

Component 2

Even though there are an important suite of projects in western region of Nicaragua that have contributed to promoting sustainable land management approaches, farmers have not yet understood the need to minimize climatic risk in their production processes. Their time frames are typically short-term, their concerns related to production over the next season. There is no

comprehensive appreciation of practices that contribute to reducing long-term climate risk, and there are no tangible demonstration activities on managing climate change risks. Moreover, given that dry areas in Nicaragua face recurrent threats of water stress and drought from climate change and variability, in addition to improving water availability through investments, it is also necessary to promote more efficient water use in all production processes. A range of activities, described in *Part I. A.* will be advanced that improve ecosystem resilience and reduce communities' climate-related vulnerability.

Component 3

There is a need to ensure that investment and productive processes are supported by normative frameworks at municipal and national levels that explicitly integrate climate change risks. Even though the Government of Nicaragua has promoted decentralization processes over the past decade, and sought to strengthen environmental management at municipal levels, climate change considerations are still largely absent from planning and programming processes. At national level, the Water Law was adopted in 2007, but its application is still incipient, and climate change considerations have not been incorporated. Moreover, the Law adopts the watershed as a key planning unit, but integrated watershed management efforts and governance are only starting to be addressed[7]. Therefore, the project will seek to consolidate an enabling environment that effectively mainstreams climate change issues and builds up the capacity to undertake climate responsive policy and investment decision-making processes. Through a pilot experience in the Estero Real watershed, the project will seek to ensure that agricultural and water policies fully reflect anticipated climate change risks and ensure vulnerability-reduction benefits in the context of emerging climate risks.

Component 4

For over a decade, local capacities for prevention as well as several early warning systems have been strengthened to address disaster risks. The National Environmental Information System (SINIA) has developed updated information and diagnostic studies on various environmental variables in several areas of the country, as well as monitoring and evaluation systems that support more targeted and informed decision-making processes. Recently, MARENA launched a Regional Center for Environmental Information – Northern Pacific Node in León which has an updated data base on environmental health and management, as well as diagnostic studies and research carried out in the departments of Leon and Chinandega. However, these systems do not include climate change and variability variables, and are therefore unable to support decision-making processes that are responsive to climate risks.

The full cost of adaptation reasoning will be articulated in the project proposal submitted for final approval by the Adaptation Fund. The proposal will outline baseline development activities that are currently financed out of traditional ODA and the value added of those outcomes that are to be financed with resources from the Adaptation Fund.

[7] The Spanish Agency for Cooperation (AECDI) through the PIMCHAS Project, will support the establishment of a Basin committee for the Estero Real River.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project implementation

The government of Nicaragua will execute this four year project with the support of UNDP under the Direct National Execution (NEX) modality. The Ministry of Environment and Natural Resources (MARENA) as executing agency will be responsible for ensuring that the stated project objective and components are delivered, and that resources are allocated and disbursed in an efficient and effective manner as will be detailed in the Project Document. Similarly, MARENA will be responsable for ensuring effective coordination between this Project and other relevant projects in Nicaragua.

The Project will be coordinated through a Project Coordination Committee (PCC) which will provide support for the operational management of the Project. It will be chaired by a high-level representative from MARENA and one from UNDP-Nicaragua as well as representatives of the main project beneficiaries.

The project structure will be constituted by a National Project Director (NPD) and a National Project Coordinator (NPC). The National Project Director will be responsable for supervising the Project on behalf of MARENA and will work with the NPC. The establishment of a NPD is requirement of the Nicaraguan protocol for the management of external donations. The NPD is the administrative and executive manager of activities described in the Project Document. The NPC will be located in the Project area and will be supported by a technical team.

MARENA will follow the norms and procedures detailed in the UNDP NEX manual for project execution. For its part, UNDP will provide support to the Director and the Coordinator of the project, in order to maximize its reach and impact as well as the quality of its products. Moreover, it will be responsible for administering resources in accordance with the specific objectives defined in the Project Document, and in keeping with its key principles of transparency, competitiveness, efficiency and economy. The financial management and accountability for the resources allocated, as well as other activities related to the execution of Project activities, will be undertaken under the direct supervisión of the UNDP Country Office.

Once the project is approved and an operational annual work plan is prepared, the UNDP Office in Nicaragua will be able, in those specific cases agreed to with project counterparts, to charge the project directly for Execution Support Services, based on transactions and employing a universal price list.

UNDP will undertake the interal monitoring of the Project and of evaluation activities, taking into account from the outset local capacities for administering the project, capacity limitations and requirements, as well as the effectivenes and efficiency of communications between ministries and other institutions that are relevant to the project.

MARENA will prepare an Annual Work Plan that incorporates project activities and results to be delivered through it. The Plan will define the execution time frame for each activity and the responsible parties for its implementation. The first Work Plan will be finalized and incorporated into the Project Document within 30 days of its signature. The participation of project counterparts will be essential for the success of the planning phase, during which the Annual Work Plan will be prepared.

B. Describe the measures for financial and project risk management

Risk		Response Measure
Investments in the upper watershed could affect the lower watershed given water flow variability.	L	Only the precipitation overflows in the upper watershed will be stored. In addition, water infiltration and storage will be enhanced through infiltration works and improved land and water use practices.
Productive sectors do not understand the need to respond to and plan for climate change risks.	L	Producers are already suffering from permanent impacts of climate change and variability. However, they do not have the capacity to understand these impacts as manifestations of long-term trends, for which there are options that can reduce risk. The project needs to develop and translate climate change scenarios for the general public, including the citizen power councils for production and socio-environmental issues as well as municipal decision makers, gather information that demonstrates the value-added of adaptation measures, and provide the necessary capacity development. Pilot activities for producers will strengthen this process
Limited access to credit can limit the adoption of new technologies.	M	The two micro-dams will guarantee that producers in the area can have at least one profitable harvest per year. This is a major risk reduction as currently even that single annual harvest often has low yields when rains fail at critical moments. Reducing this risk should make producers more credit-worthy and facilitate access to credit. Moreover, the Government has recently established the Produzcamos (Let us Produce) Bank in order to increase financing for small and medium scale agricultural production.
Key municipal actors do not agree to further an adaptation strategy coordinated at the watershed level.	L	During the preparatory phase through extensive consultations understanding of the project and its stated aims will be clarified and defined, which should enable municipalities to support it. Throughout implementation, strong collaborative mechanisms will be advanced throughout the watershed, building upon the established Committees and the Citizen Power Councils.
Proposed investments are affected by an increased cost of construction materials .	L	Feasibility studies for the two micro-dams will be updated during the preparatory phase, and detailed feasibility studies undertaken for the other small-scale investments. It is noted that communities have agreed to provide al necessary labour for the construction, so this will not only diminish expenses but more importantly, ensure strong ownership for the investments and therefore a long-term commitment to adequate maintenance.
Natural events delay project execution	M	Efforts will be made to concentrate construction during the dry season.

C. ***Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan***

Project monitoring and evaluation (M&E) will be in accordance with established UNDP procedures and will carried out by the Project team and the UNDP Country Office. The Results Framework will define execution indicators for project implementation as well as the respective means of verification. A Monitoring and Evaluation system for the project will be established based on these indicators and means of verification. It is important to note that the Results Framework, together with the impact indicators and means of verification, will be fine-tuned during project formulation.

Type of M&E activity	**Responsible Parties**	**Budget US$*** *(does not include staff time)*	**Time frame**
Inception workshop	▪ Project Coordinator ▪ UNDP-CO	$500	Within first two months of project start up
Inception Report	▪ Project team ▪ UNDP-CO	None	Immediately following IW
Measurement of Means of Verification for Project Purpose Indicators	▪ Project Coordinator ▪	None	Start, mid and end of project
Measurement of Means of Verification for Project Progress and Performance (measured on an annual basis)	▪ Project Coordinator ▪		Annually prior yearly reports and to the definition of annual work plans
Monthy reports	▪ Project team	None	At the end of each month
Annual reports	▪ Project team ▪ MARENA ▪ UNDP-CO	$500	At the end of each year
Meetings of the Project Coordination Committee	▪ Project Coordinator ▪ UNDP-CO	None	After the inception workshop and thereafter at least once a year

Technical reports	▪ Project team ▪ External consultants	None	To be determined by Project team and UNDP CO
Mid-term external evaluation	▪ Project team ▪ UNDP-CO ▪ External consultants	$ 20,000	At the mid-point of project implementation.
Final external evaluation	▪ Project team ▪ UNDP-CO ▪ External consultants	$ 20,000	At the end of project implementation
Final Report	▪ Project team ▪ UNDP-CO	None	At least one month before the end of the project
Publication of lessons learned	▪ Project team	$ 17,500 (average $ 3,500 per year)	Yearly
Audit	▪ UNDP-CO ▪ Project team	$ 45,000 (average $ 11,250 per year)	Yearly
Visits to field sites (UNDP staff travel costs to be charged to IA fees)	▪ UNDP-CO ▪ MARENA	$2,000	Yearly
TOTAL INDICATIVE COST		**$ 105,500**	

D. Include a results framework for the project proposal, including milestones, targets and indicators

This will be outlined in the full project proposal to be submitted to the Adaptation Fund for approval.

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENT [1]

Provide the name and position of the government official and indicate date of endorsement. The endorsement letter(s) should be attached as an annex to the project proposal. Please attach the endorsement letter(s) with this template.

Denis Fuentes Ortega Director Planificación Ministerio del Ambiente y los Recursos Naturales Punto Focal Nacional ante el Fondo de Adaptación 16 de abril del 2010
Tel. and email: 505-22632862 / 22632864 –

B. IMPLEMENTING ENTITY CERTIFICATION

Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, understands that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
Y. Glemarec Yannick Glemarec Director Environmental Finance UNDP Implementing Entity Coordinator	
Date: 21 April 2010	Tel. and email: +1-212-906-6843, yannick.glemarec@undp.org

Project Contact Person: Paula Caballero, Regional Technical Advisor, UNDP
Tel. And Email: +507-302-4571 paula.caballero@undp.org

1. Each Party shall designate and communicate to the Secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.