UNITED NATIONS ENVIRONMENT PROGRAMME

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Программа Организации Объединенных Наций по окружающей среде | برنامج الأمم المتحدة للبيئة
联合国环境规划署

UNEP

PROJECT DOCUMENT

SECTION 1: PROJECT IDENTIFICATION

1.1	**Project title:**	Capacity Building for Information Coordination and Monitoring Systems/SLM in Areas with Water Resource Management Problems
1.2	**Project number:**	GFL/ PMS:
1.3	**Project type:**	FSP
1.4	**Trust Fund:**	GEF
1.5	**Strategic objectives:**	
	Strategic programme for GEF III:	Operational Programme on Sustainable Land Management (OP#15)
1.6	**UNEP priority:**	Ecosystem Management
1.7	**Geographical scope:**	National
1.8	**Mode of execution:**	External
1.9	**Project executing organization:**	Ministry of Science, Technology and Environment
1.10	**Duration of project:**	60 months Commencing: March 2015 Completion: February 2020

1.11	**Cost of project**	**US$**	**%**
	Cost to the GEF Trust Fund	**2,444,500**	**9.0%**
	Co-financing		
	CITMA	784,183	
	MINAG	4,859,438	
	INRH	14,522,860	
	MES	1,080,000	
	INICA	2,251,750	
	IPF	504,150	
	ANAP	542,000	
	Sub-total	**24,544,380**	**91.0%**
	Total	**26,988,880**	**100.0%**

1.12 Project summary

The Country Pilot Partnership Program between the Government of Cuba and the GEF (CPP) supports the implementation of the National Action Programme to Combat Desertification and Drought (NAPCD) through five projects that seek to reduce land degradation and promote the integrity of ecosystems to attain national and global environmental benefits in three main regions of Cuba: the Southwestern Lowlands of Pinar del Rio and the Havana-Matanzas Plains in the Central region; North of Villa Clara and Sancti Spiritus, and to the East, the coastline of Maisí-Guantanamo and the Cauto River Basin

This 5-year project *Capacity Building for Information Coordination and Monitoring Systems / SLM in Areas with Water Resource Management Problems* constitutes Project #2 of the CPP and focuses in the development of the capacities required to ensure adequate access to useful information on sustainable land management emphasizing in water resources management. The project objective is the **strengthened coordination of information and monitoring systems for management of water resources based on an SLM approach**. It will contribute to remove three major barriers identified in the CPP that threaten the integrity of the ecosystem functions in the intervention areas and nationally, namely: 1) Inadequate incorporation of SLM considerations into extension and environmental education programs, with emphasis in water management; 2) Inadequacy of systems for monitoring of LD and management of related information; and 3) Planners have limited tools and knowledge for incorporating SLM considerations into plans, programs and policies.

To do so, the project will implement the following four outcomes: 1) Individuals and institutions have the human and material capacities to undertake SLM emphasizing in water management; 2) Strengthened biophysical and information management system for improved land use decision making; 3) Comprehensive management model for monitoring land degradation processes related to water resources in four intervention areas, with replication potential to other areas; and 4) Project monitoring and evaluation, adaptive management and lessons learned.

The project will promote an enhanced coordination and collaboration framework for intersectoral planning, monitoring and evaluation; as well as an integrated information and monitoring system that will build on the early warning and land use system put in place by th ongoing Project #1 (*Capacity Building for Planning, Decision Making and Regulatory Systems & Awareness Building/Sustainable Land Management in Severely Degraded Ecosystems*) and will emphasize on water management. The capacities of the key institutions for integrated water management will be increased, including in issues such as livelihoods; comprehensive approaches of the biophysical and socioeconomic aspects of productive ecosystems; participatory evaluation of traditional management practices; water harvesting; aquifer recharge and protection; solid waste management; increased productivity and irrigation efficiency; and mechanisms for water management planning in agriculture, among other subjects.

In this manner the project will contribute to the achievement of the CPP intermediate objectives: 1) *National capacity for integrated SLM is established, ensuring inter-sectoral coordination and effective implementation of land management plans and activities*; and 2) *Field level demonstrations of sustainable land management practices have halted, prevented and remedied land degradation in critical landscapes within Cuba, and produced effective models for replication*. Moreover, it will contribute to the CPP goal, which is that "*Cuba has the capacities and conditions for sustainably managing land in a manner that contributes to maintaining ecosystem productivity and functions*" and its purpose, which is "*reduced land degradation will allow Cuba to achieve its goals for sustainable development and increased food security*".

Overall the project will contribute to the improvement of ecosystem functions over a wide area of farmland, grassland and forests in the four areas of intervention. Global environmental benefits to be

delivered by the project include: 1) Increase in the number of producers in the areas of intervention that apply practices that reduce land degradation, including the sustainable management of water resources, agricultural and grazing lands; 2) Improvement in the availability of surface and groundwater resources through sustainable land management practices that improve irrigation efficiency and water availability; 3) Increase in the surface area where efficiency in the use of water and increased productivity generate sustainable land management; 4) Increased productivity of water used in each of the crops grown in the intervention areas (tobacco, rice, beans, maize, soy, *malanga*, potato, plantain, sweet potato) that will improve crop yields and food security. The best practices introduced will allow water savings and increased incomes at farm level, savings in fuel and reducing negative environmental impacts; preserving soil moisture and reducing negative impacts from excess soil moisture.

Project actions will also deliver benefits in terms of reduction of the volume of organic pollutants that originate in the the demonstration sites and drain into the seas of the Greater Antilles, which severely affect the health of corals and other marine fauna. The project will also enhance forest strips for protection of water resources in the demonstration areas, which will contribute to reduce the rates of erosion and sedimentation in the basins. In terms of biodiversity conservation, the project will help to reduce pressures to the globally important Cuban Forest ecosystem. By helping to reduce the rates of degradation of natural ecosystems caused by unsustainable agricultural practices and fire, it will help to reduce carbon emissions. In addition, reductions in the deterioration of the natural functions of ecosystems will contribute to their resilience and capacities to adapt to the impacts of climate change.

The incremental cost necessary to achieve the Project objective and the corresponding global benefits is US$ 26,988,880 of which US$ 2,444,500 (9%) constitute the sum requested to the GEF. Co-financing amounts to US$ 24,544,380 equivalent to 91% of the total amount required.

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ACRONYMS AND ABBREVIATIONS

ACPA	Cuban Association of Animal Husbandry
ACTAF	Cuban Association of Agricultural and Forestry Technicians
AMA	Environment Agency
ANAP	National Association of Small Farmers
AWP	Annual Work Plan
AZCuba	Sugar Entrepreneurial Group
CCS	Credit and Services Cooperatives
CEDEL	Center for Local Development
CGB	Forest Ranger Corps
CITMA	Ministry of Science, Technology and Environment
CPA	Agricultural Production Cooperatives
CPP	Country Pilot Partnership Programme
CyTINRH	Innovation and Technology Management Directorate INRH
EAN	National Environmental Strategy
EIPHH	Havana Company for Hydraulic Research and Projects
EOU	Evaluation and Oversight Unit of UNEP
EXA	Executing Agency
FMA	National Environmental Fund
FMC	Federation of Cuban Women
FONADEF	National Fund for Forestry Development
GEAH	Water Management Entrepreneurial Group
GEF	Global Environment Facility
GoC	Government of Cuba
IA	Implementing Agency
IAgric	Institute for Research and Agricultural Engineering
IGT	Institute of Tropical Geography
INICA	National Institute for Sugar Cane Research
INRH	National Hydraulic Resources Institute
INSMET	National Meteorology Institute
IPF	Institute of Physical Planning
IR	Inception Report
IS	Soil Institute
IW	Inception Workshop
IWRM	Integrated Water Resources Management
LAC	Latin America and the Caribean
LCT	Local Coordination Team
LD	Land Degradation
M&E	Monitoring and Evaluation
ME	Ministry of Education
MEM	Ministry of Energy and Mines
MEP	Ministry of Economy and Planning
MES	Ministry of Higher Education
MFP	Ministry of Finance and Planning
MINag	Ministry of Agriculture
MINCEX	Ministry of Foreign Trade and Investment
SLM	Sustainable Land Management
NGCDD	National Group to Combat Desertification and Drought
NAPCD	National Action Programme to Combat Desertification and Drought
NSC	National Steering Committee

PGOTU	General Plan for Land Use Planning and Urban Development
PIR	Project Implementation Review
PIU	Project Implementation Unit
PNMSC	National Programme for Soil Improvement and Conservation
PPR	Project Progress Report
PY	Project Year
TUDD	Technical Unit for Desertification and Drought
UBPC	Basic Units of Cooperative Production
UNAICC	National Union of Architects and Construction Engineers
UNCCD	United Nations Convention to Combat Desertification and Drought
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme

SECTION 2: BACKGROUND AND SITUATION ANALYSIS (BASELINE COURSE OF ACTION)

2.1. Background and context

Background

1. The National Environmental Strategy (EAN) identifies land degradation as one of the top five environmental problems in Cuba, with 76.8% of the productive land affected by processes leading to desertification, and the productivity of the lands classified as low to very low. The four remaining problems identified in the EAN are also related to land degradation directly or indirectly. These are deforestation, pollution of terrestrial and marine waters, loss of biodiversity and sanitation in communities.

2. As a result of this phenomenon, productive lands are affected in differing degrees, which in turn affect the livelihoods of more than 30% of the Cuban population while at the same time causing deterioration in the structural and functional integrity of ecosystems of the archipelago. This is compounded by droughts, which have doubled in the last sixty years and potentially affect the entire country.

3. In this context, in order to reduce land degradation and to promote the integrity of ecosystems and the achievement of the national goals for sustainable development and food security, while at the same time contributing to attain global environmental benefits as well as the Millennium Development Goals (MDGs), the Government of Cuba (GoC) implements a ten year Country Pilot Partnership Program in collaboration with the GEF (GEF-CPP) with the objective of strengthening the implementation of the National Action Programme to Combat Desertification and Drought (NAPCD).

4. The CPP consists of 5 projects to be implemented sequentially:

- Project #1: (Years 1-5): Capacity Building for Planning, Decision Making and Regulatory Systems & Awareness Building/Sustainable Land Management in Severely Degraded Ecosystems
- Project #2: (Years 3-7): Capacity Building for Information Coordination and Monitoring Systems/SLM in Areas with Water Resource Management Problems
- Project #3: Years (5-8): Capacity Building for Sustainable Financing Mechanisms / Sustainable Land Management in Dry land Forest Ecosystems and Cattle Ranching Areas
- Project #4: (Years 7-10): Validation of SLM Models at Landscape Scale
- Project #5 (Years 1-10): Coordination, Monitoring and Evaluation of Cuba CPP

5. These five projects combined constitute national actions to strengthen the capacities for Sustainable Land Management (SLM) and field demonstrations in the intervention areas located in three main regions of Cuba: the Southwestern Lowlands of Pinar del Rio and the Havana-Matanzas Plains in the Central region; North of Villa Clara and Sancti Spiritus, and to the East, the coastline of Maisí-Guantanamo and the Cauto River Basin (see maps in Appendix 15). Implementation of the CPP was initiated in 2008 through Projects #1 and #5. The present project *Capacity Building for Information Coordination and Monitoring Systems / SLM in Areas with Water Resource Management Problems* constitutes Project #2 of the CPP. This 5-year project will build upon the advances achieved in Project #1 in satisfying fundamental capacity needs, and will focus more specifically on the development of the capacities required to ensure that key stakeholders (decision-makers, technicians and producers) have adequate access to useful information on SLM emphasizing in water resources management.

Context

Geography and Climate

6. The Republic of Cuba is located between the Caribbean Sea, the Gulf of Mexico and the Atlantic Ocean. The Cuban archipelago comprises more than 1,600 islands, islets and keys, the island of Cuba being the largest. The total surface area of the Cuban archipelago is 109,886 km^2; of which 104,556 km^2 correspond to the island of Cuba, 2,204 km^2 to the Isla de la Juventud and 3,126 km^2 to adjacent keys. The island of Cuba is characterized by its long, narrow shape, extending 1,256 km from Maisí at its Eastern end to Cape San Antonio at its Western end. The maximum width is 191 km with a minimum width of 31 km. The country has approximately 5,746 km of coastline. Most of the Cuban territory consists of a plain with gentle slopes, with the highest elevation being 1,974 m above sea level. A new Administrative Political Division was established in 2011, which organized Cuba into 15 provinces and 168 municipalities, including the special town of Isla de la Juventud.

7. The climate of Cuba is influenced by its geographic location within the northern portion of the tropical zone, near the boundary between the tropical and subtropical areas, towards the western side of the Atlantic. The annual occurrence of meteorological elements, ranging from a warm and rainy season to another less warm and rainy, is linked to seasonal changes in the position and intensity of the North Atlantic Subtropical Anticyclone. The most important feature of this seasonal fluctuation is the decrease of the influence of the Atlantic anticyclone on Cuba during the winter. This decrease allows the emergence of extratropical weather systems that impose a significant frequency of frontal events, invasions of cold air and other events proper of higher latitudes, which greatly increase the seasonal contrast between the elements. Unlike other areas of the Caribbean Sea, the proximity to the continent and the warm waters of the Gulf of Mexico and the eastern Caribbean Sea facilitates the interaction over Cuba of processes between weather systems of the tropical zone with those of middle latitudes, even after the winter, and especially during transition periods.

8. According to the Köppen classification (as amended), the climate in most parts of Cuba is tropical with a rainy season in the summer. Overall Cuba's climate is tropical, seasonally moist, with marine influence and semi-continental features. The presence of other climatic types have been reported as in the higher areas of the main mountain ranges or as observed in the coastal strip south of the provinces of Santiago de Cuba and Guantanamo, which is classified as tropical dry with relatively few showers.

9. The determinants in shaping the climate of Cuba are the amount of solar radiation, the peculiarities of the atmospheric circulation over the country, and the influence of different physical-geographical characteristics of the country. Temperatures are generally high with annual average values ranging from 22º C to 28º C and on the eastern coast, magnitudes of less than 20º C are reported in the higher parts of the mountain areas. The average maximum temperature is between 27º C and 32º C and the average minimum temperature between 17° C and 23° C. Generally, the values of the average monthly temperature in the western and central regions differ significantly with respect to the eastern region during the dry season, while during the rainy season it becomes homogeneous, being slightly lower in the central region. The average relative humidity is high, averaging around 80%. Daily maximums are usually above 90% at sunrise, while minimums are around 50-60 % at noon in the interior of the country. The most humid areas are the western and central regions, along with the main mountain areas.

10. Easterly winds prevail in Cuba. From November to April the predominant directions are those of the first quadrant, due to the influence of winter weather systems, while in the summer the winds turn more to the southeast, especially with the withdrawal of the anticyclonic wedge. The maximum wind speed occurs during the passage of cold fronts, extra-tropical cyclones, local storms, and hurricanes, among other phenomena. The local wind systems are also of interest, with the presence of a connective central belt and the coastal influence of land and sea breezes, which strengthen or weaken depending on the predominant flow of the wind. The terrain is the fundamental factor for

transformation of normal local wind systems. The anticyclonic influence occurs throughout the year, with higher values and higher-pressure gradients during the winter months.

11. Cuba has high levels of evaporation, reaching up to 2,300 mm in the Cauto River Valley and the south shore of Guantánamo. The lowest figures are recorded in mountainous areas (1,100 mm annually). Generally the rate increases from west to east, and its space-time distribution is influenced by the latitude and structure of the terrain, the distance to the coast, and the degree of exposure to the wind, among others.

12. Precipitation is the element that mostly varies in Cuba's climate. There are two main seasons: the rainy season (May to October) with around 80% of total annual rainfall and the less rainy season (November to April). These characteristics vary in the northeast of the Central region and in mountain areas where large quantities of total rainfall occur during the months of November to April. It is precisely in this area of the country where the higher rainfall areas are located, with values above 3,000 mm per year. However, in the southern coast of the provinces of Guantanamo and Santiago de Cuba, in the lee of the Sierra Maestra and the Sagua – Baracoa Range, arid conditions are reported, with 600 mm and less.

13. The largest volumes of rain are associated with some of the most significant weather events (tropical cyclones, cold fronts, tropical waves, etc.) or originate due to daytime heating, occurring mostly in the afternoon as episodes of short duration. In the presence of large-scale weather systems, periods of heavy rainfall may occur, especially in the months of May-June and September-October. The most important aspect of rainfall during the rainy season in Cuba is related to the increasing trend of positive anomalies in the western and central regions, as well as a decline in the eastern region, which since the early 1990s has expressed significant deficits in the accumulated precipitation. Rainfall studies in Cuba determine a national average of 1,335 mm/year.

Socio-economic and demographic context

14. According to preliminary results from the latest Population and Household Census conducted in 2012, the Cuban resident population is 11,167,325, with a female population of 50.11% and male population of 49.89%. Population over 60 years is 18.3%. The most populated provinces are Havana, Santiago de Cuba and Holguin concentrating 37.9% of the total population of the country (4.2 million).

15. External financing limitations and the chronic lack of liquidity are important pressures that have constrained economic growth, the increase of people´s livelihoods, and greater financial resources to address the major environmental issues identified as national priorities. However, recent favorable financing and trade conditions with Venezuela and China have opened opportunities for imports of key inputs such as oil, and essential goods such as food, although by their nature they do not solve the chronic deficit of foreign currency for transactions. In regards to the domestic economy, the main constraints come from the decapitalization that is still present within a set of industrial activities and services that require significant investments for modernization, and the poor performance of the agricultural sector, resulting from a combination of technological, economic and natural factors, and limitations in their management, which increases pressure on the land as well as the external dependence for food consumption. Moreover, the complexities introduced by the existence of two currencies and segmented markets within the economic model hinder the measurement of the economy´s efficiency, and the regulation of existing markets.

16. Nevertheless according to the 2013 Human Development Report, Cuba ranks 59th, and is in the high human development category, with an HDI value of 0.780 in 2012. According to official data, the Cuban economy grew at an average annual rate of 10 % during the period 2005-2007. This was possible despite the adverse weather conditions, such as the worst drought in a hundred years and three hurricanes that caused losses estimated at US$3.6 billion (about 7.9 % of gross domestic product

in 2005. During the rainy season of 2007 the largest precipitation recorded in the country's history was reported and agricultural production was severely affected. Although in 2008 Cuba was hit by hurricanes Gustav and Ike, with losses estimated in US$10 billion, the economy grew. These data show the limited contribution of agriculture to the national economy. The small and medium scale agriculture suffered less damage and helped to speed recovery.

17. In recent years, the main drivers of the Cuban economic growth have been tourism, with an approximate increase from US$0.2 billion in 1994 to US$2 billion in 2004, and the social capital (doctors, teachers, sports coaches and technicians). Thus, in 2005, 70% of the gross domestic product corresponded to the services sector. This has been interpreted as an indicator of the transition from a production-based economy to a service-based economy. Political and trade alliances with other countries in the region, as well as the diversification of import and export markets have also contributed to the economic recovery.

Land use and agricultural context in Cuba.

18. Agriculture in Cuba occupies 6,342,400 hectares (ha). The cultivated surface in 2013 was of 2,645,800 ha, of which 55.8% were covered by permanent crops (with 836,800 ha corresponding to sugarcane) and 43.2% by seasonal crops. Of the uncultivated farm area, natural grasslands occupy 2,650,500 ha. The lands classified as non-agricultural cover 4,646,000 ha with forests occupying 3,402,300 ha. In the past 43 years, the forest area has increased in 1,072,100 ha.

19. The beginning of the Special Period[1] marked the restructuring of the economy, and the country started to experience local innovation in the face of the fall of the socialist regime and the collapse of national planning. In this context, significant changes have been made in the national agrarian structure with the creation of the Basic Units for Cooperative Production (UBPC) and the restructuring of the sugar agro-industry, among others, to ensure food sovereignty in the new external and internal context.

20. This process was accompanied by a gradual shift of paradigm that favors the combination of productive systems: organic, agro-ecological, conventional and mixed agricultural systems. The distribution of lands that began in 1993 with the creation of the UBPCs contributed to the expansion of small-scale local food production. At the same time the idea of urban agriculture came about seeking to ensure the supply of fresh food, mainly vegetables and spices, for the local population, to improve food quality regardless of inputs and to stimulate domestic consumption; the proposal also included production of rice and fruits through smallholders.

21. The concept of suburban agriculture was later introduced, defined as a territorial, municipalized vision for supply of diverse locally produced agricultural products that substitutes imports, and basically employs domestic inputs, preferably local inputs, under the organic, agroecological or mixed systems, producing livestock or crops or a combination of both as a means to guarantee supplies.

22. Various combinations of the resulting technology have been adapted by a large group of committed farmers who had the support of scientific institutions of the State and NGOs. The management of natural resources under agroecological principles and participatory mechanisms is considered to be an effective methodology to convert Cuban agriculture from a vertical, export-oriented, centralized and with high external inputs model, to a more horizontal, local market oriented, decentralized and with low input model. In this context, diversified and integrated crop and livestock production systems offer solutions to many of the problems of the specialized systems. The benefits come from the more intensive use of natural resources available at system level, through more

[1] The collapse of the socialist trade block (1989-1990) caused great difficulties to the Cuban economy. In August 1990 the so-called Special Period in Time of Peace began, where the country took measures primarily related to energy savings.

complex and varied interactions. Sustainable intensification through the better use of both agricultural and animal resources, allows for local production and family food self-sufficiency.

23. The highly diversified, heterogeneous and complex small and medium farms have shown to reach higher levels of production and resource efficiency than the larger scale agriculture and livestock specialized systems. In 2006 it was officially recognized that small farmers, with half of the land under agricultural use (25% of the total surface area) were responsible for 65% of the total agricultural production. Moreover, with about 13% of the pasture area (about 300,000 ha), the farmer cooperative sector owned 43.5 % of the national herd and in March 2008 this figure had risen to 55%. In 2009, following the distribution of lands, the small farmers were producing 96% of tobacco, 70% of pork, 60% of meats and vegetables and 59% of milk. Moreover, they owned 90% of small animals and 62% of the bovine herd.

24. Currently more than 80% of the land in use is managed under a cooperative scheme, where producers make most of the decisions in a decentralized manner. This has had a remarkable effect in the increase of productivity. Nearly 6 million ha of land in plains and another 1 million ha in slightly sloped areas are suitable for cultivation. In 2008, more than half of this land remained uncultivated, and in most of the remaining area the productivity of the labor force and land, as well as the efficiency in the use of resources, were extremely low. Of the more than 3 million ha that remained uncultivated - around half of the agricultural land – more than 1,6 million ha belonging to the State were declared idle.

25. This situation motivated the issuance of Decree Law #259, currently #300 that regulates the distribution of idle lands to people who want to cultivate them. As a result, in early July 2009 about 40% of these lands -nearly 700,000 ha - were distributed. By June 2009 a total of 110,463 applications had been approved and lands distributed to 78,113 individual or legal persons with the highest State priority. About 65,000 new farmers that were benefited by this program are already associated to Credit and Service Cooperatives (CCS) and follow the traditional methods and practices developed by the small farmer sector.

2.2. The global problem to be addressed

26. Despite the existence of a generally contributing environment for sustainable land management in Cuba, described in previous paragraphs, large areas of the country are subject to severe processes of land degradation. Patterns of land use within the soil, weather and topographic conditions of Cuba have led to increased land degradation and desertification in the country. The processes of land degradation vary widely across the country, depending largely on local variations in climate and topography that have determined the land uses applied and the vulnerability of the land and water resources to degradation.

27. Recognizing the severity of land degradation in the country, the GoC has granted priority to this issue through the development of the National Program to Combat Desertification and Drought (NAPCD) approved in 2000 and updated in 2008 as per the instructions of the Decennial Strategy of the United Nations Convention to Combat Desertification (UNCCD). This update has been included in the GEF-CPP.

28. The NAPCD indicates that 14% of the productive lands are affected by desertification and drought, where the conditions of land degradation are extreme. The areas affected particularly by desertification are located in the coastal plains of the country, generally areas with heights between 5 and 40 meters above sea level (masl) and in the coastal plains associated with mountain ranges, which reach heights of 500 masl. In the latter, aridity is related to wind systems, occurs on the south side of the mountain range, and is generally critical. The other areas have at least one of the main degradation processes significantly advanced. For instance, 1 million ha are affected by salinity (representing 14 %

of agricultural lands); 2.9 million ha by heavy erosion (43% of agricultural lands); 2.7 million ha by poor drainage (40% of agricultural lands); 1.6 million ha by high levels of compaction (24% of agricultural lands); 2.7 million ha by high levels of acidity, KCL pH <6; (40% of agricultural lands); and 4.7 million ha by a low organic matter content (70 % of agricultural lands). The main drivers of desertification are deforestation, improper establishment of crops and plantations, inadequate management of farming technologies, misuse of irrigated land and land use changes.

29. Moreover, the current water infrastructure comprises 239 reservoirs that store more than 8.747 billion m^3 and 788.4 kilometers of master canals connected to them, with an additional 805 micro dams with a storing capacity that exceeds 600 million m^3. The availability of water from the water infrastructure is critical to ensure the sustainable development of the country, in a context of hazards, vulnerabilities and risks given by the country´s insular condition, its geographical characteristics and the recognized impact of climate change.

30. The need for sustainable water management, and capacity development and awareness raising on the subject in Cuba is vital given among other factors, the relative scarcity of water in vulnerable areas; the loss of its original quality due to the effect of anthropogenic activity; and loss in conduction due to the inefficiency of systems in operation and the application of inappropriate technologies, with emphasis on irrigation of agricultural crops. This need is further entrenched by a complex climatic context that determines the more frequent occurrence of extreme events (prolonged droughts and hurricanes).

2.3. Threats, root causes and barrier analysis

Threats and root causes

31. The main processes that cause land degradation are anthropogenic in nature. The occurrence and natures of these processes are strongly related to the different types of land use in the country, which in turn are dependent on local topographical and climatic variations. The flat plains and undulating and pre-mountain areas (as typified by the Havana-Matanzas intervention area and the Guantánamo valley part of the Guantánamo intervention area) are dominated by mechanized agriculture. In hilly and mountainous areas (as typified by the southern part of the Villa Clara intervention area and the upper part of the Cauto Basin intervention area), topographical limitations mean that the impacts of mechanized or irrigated agriculture have been more limited; this area is characterized more typically by the relatively small-scale production of largely rain-fed annual crops, with some areas of extensively managed cattle pasture and significant areas of remaining forest, which has suffered varying degrees of deforestation, disturbance and degradation.

32. The **use of inappropriate machinery and cultivation practices in mechanized agriculture** on the flat and undulating plains leads to soil compaction and associated erosion, while the practice of continuous tillage at a constant depth can lead to the formation of an impenetrable hard pan that limits the depth of the roots and hinders natural drainage, thereby exacerbating, among other effects, the salinization of soils.

33. Another problem, which is most pronounced in, but not confined to, mechanized agriculture on the plains, is **inadequate and inappropriate fertilization**, which leads to acidification of soils, lack of uniformity in crop development and contamination of aquifers. Cuba has made major advances in organic agriculture in recent years, involving practices such as crop rotation, the use of green fertilizers, cover crops and the production and application of massive quantities of organic compost and worm humus, in response to the country's difficulty in obtaining imported synthetic fertilizers. However, although the use of mineral fertilizers has been significantly reduced, synthetic fertilizers are still extensively used in some crops in order to ensure that short term production and food supply needs are met. In cases where soil conditions and specific crop nutrient needs are not properly taken

into account, this leads to problems of soil salinity buildup, nitrate contamination of aquifers and eutrophication of superficial water bodies. In other cases, the shortage of synthetic fertilizers and the difficulty in producing the vast quantities of organic fertilizer which would be needed to substitute them, meaning that crops suffer nutrient deficiencies and fail, with the result that large areas of land need to be brought into cultivation in order to meet production targets. Inadequate application of organic fertilizers also leads to reduced levels of soil organic matter, a problem that affects 70% of agricultural land in the country.

34. It is also on the plains that irrigated agriculture is concentrated. Particularly in such areas, the **inappropriate use of irrigation** contributes to land degradation, especially in regards to acceleration of soil salinization, which in turn worsens when irrigation water is of low quality, thereby destroying the structure of soils, reducing permeability and creating hard pans. Problems related to poor drainage affect 2.7 million ha or 40% of the agricultural lands in the country and are observed particularly in the central and eastern regions such as the Cauto Basin, Guantanamo and Villa Clara, in descending order. Improper adoption of crops and crop association schemes further contribute to the processes of land degradation, especially when the crop demands a water irrigation volume that does not match the capabilities of the territory, which implies resource overexploitation with depletion of aquifers or salinization of these due to the saline intrusion. This affects the balance of the ecosystem, reducing its resilience and ability to provide acceptable crop yields among other environmental services. On the other hand, a combination of inadequate management of irrigation with overall problems of efficiency, poor drainage and poor water quality affect productivity, one example is the production of rice in the northern areas of the Granma province in the Cauto basin. A low utilization of rainwater through water harvesting systems, clogging of sinks and pathways for natural recharge of aquifers and water sources, as well as mishandling of agrochemicals generate instability in the quality of the water resource and as a result, economic losses.

35. The country´s insular condition determines the constant interaction with marine and coastal waters, which equilibrium is affected by anthropogenic causes through the increase in the contents of chloride, sodium and other salts in groundwater and surface waters. In the case of groundwater, the ***intrusion of seawater into aquifers, especially in the coastal carsic formations***, constitutes an ever-present problem given the hydraulic relationships between fresh and seawater. Under a situation of equilibrium between these two waters, fresh water has a salt content below 500 mg/l, with higher values at the mouths of rivers and estuaries. Groundwater aquifers in connection with the sea, depending on their management, may vary their composition from calcic or magnesic bicarbonated to chloric sodic or chloric sodic bicarbonate thereby raising their salinity tenors to levels higher than 1 g/l of total soluble salts, making them unfit for human consumption and irrigation, among other uses.

36. At the end of 2009, the areas under risk reached almost 500,000 ha. Of these, 15.9% were irrigated with sprinkler systems, 5.3% with machines, 6.3% with drip irrigation, 60.9% by gravity and 1.5% with other techniques. Gravity irrigation has been the most used system and the least efficient. Of the planned volume of water for all uses in the country, 50% is used every year for irrigation. Rice is the crop with the highest demand (38.9% of the planned irrigation volume and 21% of the planned national volume).

37. An analysis of the relationship between the total water allocated for irrigation of crops and the areas under irrigation reflects a growth of 52% from 5.3K m^3/ha in 2007 to 8.1K m^3/ha in 2010. Rice represents the highest share within this growth rate, passing from 6.5K m^3/ha to 9.8K m^3/ha. This shows that it is not the growth of irrigated areas that increases the demand for water, but the growth in surface area of high water-consuming crops coupled with the inefficiency of the irrigation systems that have been in operation for many years without an effective maintenance program, and poor management and operation.

38. **Fire** is commonly used for land clearance, the eradication of pasture pests such as ticks and the rejuvenation of pasture grasses. In the short term, this has the attraction of saving labor in manual clearance and minimizing the requirements of scarce fuel and chemicals for clearance with machinery or herbicides. In the long term, however, it degrades the vegetation that protects the soil against raindrop impact, leading to surface crusting, reduced infiltration and increased erosive cross-surface flow, which leads to an increased **sedimentation of water bodies**. It also affects soil nutrient status by leading to the loss of soil carbon, nitrogen and micro-fauna. Soil degradation as a result of the inappropriate fire is a particularly pronounced problem in the Guantánamo intervention area.

39. In the areas around the hills located along the coastal strip of the Guantánamo intervention area, **intensive grazing of cattle and sheep** is leading to the degradation of xeric vegetation and the erosion of soils, which are left to the exposure of free falling rain.

40. The limited extent of adoption of SLM practices based on effective and efficient management of water resources by farmers, is partly due to the lack of awareness of their existence and the long term benefits they provide when compared to more 'traditional' practices, many of which demand high water consumption, hence leading to negative impacts. This problem affects the producers of all scales and types, ranging from small farmers to companies, farmers' cooperatives, and large-scale producers of sugar cane, livestock and forestry. Moreover, most of the population has a limited general perception of the problems related to natural resources degradation. Members of local communities tend to be informed about issues that directly affect their surroundings; however, the perception of soil erosion, loss of biodiversity and water pollution as problems is limited, as well as the perception of the links between biophysical and socio-cultural factors. Moreover, central planning involves prioritizing production targets to ensure food supply, market access and minimum prices for the products, which are not necessarily compatible with the goals of SLM in the sense that in order to meet production goals the use of inappropriate practices may be involved, such as the use of increasing amounts of water although the aquifers´ availability decreases. Furthermore, the lack of regulations to promote SLM and incentives to encourage sustainable practices contributes to a low level of adoption of SLM.

41. Project #1 has helped to implement adjustments and/or mitigation of threats originating in the misuse of fire, lack of soil conservation and inappropriate use of irrigation and/or water management in its intervention areas and in the "polygons for soil conservation in agriculture"[2] throughout the country. The Ministry of Agriculture (MINag) has adopted the measures promoted by Project #1 as good practices and improvements are observed in the field through the dissemination of SLM concepts and tools. Moreover, as a result of the synergies and replication, SLM concepts and practices are being adopted in provinces outside the areas of intervention of the GEF-CPP. However, there is still need to extend the good practices to the rest of the country. The lack of knowledge of SLM concepts outside the GEF-CPP and Project #1 intervention areas results in the inefficient management of land use and resources. Project #2 will promote the SLM practices in its intervention areas emphasizing in Integrated Water Resources Management (IWRM), assistance to irrigators, supply of technical-scientific services to select the most appropriate irrigation technique taking into account type of crops, and soil and water quality and availability, among other actions. Good practices will include rain water harvesting, production of biogas, protection of aquifer recharge areas, environmental education and empowerment of water users. It will also contribute to increase upscaling beyond its areas of intervention.

[2] Polygons are special areas created by the Soil Institute of the Ministry of Agriculture for implementation and demonstration of scientific results. These have been adopted within the framework of the CPP as areas for replication given that they provide an opportunity to demonstrate the integrated economic, social and environmental aspects of SLM.

Barriers

42. The analysis conducted during preparation of the CPP identified six barriers[3] that constrain a comprehensive implementation of SLM throughout Cuba. These barriers will be addressed through the five projects that constitute the CPP. Project #2 will focus on the removal of the following three barriers:

Barrier 1: Inadequate incorporation of SLM considerations into extension and environmental education programs, with emphasis in water management (relates to CPP Barriers 1 and 2)

43. Overall, Cuba has a well-developed agricultural extension and environmental education system. The incorporation of land degradation and sustainable management considerations and criteria in these training systems is still new in the country. Certain aspects such as conservation agriculture, the use of bio-fertilizers, and establishment of crop rotations are being gradually incorporated as a result of the changes in Cuba´s agricultural policy, including the issuance of new regulations and legislation in the areas of land tenure, and technical standards for agriculture and water.

44. During the development of the CPP and its two ongoing projects (#1 and #5) a number of shortcomings that limited the introduction of the SLM concepts in different spheres of the social and economic management of the country were removed. The strengthening of the economic structure of the State and incorporation of actions to attain socio-economic development in a sustainable manner as expressed in the country´s development policy reflect the will of the GoC and provide the opportunity for addressing the threats posed by the degradation of soil, water and forests. This is evidenced by the inclusion of the concepts of SLM in the National Environmental Strategy, the National Environmental Education Strategy and the new National Water Policy, all of them implemented under the framework of the CPP. Since the inception of the CPP and its projects this concept has been disseminated and the target audiences have begun receiving training and awareness raising. Some 25 workshops and/or training courses on SLM have been conducted with the participation of 1,623 decision-makers, agricultural extension workers, farmers and professionals in general, who are linked to the CPP interventions.

45. However, the causes that gave rise to the CPP barriers still exist, as the perception of SLM is still insufficient outside the space of the CPP projects, and even internally SLM is only associated with agricultural problems and soil conservation, and not to the extent necessary to integrate other SLM related stakeholders. It is necessary to continue mainstreaming the SLM concepts in plans and programs as well as monitoring systems.

46. The curricula of technical schools, universities and other educational institutions where technicians responsible for implementing education and outreach programs are trained, have advanced significantly in recent years in regards to the incorporation of SLM issues, but in general they tend to treat the different components of the natural resources (e.g. soil, water and forests) separately and do not adequately address the essential integration between these elements which is vital to SLM. This shortfall is directly related to inadequate levels of awareness and understanding of the complexity and the integrated nature of land degradation, and differences on SLM concepts among the staff of a number of institutions. This problem is particularly widespread at the institutional level, affecting key institutions within the CPP, such as the Ministry of Agriculture (MINag) and its dependencies, the Sugar Entrepreneurial Group (AZCuba), the Institute of Physical Planning (IPF) and the National Institute of Hydraulic Resources (INRH).

[3] CPP Barriers: 1) Limited inter-sector integration and inter-institutional coordination; 2) Inadequate incorporation of SLM considerations into extension and environmental education programmes; 3) Limited development of financing and incentive mechanisms for SLM; 4) Inadequacy of systems for monitoring of LD and management of related information; 5) Planners have limited tools and knowledge for incorporating SLM considerations into plans, programmes and policies; 6) Inadequate development of regulatory framework for combating LD

47. This inadequate mainstreaming of SLM is to some extent a result of insufficient dissemination of the results of field demonstrations and application of integrated approaches to SLM in productive activities, which is the competence of the technicians and trainers in general. Specific areas where an increased knowledge of SLM is required include, among others, those related with the low level of application of appropriate technologies particularly in hillsides, proper nutrient management at each site and for different types of crops, management of soil moisture and efficient irrigation, intensive farming management, crop diversification and rotation, intercropping with green fertilizers, forestry and appropriate extension methods (e.g. participatory action research) that take into account the conditions and criteria of the farmers and the characteristics and value of their traditional knowledge.

Barrier 2: Inadequacy of systems for monitoring of LD and management of related information (CPP Barrier 4)

48. The operation of the networks for observation of the hydrological cycle is the basis for water resources development and water management in the country. The monitoring system comprises 1,923 rainfall stations, 38 hydrometric stations, 123 rain gauge stations (not operating due to poor technical conditions), 1,875 hydrogeological stations, 13 weather stations and 2,398 quality stations.

49. However, this monitoring system presents difficulties because it is depressed since the early 1990s to date (Special Period). While under stable operation, especially the rainfall network, technological status is not good. The system provides information on the status of isolated variables and factors that cause the deterioration of natural, technological, economic and social resources (such as rates of soil erosion, forest cover, water quality, and state of water infrastructure), hence it does not allow a comprehensive assessment and interpretation of health, function or resilience of ecosystems. Except for some monitoring systems (e.g. REDCAL water quality monitoring system and early warning systems) the systematic control of the observations does not meet the current needs of development of the country, given the obsolete means and equipment for measurement, the lack of inputs and components for its operation, and the poor condition of the transportation means to support systematic monitoring. The new government policy foresees the strengthening of the monitoring system at all levels in several phases although the difficulties for procurement of means and equipment persist due to the lack of access to adequate markets. The key institutions affected by these constraints are the National Institute of Hydraulic Resources (INRH), which controls the Water Quality Network, and monitors the availability of surface and ground water among others; the Institute for Research and Agricultural Engineering (IAgric) and the Institute of Soils (IS), both of these belonging to the MINag and in charge of determining the quality of irrigation water and planning the water volume as per crop consumption rates and unit of production or service; AZCuba, which determines the quality of water and type of irrigation for sugarcane production; and the Institute of Meteorology (INSMET) which monitors the behavior of the climate and its variables through the National System for Climate Monitoring, which includes the Monitoring and Early Warning System for extreme weather events.

50. This affects the ability of producers to make appropriate decisions regarding the management of their land, as well as for providing an efficient feedback of information for decision-making. This also limits the capacity of planners to develop land use and agricultural production plans that reflect the sustainable carrying capacity of the land. The need for adequate management of monitoring and information is especially critical with respect to parameters such as soil nutrient status, the quality of aquifers, soil salinity and early warning of agro climatic trends. This also affects the effectiveness of institutions to the extent that they have limited ability to determine the impact of their actions on natural resources and make adjustments accordingly. Of greater importance with respect to SLM is the limited availability of information regarding long-term and short-term trends, which means a reduced ability to cope with the increase in frequency of extreme weather events (hurricanes, droughts).

Barrier 3: Planners have limited tools and knowledge for incorporating SLM considerations into plans, programs and policies (relates to CPP Barriers 5 and 6)

51. To ensure that the private agricultural sector meets the requirements of food security for the population, the centrally designed plans that determine the productive activities of individual farmers and cooperatives sometimes place a strong emphasis on achieving high yields in the production of a limited number of crops in the short term. On the contrary those actions with long term implications, including SLM, have a relatively low priority. There is limited consideration in the plans and programs of how to make the short-term food production compatible with the long term SLM goals.

52. This is because of the insufficient intersectoral and interagency coordination between the institutions responsible for food security and SLM (e.g. IPF and MINag). It is also the result of limited knowledge by planners, technicians and producers on methodological and technical options to combine these objectives (e.g. through the inclusion of appropriate indicators in planning tools) and the range of SLM options that are applicable to high performance food crops. Moreover, technical standards have not adapted to the changing weather patterns.

53. The plans that determine land uses and production objectives still have shortcomings relative to SLM. Planners currently have better conditions for adequate access to information and technical expertise to properly take into account such information and consider it in the development of plans. However, the recognition of the impacts of management practices on soil conditions and water resources is low, for instance the implications of poor water management on land degradation, inappropriate species selection and use of monocultures. This is exacerbated by deficiencies in the systems for monitoring systems and feedback of information on such impacts.

54. Regarding management of water resources, there are weaknesses in the monitoring system and in the management of water resources in general given the limited efficiency of the State´s financial resources available for water management. As the result there is a low overall efficiency of irrigation with water losses due to conduction and mismanagement; low level of rainwater harvesting locally, and an urgent need to protect water resources through forest strips and to establish hydro-sanitary perimeters around dams, rivers, springs, catchment areas of surface and groundwater basins; recover the State´s functions of improvement and maintenance of the irrigation systems and hydraulic infrastructure that deteriorated in recent times.

55. Moreover, information dissemination is poor; in many cases the information necessary for a rational management of water does not reach users and decision makers. Furthermore the information is not prepared in a language that is understandable by the target audiences; although the information may be backed by an extensive and quality database it may not be useful since the user is not trained to understand the data or it is not delivered in a language understood by the user.

2.4. Institutional, sectoral and policy context

Institutional and sectoral context

56. A number of national level institutions have a stake in SLM issues. The **Ministry of Foreign Trade and Foreign Investment (MINCEX)** is in charge of coordinating international cooperation in Cuba and represents the GoC in international cooperation affairs. Within the **Ministry of Science, Technology and Environment (CITMA)**, the **Environment Agency (AMA)** is the national coordinator of the CPP and its projects with the mandate of developing and transferring global approaches to SLM and mainstreaming of SLM in the domestic and international environmental information sharing mechanisms. It is the headquarters of the Technical Office of Desertification and Drought and therein the Central Coordination Unit for the Country Partnership Program. AMA comprises key project-related institutions, namely: 1) the ***Institute of Tropical Geography (IGT)*** in

charge of the SLM Monitoring and Evaluation system and the integration of databases and monitoring systems; 2**)** the ***National Institute of Meteorology (INSMET)*** responsible for improving climatic and agroclimatic regionalization of tasks for land use (including zoning of crops and forest species, etc.) to support assessment, reduction and control of the environmental impacts of production and other socio-economic activities, as well as for working with IGT to ensure the integration of databases and monitoring systems; 3) the ***Office of Programs and Projects***, which evaluates the introduction of scientific and technological innovations and manages the Information Group responsible for the dissemination of results within the framework of the CPP´s dissemination strategy; and 4) the ***Technical Office to Combat Desertification and Drought*** in charge of the NAPCD with its national and international commitments as well as the SLM national and international projects. CITMA has established the ***Center for Local Development (CEDEL),*** which assists local governments in designing their local development processes within a comprehensive development vision taking into account the economic-productive, institutional, socio-cultural and environmental dimensions of development. On the basis of an ecosystem approach CEDEL is responsible for incorporating SLM considerations to standards and technical regulations on the use and management of water resources in coordination with other institutions.

57. The **Ministry of Agriculture (MINag)** is the lead agency responsible for the management, conservation and improvement of the lands for agricultural production other than sugar, livestock production and forestry, and to implement the measures necessary to comply with the stipulations of Law #81 of the Environment in coordination with CITMA, INRH, Ministry of Energy and Mines (MEM), AZCuba and other agencies and institutions. MINag comprises a network of research and development institutions that play an important role in SLM: 1) ***Institute for Research and Agricultural Engineering (IAgric)*** participates in programs and projects at different levels on issues concerning the agro ecological regionalization for irrigation under water deficit conditions, agricultural drainage and recovery of saline soils, technologies for soil conservation and preservation of water quality and strategies to mitigate environmental degradation associated with irrigation, drainage and mechanization. IAgric advises and leads the effective implementation of MINag´s programme under the National Hydraulic Programme; 2) ***Soil Institute (IS)*****:** in charge of generating and transferring SLM related technology; it monitors and controls land use and land use change; leads and implements the National Program for Soil Improvement and Conservation for prevention and recovery of affected soils; organizes, controls and directs the rational application of mineral fertilizers and the production and application of organic fertilizers and bio-fertilizers; 3) ***State Forestry Service (SEF)*** represents the Forestry Directorate and exercises control over forestlands and the expansion of agricultural land; it promotes forest management and reforestation of former forestlands; 4) ***Institute for Research in Agroforestry (FEIS)*** contributes in the selection of species for reforestation of forest strips for protection of water resources as well as monitoring in the CPP demonstration sites.

58. The **National Institute of Hydraulic Resources (INRH)** is responsible for directing, implementing and monitoring the implementation of the National Water Policy in Cuba. The INRH organizes and directs in coordination with central government agencies the protection of ground water, watersheds, natural channels, and hydraulic works and infrastructures against the dangers of pollution, siltation and other forms of degradation and deterioration, and systematically monitors water quality. INRH comprises several bodies: 1) ***Innovation and Technology Management Directorate (CyTINRH)*** in charge of incorporating SLM considerations to standards and technical regulations on the use and management of water resources and in the programs and projects related to water resource management; 2) ***Havana Company for Hydraulic Research and Projects (EIPHH),*** which is responsible for introducing water management best practices in replication areas and sites; 3) ***Water Management Entrepreneurial Group (GEAH)***, which is responsible for creating a strategy to strengthen the hydrometric network, water quality laboratories and early warning systems, assess the availability of water in new demonstration sites and establish management plans.

59. The **Sugar Entrepreneurial Group (AZCUBA)** (formerly Ministry of Sugar) is the main institution for sugar production and responsible for land use planning in its domains; it comprises the ***Sugarcane Research Institute (INICA)*** and the ***Directorate for Science and Technology***. The **Institute for Physical Planning (IPF)** is the national entity subordinated to the Council of Ministers that leads the implementation of State and Governmental policies related to territorial management, urban planning, and cadaster; it is also responsible for defining plans for permitted land uses and issuing permits. The **Ministry of Higher Education (MES)** trains technicians and extension agents through various academic and vocational training. The **Ministry of Education (ME)** prepares technicians and extension agents through various basic/professional education institutions by way of the Agricultural Polytechnic Institutes (IPA). The **Forest Ranger Corps** of the Ministry of the Interior is responsible for forest protection. The **National Watershed Council** is the coordinating body in the field of planning and management of river basins in the country and has helped to develop concepts related to integrated watershed management.

60. Municipal governments and farmers´ cooperatives are involved in natural resources management at local level. The **Municipal governments** (168 in total) are in charge of coordinating land use planning within their territories. Farmers are grouped in several types of **Cooperatives**, namely: 1) Agricultural Production Cooperatives (CPA), 2) Credit and Services Cooperatives (CCS), and 3) Basic Units of Cooperative Production (UBPC). Cooperatives receive several benefits from the State such as credit, insurance, social security and wages (in the case of state farm workers).

61. Non-governmental organizations (NGO) that represent key stakeholders for SLM include: 1) **National Association of Small Farmers (ANAP**), which includes all farmers at all levels; 2**) Federation of Cuban Women (FMC),** which includes women at all levels and coordinates the incorporation of gender issues in the CPP demonstration sites; 3) **Cuban Association of Agricultural and Forestry Technicians (ACTAF)** which brings together the agricultural researchers; and 4) **National Union of Architects and Construction Engineers (UNAIC)** that brings together hydraulic researchers and engineers engaged in water management.

Regulations and policy context

62. Cuba has developed National, Sectoral and Territorial Environmental Strategies, which have become effective instruments for implementation of actions for improving environmental performance. These strategies link economic, social and environmental aspects in their design and implementation thereby constituting instruments for sustainable development. The most important is the **National Environmental Strategy**, currently in its third edition covering the period 2011-2015; it is based on Law 81 of the Environment, identifies the main environmental problems of the country and establishes an annual action plan that coves all sectors and includes goals and actions to face the identified problems.

63. The **Territorial Environmental Strategies** identify the locally suitable actions to preserve the environment and drive actions aiming at achieving the goals of sustainable development. These strategies incorporate the **Provincial Programme to confront Climate Change**, which is implemented by the key institutions working in agriculture, sugar production, tourism, and public health among others. As part of these territorial strategies, municipalities have **Integrated Environmental Programs** that include actions aimed at managing watersheds, mountain areas, biodiversity, desertification and drought, pollution, climate change and environmental education. **Integrated Coastal Management Programmes** are also developed under the coordination of municipal governments.

64. The **National Water Policy** (2012) sets the country´s intended vision for the continued development of the water sector; it establishes, promotes and organizes four strategic priorities: 1)

productive use of available water; 2) efficient use of existing infrastructure; 3) risk management associated with water quality; and 4) risk management associated with weather events. These priorities are expressed through 22 guiding principles that in turn contain the directives to be implemented by all agencies of the Central Government, Territories and Society.

65. Cuba has also developed a **National Program to Combat Desertification and Drought** (NAPCD). The programme integrates the principles and priorities for action, together with the guidelines underlying the text of the UN Convention to Combat Desertification and Drought (UNCCD). The **National Strategy for Environmental Education** was first launched in 1997 and contributed to widespread awareness of the need to incorporate environmental considerations into economic policies and social development in different fields and sectors of society, and communication processes. Currently the strategy covers the period 2011-2015 and reflects the problems and needs arising from new environmental, social and economic conditions; and explicitly incorporates the principles of SLM. The **National Forestry Action Plan of Cuba** was approved in 1992; it currently includes productive long-range goals for the years 2025 and 2050 that will contribute to the sustainable use of forest resources and an assessment of the ecosystem services provided by forests, taking into account the characteristics of the islands and the Cuban biota. Key forest ecosystem services include the protection of water resources and protection of soils from erosion and desertification.

66. The regulatory framework related to SLM includes the **Decree 138 of 1993 on Terrestrial Waters** regulates the use, control and protection of territorial waters, which is currently being revised to suit the **National Water Policy**. **Law 85, Forest Law of 1998** is the basis for legislation in the forestry sector. It stipulates the promotion and provision of incentives for reforestation with economic, social and protection objectives; conservation of biodiversity associated with forest ecosystems; and the protection of forests against deforestation, unplanned logging, fire, grazing, pests, diseases and other harmful factors. Within the framework of this law the National Fund for Forestry Development (FONADEF) was established in 2000, which provides funding to individuals and organizations for forest management activities. **Decree No. 179 of 1993 on the protection, use and conservation of soil** contains specific regulations for soil conservation and management. It includes for instance, additional rules on fertilizer application and water quality that can be used for irrigation that were developed under Project #1. The **Mining Law** (No. 76 of 1995) defines mining policy and relevant regulations, including provisions for the closure of mines that have unacceptable impacts on the environment as well as for reforestation and rehabilitation of areas affected by mining. **Decree Law 259 of 2008 on the Distribution of Idle Lands** as amended in 2012 by Decree Law 300 constitutes one the most important institutional changes in the last five years. This legal instrument regulates the distribution of idle lands, contributing to the increase of agricultural production and the use of potentially productive land.

Planning Mechanisms

67. The responsibility of planning for land use is shared among several institutions. The **IPF** has the overall responsibility for defining permissible land uses, evaluating proposals from different stakeholders and issuing permits accordingly. Agricultural uses are subject to certification by the **MINag** through the Institute of Soils (IS). **AZCuba** evaluates the physical potential of the lands under their control and determines the land uses, areas for cultivation of sugar cane, areas for other uses such as livestock, forestry and other crops, and non-agricultural areas. The **MEM** defines areas for mining and with the approval of the IPF, facilitates the use of such areas and their subsequent restoration. The **INRH** directs, executes and monitors the implementation of the water resources policy; it elaborates the National Hydraulic Programme with the participation of all the concerned institutions in the country and submits it to the National Economy Plan. **CITMA** is responsible for proposing the

creation of protected areas as well as planning and management of coastal areas. The National Council of Watersheds and the Territorial and Specific Watershed Councils were created in 1997 to support the integrated environmental management of the country's main watersheds.

68. At the municipal level, the main instrument for planning of land use at local level is the **General Plan for Land Use and Urban Development**, which aims to maximize compatibility between land management and its capabilities; occupation; and appropriate location of economic and social activities, taking into account environmental and disaster risk management issues. These plans are developed by a coordination group that comprises key institutions and the Municipal Departments of Physical Planning. The resulting plans are subject to annual approval by the Council for Municipal Administration.

69. Planning of agricultural production is governed by the **National Economy Plan**, which is organized by the Ministry of Economy and Planning. Within this plan MINag and AzCuba define their quantitative objectives by activity. These objectives focus on activities that provide food supplies and export crops (tobacco, cocoa, coffee, sugar cane, rice, beans, potatoes, grasses, etc.) and those that given their importance require a guaranteed supply of inputs by the Government. Other minor crops such as tubers, grains and vegetables are planned regionally and locally, responding to the needs of each territory. Production is organized at local (municipal) and national level through State enterprises and different forms of private production. The changes in the agrarian structure in Cuba in recent years have been characterized by a reduction of central planning and an increased incidence of market forces in farmers' decisions regarding production activities. Once their production obligations to the State are fulfilled, farmers can produce according to their needs and sell their surplus in Farmers Markets.

2.5. Stakeholder mapping and analysis

70. The following table includes the key participants involved in Project #2 and their respective roles and interests in the project.

Table 1: Stakeholder Analysis

Stakeholders	Mandate and role / interest in the project
Governmental Agencies	
Ministry of Foreign Trade (MINCEX)	Represents the Cuban government regarding international collaboration
Ministry of Science, Technology and Environment (CITMA) - Environment Agency (AMA) • Meteorology Institute (INSMET) • Tropical Geography Institute (IGT) - Local Development Center (CEDEL) - Territorial Delegations	CITMA is a Focal Point of GEF and is responsible for the coordination of NAPCD and the CPP. AMA is a branch of the Coordination Group and of the Central Coordination Unit for the Country Partnership Program, and will be responsible for project management. CEDEL will participate in the activities of capacity building, while the IGT and INSMET will be responsible for implementing activities to strengthen the biophysical monitoring systems and information management. CITMA Delegations will play an important role in the coordination of project activities in the areas of intervention and demonstration sites.
Ministry of Agriculture (MINAG) - Institute for Research and Agricultural Engineering (IAgric) - Soil Institute (IS) - Forestry Directorate, represented by the State Forestry Service (SEF) - Institute for Research in Agroforestry (INAF) - National Center for Land Control	Responsible for the Agricultural Policy. MINAG is one of the two entities that will coordinate and implement Project #2 through IAgric in collaboration with the Provincial Offices and Soil Departments at provincial and municipal levels. MINAG agencies will be responsible for developing capacities and strengthening monitoring systems (IAgric) as well as implementing demonstrations on the ground (IAgric, IS, SEF, INAF). The extension agents from MINAG Agencies will be

Stakeholders	Mandate and role / interest in the project
	trained in participatory approaches, SLM concepts and specific technologies and practices to develop their capacities to provide an effective assistance to farmers.
National Institute of Hydraulic Resources (INRH) - Directorate for Management of Innovation and Technology - Directorate for Watersheds - Business Group for Research and Engineering Projects (GEIPI) - Havana Company for Research and Hydraulic Projects (EIPHH) - Water Management Entrepreneurial Group (GEARH) - Directorate of Rational Use of Water (DURA)	INRH directs, implements and monitors the implementation of the State and Government policy for the water resources of the country. INRH is one of the two entities that coordinates and implements Project #2 and its dependencies will have different responsibilities in the project, including capacity development (CTNR, DURA), strengthening monitoring systems (GEARH) and implementing demonstrations on the ground (EIPHH).
AZCUBA - Sugar Cane Research Institute (INICA)	AZCUBA is the main institution for sugar production; it is responsible for planning of land use within its territories. INICA will be responsible for the design, validation and implementation of scientific and technological innovation programs and projects in sugarcane cultivation. INICA will have responsibilities in strengthening of the monitoring system. INICA extension agents will be trained in participatory approaches, SLM concepts and specific technologies and practices to develop their capacities to provide an effective assistance to farmers.
Institute for Physical Planning (IPF) - Directorate for Land Use - Territorial Directorate for Physical Planning (DTPF)	IPF is the national organism subordinated to the Council of Ministers that leads the implementation of the State and Government policy on land use, urban planning (including design and architecture) and cadaster. Throughout Project #2 the IFP will carry out land use planning in the intervention areas and demonstration sites management areas and sites of intervention, and will coordinate the harmonious development of territorial land use plans and project activities to ensure sustainability of project results.
Ministry of Higher Education (MES) - Higher Institute of Applied Science and Technology (InSTEC) - School of Social Communication (Havana University) - University of the East - Directorate of Science and Technology - Agrarian University of Havana - "José Antonio Echeverría" Polytechnic Institute	Will be responsible for training technicians and extension agents through various academic and vocational trainings. The main mission of MES is to develop the country´s scientific and technical potential. Their participation will be of vital importance to ensure appropriation of SLM concepts, methodologies and good practices and mainstreaming into the curricula of related careers. The Directorate of Science and Technology will coordinate training of technicians and extension agents through various academic and vocational training. The School of Social Communication will be the focal point for communication activities within the project.
Ministry of Education (ME) - Agricultural Polytechnic Institutes - Universities for Teachers	The ME´s mission is to train youths in agricultural technical careers. Within Project #2 it will be responsible for mainstreaming SLM practices and lessons in their curricula as well as disseminating the vision of an integrated and adequate management of water resources to professionals, technicians, decision makers, and the general population, to ensure sustainability of CPP actions.
Ministry of Interior - Forest Ranger Corps (CGB)	The Forest Ranger Corps is responsible for forest protection. The CGB has training centers that will be used by Project #2 to carry out capacity building activities.

Stakeholders	Mandate and role / interest in the project
Municipal Governments	Responsible for coordinating planning of land use at the municipal level. Eighteen municipal governments (see table 2 below) are involved Project #2 and will be responsible for coordinating interventions in their territories.
NGO´s	
National Association of Small Farmers (ANAP)	ANAP is a non-governmental organization that brings together all the farmers at all levels in the country. ANAP has training centers that will be used by the project for capacity building and extension activities. ANAP is a key target group of the project for implementation of sustainable water management systems. It will also support awareness raising and replication activities among its members.
Federation of Cuban Women (FMC)	The FMC brings together women at all levels. It will coordinate project activities on gender and water issues in the demonstration sites.
Cuban Association of Agricultural and Forestry Technicians (ACTAF)	The ACTAF represents technicians and professionals of the agricultural and forestry sectors in spaces that promote an agro-ecological based sustainable development. ACTAF will be a partner for implementation of forest strips for protection of water bodies. It will support awareness raising activities among its members.
National Union of Architects and Construction Engineers (UNAIC)	Organization of social interest and professional character that brings together several construction related associations. UNAIC will raise awareness and provide training to professional staff in the project´s intervention areas.
Beneficiaries	
Cooperatives - Agricultural Production Cooperatives (CPA) - Credit and Service Cooperatives (CCS - Basic Units of Cooperative Production (UBPCs)	Cooperatives are associations of producers with which the project will work to implement demonstrations, promote the dissemination of knowledge and upscaling of technologies.
Individual Farmers	The project will work with farmer and community leaders to implement demonstrations, promote replication of technologies, facilitate local processes of analysis and research, and interact with other local stakeholders of interest to the project.

2.6. Baseline analysis and gaps

71. The National Directorate for Hydraulic Planning of the INRH is responsible for promoting the implementation of the recently approved National Water Policy through the National Hydraulic Development Programme, in line with Cuba´s Economic and Social Policy. This implies a financial support that will gradually facilitate the management of water resources in the country through mainstreaming into the work of other Central Government Agencies.

72. The work of the National Hydrological Service of the INRH allows that the current operational level of the hydrological equipment that supports monitoring the variables of the hydrological cycle be considered satisfactory at the national level. This situation is not homogeneous in all provinces. The Hydrological Service uses different pathways and programs for collecting and processing of measurements of the hydrological cycle variables. This includes mail, monthly visits of technicians to the networks´ facilities, the Automated System for Processing and Feedback of Information on Rain (SATRIL), the Programme for the Water Use Plan in Cuba (PUA), the Rainfall Diary Programme (PDL), and others.

73. REDCAL is a water quality monitoring network with over 30 years of experience and information available for decision-making. The network is supported by the analytical work of 15 provincial laboratories belonging to the INRH, which have qualified personnel and minimum essential equipment to carry out physical, chemical and bacteriological analyses of water quality. The laboratory network of the INRH began the process of state accreditation and is working to upgrade the equipment.

74. Cuba prioritizes water supply to the population and works to strengthen the rehabilitation of networks and sanitation as part of a national programme for long-range investments. In this regard, specialized task forces are working in the aqueduct systems of 12 cities that are in an advanced state of deterioration and, in turn, are affected by very dry periods. In 1995 Cuba had reached MGD Goal #10[4] and since 2004, 95.6% of the population enjoys access to safe drinking water, whereby the percentage of the population without access has been reduced by almost three quarters compared to 1990. Nevertheless the Cuban government continues to invest in the improvement of the distribution networks and water treatment plants. Nearly half of the population of Havana is seriously affected by water supply problems. Several municipalities do not have a distribution network, while others have very poor networks, which result in significant losses of water. During the last decades, the development of the drinking water and sanitation services has been concentrated in the large cities and in rural areas with less emphasis on small towns, which accounts for the need to increase investments.

75. The country faces a severe drought, which is becoming more critical and extensive given the existing infrastructure problems. The most recent drought that began in November 2008 and intensified during 2009 was the fourth period with the least amount of rainfall in the past 109 years. The Cuban government has made significant investments in major water infrastructure such as dams and diversion canals. This has ensured the availability of water at source level even in the case of extreme drought. The government has also approved cooperation projects for the improvement and expansion of water supply systems and sanitation in five small towns, which are in their first and second stage of implementation as well as a programme for Improving Integrated Water Management in the Tributary Watersheds of the Havana and Santiago de Cuba Bays.

76. The main actions developed for the reduction of surface and groundwater pollution include establishing and permanently updating the National Inventory of Major Pollutant Sources of ground water, which is used as a reference for management and regulating as a means to mitigate and reduce the current loads.

77. The National Programme for Soil Improvement and Conservation (PNMCS) currently spends approximately US$18 million per year within the framework of the National Economy Plan to combat land degradation, forest protection and management of water resources. The current and prospective program for major crops is based on the decrease of the gradual deterioration suffered by the irrigation systems and the irrigated areas in general, with the objective of maintaining the current irrigated areas in optimum conditions in order to raise productivity and efficiency in the use of irrigation water. The main actions include: 1) starting the process of electrification of irrigation systems, which in 2008 amounted to 160,000 ha; 2) introducing practices such as selecting more resistant seed varieties and with lower water requirements; and application of technological solutions to improve efficiency in water use; and 3) increasing agricultural production on the basis of profound structural changes (e.g. decentralization of production of large enterprises to other forms of individual or collective production as small businesses, cooperative production and other productions according to cultural aspects and resources available).

[4] MDG #10: Reduce in half the proportion of people without sustainable access to safe water and sanitation by 2015.

78. The Water Balance is the main instrument of the GoC to ensure planning, management and control of the consumption of such an important resource as water. Farmers currently receive technical support through the extension services of different institutions such as the IAgric and its regional offices, State enterprises with which production contracts are established, the IS and its dependencies and the INRH. However, the support given by these extension services tends not to include the principles of SLM and inter- sectoral integration, due to training based typically on the specific sector covered by these institutions and the limited degree of inter-institutional coordination.

79. The GoC invests heavily in education, with higher educational and literacy levels than other countries in the region. However, specific awareness and experience regarding the SLM is lacking in many cases, for example with regard to the complex and multifaceted nature of land degradation, social issues and the ongoing development of technologies and SLM regional approaches.

80. In summary, the levels of commitment to addressing the problem of land degradation in Cuba are high and there is an institutional and legislative baseline on which to work. The main gaps in the baseline are the limited degree of recognition of the complex, multi-sectoral and multidisciplinary nature of the problems of land degradation at the government programs level, extension services and education; inadequate information flow to planners and between planners and practitioners, in relation to the processes of degradation and SLM; the need to continue updating the regulatory framework for combating land degradation and the reduction of degradation processes in areas with water resources management problems and the need to rescue and strengthen and organize the Hydraulic Programme and support the implementation of the National Water Policy with an integrated approach.

2.7. Linkages with other GEF and non-GEF interventions

Links with GEF projects and activities

81. Project #2 will coordinate with the UNDP/GEF Project *"A landscape approach to conserve threatened mountain ecosystems"*. The main objective of this project is to reduce the vulnerability of biodiversity of mountain ecosystems to ensure its effective management and protection against current and future threats at landscape level. This will be achieved through connectivity of fragments of mountainous ecosystems where economic and conservation interests are integrated harmoniously and in compatible ways in terms of mitigating the loss of biodiversity and increasing the ability to generate environmental goods and services to improve the livelihoods of the inhabitants of the mountains. The intervention areas are mountain ranges, which are the main shelters of biodiversity in Cuba and considered as Special Regions for Sustainable Development (REDS). Project #2 will coordinate with this project the implementation of SLM through meetings in demonstration sites for exchange of experiences, sharing of information and lessons learned, workshops and training

82. Project #2 will establish synergies with several projects under the **GEF Small Grants Programme (SGP**), especially with SGP projects associated with the production of renewable energy from solid wastes to reduce pollution, and rain water harvesting. Projects #1 and #5 have provided training to sector specialists that have established technical teams that work in SLM issues at local level. These teams work in SGP intervention areas implementing the Procedures Manual to declare Lands under SLM. Project #2 will continue to provide capacity building through training, awareness, and assessments under the SLM principles in replication areas where the SGP projects are being implemented.

Links with non -GEF projects and activities

83. The project will coordinate with the European Union funded Project "*Environmental Basis for Local Food Sustainability (BASAL)*" implemented by CITMA and MINag. The project supports the adaptation of the agricultural sector to the impacts of climate change within the framework of the

strategic programmes for several crops and livestock production and it will be implemented at local and provincial levels in the municipalities of Los Palacios, Güira Melena and Jimaguayú. The project will provide resources for individual producers and cooperatives to implement agricultural adaptation measures to reduce the vulnerability of production to the negative effects of climate change. This project and Project #2 have common demonstration sites in Havana-Matanzas and Pinar del Rio. Moreover, one of the objectives of BASAL is to strengthen local monitoring capacities. Both projects will coordinate through workshops and meetings seeking to incorporate SLM considerations in the field activities of BASAL. Another key issue for coordination will be the adoption by BASAL of biophysical monitoring indicators for SLM generated by Project#2.

84. Project #2 will also coordinate with the UNDP/Adaptation Fund Project "Reduction of environmental vulnerability to coastal floods through ecosystem based adaptation (EbA) in the South of the Provinces of Artemisa and Mayabeque" executed by CITMA and MINag. Its objective is to undertake actions for rehabilitation of mangrove areas located in the southern coastal strip of the Provinces of Artemisa and Mayabeque to reduce the impacts of floods, erosion and saline intrusion. This project and Project #2 have common demonstration areas in the Havana Matanzas Plains, therefore both projects will undertake joint training and awareness raising events, technical workshops, assessments and evaluations under SLM principles.

85. "Program for Local Support of Modernization of the Agricultural Sector in Cuba (PALMA)", which is an initiative to promote food security and sovereignty. This project focuses on food production taking into account livelihoods, a national food balance vs. market, supply and demand as guidelines of the process; urban and suburban agriculture as spaces to supply products to local consumers, reducing transportation costs, achieving self-sufficiency and local development, as means to reduce rural migration and dignify the work of the farmers. The PALMA project receives technical assistance under the CPP in environmental issues as well as guidance for procurement and introduction of environment-friendly technologies. Project #2 will provide capacity building and assistance in regards to technologies for adequate water management for SLM.

86. Finally, the project will coordinate with the JICA funded Project "Strengthening of Capacities for Management of Underground Waters and Control of Saline Intrusion in the Republic of Cuba", implemented by INRH. This project and Project #2 have a common demonstration site in Havana-Matanzas (Guira de Melena) where coordination will be ensured through meetings, exchange of experiences, workshops and training, and sharing of lessons learned.

SECTION 3: INTERVENTION STRATEGY (ALTERNATIVE)

3.1. Project rationale, policy conformity and expected global environmental benefits

Project rationale

87. In recent years changes have occurred in the productive organization of important sectors such as agriculture (see par.18-25 above), which consumes more than 50% of the water available in the country. These changes have given rise to new users in this sector, with different economic and legal responsibilities that require different technical and legal approach. This implies that in the coming years the management of water resources should be based on an integrated approach that takes into account a range of environmental, economic and social factors and needs, with the wide involvement of all sectors of society. These changes in the enabling framework must also involve a paradigm shift in the water policies. There is a need to develop the capacities and conditions necessary for a SLM that helps to maintain productivity and ecosystem functions at the level of the productive stakeholders, under different degradation conditions.

88. The water management practices of the past, most of which were designed based on relatively stable hydrological conditions, will be inadequate to address the impacts of climate change. Even the current climate variability often exceeds the capacity of the water management instruments that have been implemented. In addition to the challenges of climate change, population growth and changes in patterns of consumption and production, the desertification and drought related problems are a clear indication that it is time to improve water management for a SLM. It is necessary to assess the implementation of SLM as an indicator of performance and evaluation of the impacts of the current development programs in the country, such as the National Programme for Soil Improvement and Conservation, the Reforestation Programme and the Water Programme.

89. In this context, the project will help to remove the identified barriers. The project seeks to develop an enabling environment for integrated water resources management for SLM in three main regions of Cuba: the Southwestern Lowlands of Pinar del Rio and the Havana-Matanzas Plains in the Central region; North of Villa Clara and Sancti Spiritus, and to the East, the coastline of Maisí-Guantanamo and the Cauto River Basin.

90. The project will work at both national and local levels. At the **national level**, the project will build the capacities of the key institutions for integrated water management for sustainable land management. The project will build upon the progress achieved in Project #1 in regards to satisfying fundamental capacity needs, focusing more specifically on the development of the capacities required to ensure that decision makers and technicians at different levels have increased access to science-based knowledge and SLM strategies through decision support tools that enable sustainable land management in Cuba. The project will mainstream integrated water resources management and its multiple benefits into planning tools and policy instruments well as into relevant agricultural sector practices. Capacity building activities will focus on supporting the definition of information requirements for decision-making related to SLM in Cuba; supply of equipment and materials (hardware, software, images, databases, monitoring stations, etc.) and training necessary to ensure the availability of the information needed by decision makers; and support to the establishment of a system for management of the information generated, in order for it to be used by the numerous institutions involved in SLM related activities in a way that allows integrated (cross-sectoral) decision-making.

91. At the **local level**, the project will develop and validate the application of integrated land management approaches, emphasizing in water resources management through selected demonstration practices in the wider landscape at the four intervention sites. The project will continue and complement the work initiated under Project #1 in Guantánamo and Pinar del Río (and their demonstration sites). In both of these sites, the project will work at medium scale[5], in contrast to the small scale of Project #1. In Guantánamo, the project will replicate activities demonstrated during Project #1, with additional integration of sustainable water management practices, and will test and implement monitoring and evaluation, and information management activities in degraded landscapes. In Pinar del Río, it will build on the monitoring and evaluation system for extreme climatic events established in Project #1 to establish an overall land degradation monitoring system that incorporates national and local level information systems; and will implement sustainable land management

[5] The CPP defines the scales of intervention. Small scale: privately owned lands (for example farms, Basic Cooperative Units, Agricultural Production Cooperatives, Credit and Service Cooperatives etc.). In general these units tend not to exceed 60 ha in area, although this depends on the nature of land use in each case; forestry and livestock farms tend to have larger areas while those with minor crops commonly have areas of 15-20 ha. They are chiefly run with family labor, or that of various families, depending on the form of association adopted in each case. Medium scale: combined State-private lands (e.g. Agricultural Enterprises, Livestock Enterprises, sugar cane farmers, Popular Councils). Their area is generally between 80 and 150 ha. The diversity of land uses is greater than the small-scale farms and may include various forms of working (family or paid labor).

practices that integrate soil and water management practices. Additionally, the project incorporates the Havana-Matanzas Plains and the Cauto River Basin intervention areas, where new demonstration sites will serve to test the monitoring system and promote sustainable land management practices emphasizing water resources management. In Havana-Matanzas the project will work at small scale, while in the Cauto River Basin it will work at medium scale. Field demonstrations will also serve to promote upscaling of sustainable land management to other areas of the country.

92. The project design has the explicit goal of achieving a maximum effect on the sustainable management of water resources, continuing with the institutional strengthening goals initiated under Project #1. It will work on strengthening the National Water policy through a systems approach given its link with other natural resources, including in particular, soil, forests, atmosphere, and with human beings. This will provide a strategic contribution to the CPP as water resources represent an important cross-cutting factor across all fields of agricultural production and which is recognized as one of the main causes of land degradation in Cuba.

93. The project will contribute to the effective empowerment of women as social actors. To this end it will prioritize the empowerment of women through: 1) assessing the role of women in the management of irrigation and developing awareness raising activities on gender and water management; 2) generating opportunities for women (producers, technicians and staffs of institutions working in SLM-water management) to increase their access to information and knowledge on water resources management; 3) increasing the capacities of female technicians and operators of water management infrastructure (dams, irrigation systems) in the use of new technical instruments (e.g. water balance for planning and use of irrigation water, participatory monitoring and evaluation approaches for water use and management, information and monitoring networks and systems); 4) ensuring access to technical assistance and training to female producers for incorporation of best practices at farm level; and 5) fostering participation of women in project planning and decision-making. The Project Results Framework (Appendix 4) includes gender-disaggregated indicators at intervention area level (Outcome 3). As part of the project´s M&E activities disaggregated data by gender will be recorded to monitor differentiated project impacts.

94. Project #2 will contribute to achieving the objectives of the CPP of which it is part, as well as to the key national, regional and local level priorities by developing decision making instruments and strengthening the capacities of key stakeholders on issues related to land degradation. Within this context the project´s approach recognizes that ecosystem-based management must contribute to preserving or restoring the integrity of ecological systems as the base upon which socio-economic development and human wellbeing depend. In this sense, the project is aligned with UNEP´s Ecosystem Management Subprogramme, which seeks to integrate an ecosystem approach into development and planning processes; acquire and improve the capacity to use ecosystem management tools; and realign environmental programmes and financing to tackle the degradation of priority ecosystem services. Within this Subprogramme, it is aligned with Expected Accomplishment (a): “Use of the ecosystem approach in countries to maintain ecosystem services and sustainable productivity of terrestrial and aquatic systems is increased”, Output 3. “Tools, technical support and partnerships to improve integrated water resource management including water quality using ecosystem management approaches”.

Intervention areas

95. **Maisí-Guantanamo Coastal Plain:** Project #1 has implemented SLM actions and has developed cross-sectoral capacities for a harmonious and sustainable development of such measures. On this basis Project #2 will continue actions to monitor and assess land degradation and rehabilitation of the ecosystem through implementation of integrated management plans. Project #1 demonstration sites remain: 1) CCS Enrique Campos "Matabajo"; and 2) UBPC Eliomar Noa (see description of pilot sites in Appendix 15).

96. Guantánamo is the easternmost province of the country and suffers from intense drought and desertification. The Guantánamo region can be divided into two widely contrasting areas: i) a mountainous area inland (north) with high annual rainfall up to 3,000 mm, relatively well preserved forests and of great importance for the supply of water services; and ii) the plains with an extension of 1,220 km^2 in the valley of Guantánamo and the coastal strip running from Guantanamo Bay at the eastern end of the island, which is a narrow coastal plain that gives way to the hills inland. This second area constitutes the project intervention area. The area has a semi-arid climate as a result of the rain shadow effect, with levels of annual rainfall in the coast that range from 200 mm in the west (making this the driest area of the country) up to 1,000 mm in the east and progressively increasing inland.

97. In recent years, the drought that has affected this area historically has been more frequent and intense, which obviously affects agricultural yields in these areas as well as the quality of the pasture for livestock. There has been a marked rural-urban migration in the area of Guantánamo over recent decades especially during the period between 1981-2002 with a decrease of 11% in the rural population and an increase of 26.5% in the urban population.

98. The soils in the lower areas, both in the Guantanamo Valley and in small intra-montane and coastal valleys with flat reliefs have poor surface drainage; groundwater (typically having salt concentrations between 40 and 255 g/l) is frequently found at depths of less than 1.5 meters and when the water table rises, it causes flooding and/or salinization of fields. In some parts of the South Guantánamo Valley salt concentrations have increased from 700 to 1,500 ppm and 2,500 ppm in some cases in the past 20 years. An estimated 30,000 ha are affected by poor drainage and about 10,000 ha of arable land in the valley of Guantánamo remain uncultivated due to salinity problems and lack of access to water for irrigation. Soils in the higher areas tend to be more vulnerable to water erosion, especially in areas with a more rugged topography along the coast.

99. In the southern part of the Guantanamo Valley, and other lower parts of the area there are predominantly agricultural and grazing lands. The main crop in these areas is sugarcane, followed by pasture, fruits, tubers and vegetables and legumes. Agriculture is largely mechanized and large areas of the Guantánamo valley are irrigated. The situation in the coastal strip is markedly different, due to its topography. Much of this area consists of xeric scrub-covered hills, used primarily for grazing sheep, goats and cattle. Cooperatives and individual farmers that have limited financial resources to implement pasture rotation make use of extensive farming. Agriculture is concentrated in the coastal plains and inland valleys.

100. **Southwestern Lowlands of Pinar del Rio:** Project #1 strengthened institutional capacity, awareness and knowledge of SLM in the demonstration sites of this intervention area and began the process of strengthening the provincial early warning system to extreme weather events and the agricultural and meteorological drought in Pinar del Río. Project #2 will operate in the development and implementation of a comprehensive national system for monitoring weather events and their influence on the ability of integrated water management in extreme weather conditions, continuing the actions of the early warning system for droughts and an integrated long-term monitoring and reporting system of the effects of climate change and the impacts of SLM measures. Project #1 demonstration sites remain: 1) CCS "Raúl Gómez García", Manolo Farm in Las Martinas; 2) Cubaquivir Agroindustrial Company; and 3) CPA “Jesus Suarez Soca” (see description of pilot sites in Appendix 15).

101. The intervention area covers a total of 3,770 km2. The range of altitudes between 0 and 100 m and the topography is gently undulating, with generally less than 15% slopes. This area is susceptible to extreme weather events. Summer droughts in the period between January and May can be intense, limiting agricultural production and hampering the development of the natural vegetation. On the other hand, the area is highly vulnerable to cold fronts, tropical depressions and hurricanes. The soils in the area generally have low natural fertility (less than 3% of organic matter), very low water holding

capacity and a limited internal drainage due to the existence of a hard pan. In more than 53% of the area, the effective depth of the soil is limited (less than 25 cm), which limits the normal growth and development of certain crops.

102. About 44% of the agricultural area of the province is currently under production. The main crops in the northeast and central part of the plain are rice, tobacco, citrus, grains and tubers, which are almost exclusively produced as monocultures. To the south and west, grasslands and forests predominate. Fields are cultivated mechanically, using either mechanical or animal power. Although irrigation is practiced widely, the water sources are wells or reservoirs and many farmers cannot irrigate because of the limited availability of financial resources to acquire or repair irrigation equipment such as pumps and pipes. Around 126,600 hectares of farmland in the intervention area is unused; of these, about 76% correspond to natural pastures that suffer high levels of infestation by invasive species.

103. **Havana-Matanzas Plains**: Project #2 will work on a small scale based on hydraulic complexes and groundwater basins to strengthen the monitoring system of reserves and water quality; it will also pilot best practices for monitoring, evaluating and managing the information developed by the Project #1. This plain is of vital importance for the productive development of the Capital city and provides a scenario for piloting of IWRM and SLM best practices as a model for sustainable management of natural resources, conservation of underground water reserves, improving catchment areas and training of stakeholders in IWRM. The pilot sites in this area include: 1) Güira de Melena Agricultural Company; and 2) the State Company for Water Management, its area of influence and the Irrigation Community of Güines (see description of pilot sites in Appendix 15)

104. The Havana-Matanzas Plains occupy an area of approximately 3,770 km2 stretching across the provinces of Havana and Matanzas to the west of the country. Altitude ranges between 20 and 40 m, with slopes that do not exceed 3%. Soil conditions are favorable for crops although they have a low water holding capacity and low level of nutrients. While the area is favorable for agriculture, however anthropogenic influence has caused soil compaction, resulting in a sharp decrease of permeability and biological activity. The natural vegetation has been almost entirely replaced by crops and pastures, both natural and cultivated. As a result, vegetation cover and soil organic matter have declined considerably. The direct incidence of solar radiation on the soil surface accelerates the mineralization of organic matter. It presents relatively high density of surface watercourses to the center-east of the region in contrast to its scarcity to the center-west and some intermittent courses to the west.

105. The phenomenon known as seawater intrusion has been and is still one of the main hydrogeological problems in the Havana-Matanzas Plains given the direct connection of the aquifer with the sea. This natural process is accelerated sharply with the increase of the critical periods of drought and overexploitation of groundwater resources where the intensity of the operation has exceeded the limit of the natural balance between freshwater and seawater.

106. **Cauto River Basin:** In this intervention area Project #2 will implement actions in the landscape at a medium scale, mainly aiming at the sustainable management of water resources and mitigating the effects of drought. Three demonstration sites have been selected in this area: 1) CCS General Ramos "El Horno"; 2) CCS "Cuba Va"; and 3) CCS Hermes Rondon Cuenca del Cauco (see description of pilot sites in Appendix 15).

107. The Cauto River Basin is the nation's largest, with 9,540 km^2, located to the east of the island, it has an average height of 93.8 m and 343 km in length in its main channel. The drainage density is 0.7 km / km^2. The intervention area includes the provinces of Granma, with a surface area within the watershed of 3,281 km^2, Santiago de Cuba with 2,943 km^2, Holguín with 2,685 km^2 Las Tunas with 631 Km^2.

108. Soils in the lowlands are used for cultivating mostly rice, tobacco, vegetables and grains, and for grazing livestock. This area suffers from flooding during the period of greatest rainfall (May-October) since the water table is very close to the ground surface and the predominance of poorly drained soils. The mountainous area includes the mountains of the Sierra Maestra and the hills of Holguin. The potential erosion is severe given the steep slopes. Misuse of soils and improper exploitation of forest areas have caused the deterioration of soils in the area.

109. This is one of the watersheds in the country with the best distribution of hydrological networks in terms of quantity and quality of the observation regime in each one of its measurement points. The average annual rainfall is 1,375 mm, with around 80% falling during the rainy season and 20% during the dry season; and the spatial distribution is irregular. Ground water is scarce in the provinces of Santiago de Cuba, Holguin and Las Tunas. In Granma its use is seriously affected by salinity of geological origin. Groundwater is evaluated in 405 hm^3 and flows are generally less than 50 l/s.

110. This basin is one of most modified basins in the country; since 1899 there has been intense modification of the landscape throughout the valley, and natural conditions have only been maintained in a small section in the higher elevations of the Sierra Maestra and near the coast. Currently the landscape is evaluated as a moderately to heavily modified geosystem. Anthropogenic interventions linked to the lack of implementation of erosion prevention measures in the highlands have caused soil erosion, a phenomenon that can affect the quality of inland waters and waterworks through eutrophication and siltation.

Table 2. Summary of Key Characteristics of Intervention Areas

	Maisí Guantanamo	**Pinar del Rio**	**Habana-Matanzas**	**Cauto River Basin**
Total surface area	1,220 km^2	3,770 km^2	3,770 km^2	9,540 km^2
Provinces	Guantanamo	Pinar del Rio	Artemisa Mayabeque Matanzas	Las Tunas Granma
Municipalities	- Imías - Guantánamo	- Consolación del Sur - Los Palacios - Sandino	- Artemisa - Alquilar - Güira de Melena - Güines - San José las Lajas - Quivican - Jagüey Grande - Jovellanos	- Las Tunas - Bayamo - Guisa - Jiguaní - Río Cauto
Key LD processes	Highly degraded ecosystem. Semi-arid climate	Highly degraded ecosystem and extreme weather events	Less degraded ecosystem. Deficiencies in water management	Degraded ecosystem
Main land uses	Agriculture (sugarcane mainly, fruits, tubers, vegetables and legumes) Livestock production	Agriculture (rice, tobacco, citrus, grains, tubers)	Agriculture (vegetables, potatoes, plantain, sweet potatoes, maize, beans, fruits)	Agriculture (rice, tobacco, vegetables and grains) Livestock production
Scale of intervention	Medium scale	Medium scale	Small scale	Medium scale
Number of	2	3	2	3

demonstration sites				
Key lines of action	Replication of demonstration activities, conservation of rainwater and testing of high efficient irrigation systems	Strengthen resistance to drought and other extreme climatic events	Sustainable use of ground water	Sustainable management of water resources; drought prevention and management of water reserves for SLM

Policy conformity

111. The CPP was approved under the Operational Program on Sustainable Land Management (OP#15), which objective was to mitigate the causes and negative impacts of land degradation on the structure and functional integrity of ecosystems through sustainable land management practices as a contribution to improving people's livelihoods and economic well being. The project will play a key role in the operation of the Cuban CPP and in particular it will strengthen capacities for the coordination of information and monitoring systems in the management of water resources based on SLM. It will contribute to capacity development of individuals and institutions, with emphasis on the management of water resources and the integration of biophysical monitoring systems and information management. The project will also contribute to improved decision-making on land use, and will raise awareness on SLM to a wide group of sectors and institutions in Cuba. In this manner the project is aligned with OP#15 outcomes (a) "Institutional and human resource capacity strengthened to improve sustainable land management planning and implementation to achieve global environment benefits within the context of sustainable development", primarily through promotion of a broader change in the system through the removal of financial, capacity, technical, institutional and policy barriers for SLM at country level. As with the other CPP projects, Project #2 will carry out field demonstrations in four intervention areas; it will build on the lessons learned by Project #1 and will introduce new experiences and extract further lessons for development, application and dissemination of an integrated model for SLM. Hence the project keeps the alignment to OP#15 Outcome (c) "Improvement in the economic productivity of land under sustainable management and the preservation or restoration of the structure and functional integrity of ecosystems". Throughout implementation, the project will ensure alignment with emerging GEF-6 guidance under the Land Degradation Focal Area.

Global Environmental Benefits

112. Overall the project will contribute to the improvement of ecosystem functions over a wide area of farmland, grassland and forests in the four areas of intervention. Global environmental benefits to be delivered by the project include: 1) Increase in the number of producers in the areas of intervention that apply practices that reduce land degradation, including the sustainable management of water resources, agricultural and grazing lands; 2) Improvement in the availability of surface and groundwater resources through SLM practices that improve irrigation efficiency and water availability; 3) Increase in the surface area where efficiency in the use of water and increased productivity generate SLM; 4) Increased productivity of water used in each of the crops grown in the intervention areas (tobacco, rice, beans, maize, soy, *malanga*, potato, plantain, sweet potato) will improve crop yields and food security. The best practices introduced will allow water savings and increased incomes at farm level, savings in fuel and reducing negative environmental impacts; preserving soil moisture and reducing negative impacts from excess soil moisture.

113. The project will deliver a modernized long-term monitoring and evaluation system for management of water resources that will generate updated information for SLM. Moreover, the project will also deliver an information coordination network between key institutions in the areas of intervention for the management of information related to the integrated management of water resources for SLM.

114. Capacity building will contribute to the development of methodologies for efficient use of water for SLM. A greater number of resource managers of key institutions and agencies will be aware of the processes based on the sustainable management of water resources for SLM, thereby increasing the incorporation of SLM concepts in the implementation of the environmental, water, soil and forest policies; strengthening of land use plans in the demonstration areas to include water management, and the review and updating of water related policy and regulatory documents under an SLM approach. The project will also improve the knowledge and skills of producers and managers of water resources, increasing the coverage of technical assistance and improving management and efficient use of water.

115. Project actions will also deliver benefits in terms of reduction of the volume of organic pollutants that originate in the demonstration sites and drain into the seas of the Greater Antilles, which severely affect the health of corals and other marine fauna. The project will also enhance forest strips for protection of water resources in the demonstration areas, which will contribute to reduce the rates of erosion and sedimentation in the basins. In terms of biodiversity conservation, the project will help to reduce pressures to the globally important Cuban Forest ecosystem. By helping to reduce the rates of degradation of natural ecosystems caused by deforestation and fire, it will help to reduce carbon emissions. In addition, reductions in the deterioration of the natural functions of ecosystems will contribute to their resilience and capacities to adapt to the impacts of climate change.

3.2. Project goal and objective

116. The objective of Project #2 is the **strengthened coordination of information and monitoring systems for management of water resources under an SLM approach**. The project focuses on the development of capacities to ensure a more efficient and sustainable water management; it will build upon the progress made and lessons learned under Project #1 in terms of training, awareness raising and capacity building on SLM and will establish the basis for the subsequent CPP projects.

117. Thus the project will contribute to the achievement of the CPP intermediate objectives: 1) *National capacity for integrated SLM is established, ensuring inter-sectoral coordination and effective implementation of land management plans and activities*; and 2) *Field level demonstrations of sustainable land management practices have halted, prevented and remedied land degradation in critical landscapes within Cuba, and produced effective models for replication*.

118. Finally, the project will contribute to the CPP goal, which is that "*Cuba has the capacities and conditions for sustainably managing land in a manner that contributes to maintaining ecosystem productivity and functions*" and its purpose, which is "*reduced land degradation will allow Cuba to achieve its goals for sustainable development and increased food security*"

119. To achieve the stated objective, the project will implement the following three outcomes:

1) Individuals and institutions have the human and material capacities to undertake SLM with emphasis on water management.

2) Strengthened biophysical monitoring and information management system for improved land use decision-making

3) Comprehensive management model for monitoring IWRM / SLM increases agricultural production in four intervention areas, with replication potential to other areas

3.3. Project components and expected results

Outcome 1. Individuals and institutions have the human and material capacities to undertake SLM emphasizing in water management (GEF: US$376,416; Cofinancing: US$ 3,495,838)

120. This outcome will contribute to achievement of CPP Outcome 1.3: *Individuals and institutions have the capacities (human and material) to undertake sustainable land management*.

121. Given the importance of capacity building for SLM this outcome constitutes the basis for continuing the progress made by Project #1 and strengthening of the CPP as a whole. Some of the main achievements under Project #1 include the identification of key sectoral stakeholders that can contribute to raise awareness and promote the adoption of SLM; incorporating SLM in the subject "Agricultural Education in Contemporary Cuban School", which is taught in teacher training centers; the use of mass media for education, an example of which is the course “University for All” with the purpose of conveying issues related to SLM; awareness raising to members of the Committee on Energy and Environment of the National Assembly at the VIII Regular Session of the National Assembly of People´s Power in December 2011 which derived in the follow-up of several SLM topics in bilateral activities; updating of regulatory documents related to the use of water in irrigated agriculture; identification of gaps in the water law; and publications to support the strengthening of capacities.

122. This outcome will strengthen the human and institutional capacities for SLM, updating of policy and regulatory documents to effectively implement the National Water Policy, and incorporating SLM considerations to territorial plans and programs related to water use and agricultural production. Training and awareness raising will target critical issues related to the proper use of water for SLM, stabilization and eventual recovery of overexploited aquifers and preserving those that are in balance or have a higher recharge than extraction. Capacity building will also take into account issues such as the role of forests in conservation of water resources, and methodologies for restoration of forest ecosystems, thus laying the theoretical foundations for Project #3. Through capacity building of key stakeholders for the SLM, Outcome 1 will create the conditions for updating and improving the monitoring system (Outcome 2) and the implementation of best practices for water management and monitoring of these in the intervention areas (Outcome 3), thus facilitating upscaling of experiences and lessons learned.

123. The Local Development Center (CEDEL) will be responsible for implementing this outcome, and will coordinate with other participating institutions through regular meetings, technical conferences and workshops for information exchange, and joint work plans.

124. This outcome includes the following outputs: 1) Territorial plans and programmes related to use of water and agricultural production mainstream SLM considerations; 2) Technical standards and regulation on use and management of water mainstream SLM considerations; 3) Increased SLM awareness of decision makers at national, provincial and municipal level; and 4) Increased SLM knowledge of resource managers of key institutions and agencies at national, provincial and municipal levels, and local producers

Output 1.1 Territorial plans and programmes related to use of water and agricultural production mainstream SLM considerations

125. This output will be implemented by the IPF, the Research Directorate of IAgric, and the Directorate for Rational Use of Water of the INRH and will seek to incorporate SLM considerations in water use plans and programs that are organized under the Hydraulic Programme. This will allow for

a rational use of water at territorial level. To this effect, the project will implement institutional capacity building activities during PY1 and PY2. During PY2 and PY3 the project will implement the following activities: 1) institutional and territorial strengthening for the development of land use plannning of the basins involved in the project following an SLM approach; 2) raise awareness and train resource managers and producers on issues related to SLM and the National Water Policy; 3) develop workshops to support the Hydraulic Programme, and coordination meetings of the institutional and territorial managers including those of the National Land Use System, the Hydraulic Programme, the monitoring, evaluation and information system and the National Meteorological System.

Output 1.2 Technical standards and regulations on use and management of water mainstream SLM considerations

126. The Technical Councils for Sectoral Standards of the INRH and IAgric will implement this output between PY2 and PY4. The output will support incorporating SLM considerations in standards and regulations on the use and management of water by updating and/or adjusting such standards and regulations. The project will carry out the following activities: 1) selection of the policy and regulatory documents that support and strengthen the National Water Policy and SLM in the basins; 2) review, update, create and harmonize standards and regulations related to water use; 3) review, update, and develop new water management standards (e.g. methodologies, technical regulations, technical instructions); 4) conduct workshops to discuss the draft law on water resources in order to support the ongoing legal provisions (e.g. the Decree #138 will be repealed and replaced by a new decree); 5) conduct a workshop to discuss the drafting of a legal provision on irrigation waters with irrigation-related personnel and INRH to align the irrigation regulations with the water law; 6) conduct work meetings with the National Group in charge of the Hydraulic Programme to incorporate an SLM approach in their activities.

Output 1.3 Increased SLM awareness of decision makers at national, provincial and municipal level

127. The MES (School of Social Communication), the INRH and IAgric will develop and implement an awareness raising program targeting decision makers at national, provincial and municipal levels. The program will seek to increase the knowledge on SLM in areas with water resource management problems to promote a rational use and integrated management of water. The project will carry out the following activities between PY1 and PY3: 1) development of outreach materials related to the different aspects of SLM in areas with water resources management problems; 2) incorporate aspects of SLM in community education processes in demonstration sites to empower water users through e.g. community work and interest circles for children and youth; 3) celebration of annual competitions on integrated water resources management for SLM in schools in the four intervention areas; 4) conduct technical workshops on subjects such as reforestation of forest strips for protection of water resources, water erosion and sedimentation, targeting technicians, new land tenants, and producers in general in the demonstration sites and “agriculture polygons”; 5) seminars for communicators seeking to incorporate IWRM/SLM considerations in mass media, especially in the provinces where the Project #1 demonstration sites are located; 6) identification of communicators linked to the new intervention areas and exchanges with communicators and journalists already participating in the CPP to promote communication activities on Project #2.

Output 1.4 Increased SLM knowledge of resource managers of key institutions and agencies at national, provincial and municipal levels, and local producers

128. Between PY2 and PY3 this output will build the capacities of producers and technical and managerial staff related with water resources management for SLM. To do so, the project will provide the main Documentation and Training Centers of the IAgric and INRH with computers, furniture and equipment. National capacity for monitoring and evaluation of SLM will be strengthened through the Office for Land Monitoring and Evaluation (OCET). SLM considerations will be mainstreamed into the training programs of the institutions the provide training to technicians and professionals involved in the use of water (Hydraulic Research Center - CIH, Havana Agrarian University - UNAH, Higher Institute for Technology and Applied Sciences - INSTec, CENCA, Ciego de Avila University - UNICA, University of the East, Las Villas Central University - UCLV, among others). This will include updating of the training programs and mainstreaming of SLM´s integrated approach. Training programs will be directed to several types of audiences. This will include specialized training for producers, teachers, and extension officers in IWRM/SLM to strengthen and improve technical assistance services in the intervention areas; and community leaders and community teachers in IWRM related topics.

Outcome 2: Strengthened biophysical and information management system for improved land use decision making (GEF: US$887,028; Cofinancing: US$9,407,365)

129. This outcome will contribute to achieve CPP Outcome 1.5: *Information on land resource conditions and trends throughout Cuba is being applied by planners in decision-making.*

130. A number of institutions, including INSMET, INRH, IS, IAgric, IGT and INICA have their own institutional networks and information and monitoring services with trained staff that are proficient in the processing and delivery of information; however these networks and services operate independently. Project #1 initiated the process of strengthening the early warning system to extreme weather events related to the agricultural and meteorological drought and established a monitoring system associated with soil productivity. Project #2 will build on these achievements to integrate the various institutional networks (including the monitoring system established by Project #1) and develop a biophysical monitoring and information system that will collect the current products of the different networks and produce reports that are accessible to decision makers and users. The system will be an important instrument for water management and will allow a rational use of the resource. The system will provide useful information to improve efficiency and productivity in the project intervention areas and will help to properly organize the Water Balance for an adequate SLM. It will also lay the groundwork so that Project #3 will access useful products such as sowing calendars, drought and fire alerts, forest regionalization, among others.

131. Achievement of this outcome will be the responsibility of the National Sugarcane Institute (INICA). This outcome includes the following outputs: 1) Integration of data bases and monitoring systems; 2) Strategy for dissemination of information to end users; 3) Strengthened hydrometric network, water quality laboratories and early warning systems; 4) Water availability assessments in four intervention areas; 5) Monitoring of water use and management in four intervention areas

Output 2.1 Integration of data bases and monitoring systems

132. This output will be implemented by the INSMET and the IGT between PY2 and PY3. The output will seek to strengthen the relevant institutions associated with monitoring and evaluation systems at national level. A network of institutions will be organized to facilitate the integrated management of water resources for SLM. This network will include INSMET, INRH, IS, IAgric, IGT

and INICA. These institutions will sign interinstitutional agreements to coordinate the integration and information sharing process, development and implementation of the monitoring and information management system.

133. The output will provide technical assistance for the design of the informatics architecture that will link the afore-mentioned institutions, agree on the monitoring objectives and the parameters that need to be included in the design of the network. The project will provide equipment to support the integration of data bases (e.g. computers, servers). Technical workshops will be carried out to identify the different demands and interests of the concerned institutions to ensure proper coordination of information, and the establishment of mechanisms for the flow of information to and from the system. Moreover, a technical seminar will be carried out with the territorial and national teams to organize the integration process and for capacity building.

Output 2.2 Strategy for dissemination of information to end users

134. AMA (which began developing the information system under Project #1), INSMET and INRH through their offices and regional centers will be responsible for implementing this output between PY3 and PY4. The output will develop an information dissemination strategy based on the INFOGEO platform of the IGT used by Projects #1 and #5. This is an open access platform for management of geographic and environmental information and provides users and the Cuban scientific community with an organized set of links, resources and web services on geospatial and general information. The platform is a virtual space where different academic disciplines, research projects and scientific societies meet and converge around a common theme, which is the use and management of geographic and environmental information and geomatics.

135. The project will implement the following activities: 1) preparation of information packages to support the implementation of IWRM/SLM technologies in the intervention areas; 2) uploading of IWRM/SLM related information in the SLM Digital Repository developed by Project #1; 3) collaboration with the Information System for the Management of Science and Innovation Programs (SIPROCIT) to identify gaps and improve the national scientific research programs and projects associated with SLM with emphasis on water management; 4) channel the updated and integrated SLM-related information products produced by the monitoring and information management system to decision makers, producers and extension and technical services in the intervention areas, seeking to increase the productive results and water productivity.

Output 2.3 Strengthened hydrometric network, water quality laboratories and early warning systems

136. This output will be implemented by the the GEARH and INSMET between PY1 and PY3 and will benefit the monitoring and evaluation networks at national and regional level. Strengthening of the information, monitoring and evaluation system for SLM at national and regional level will require the following activities: 1) assessment of the status of institutional and regional laboratories and selection of the laboratories to be strengthened for monitoring and evaluation; 2) supply and installation of equipment for the hydrometric network (see Appendix 14 for details); 3) supply and installation of equipment for the water quality laboratories see Appendix 14 for details); and 4) supply and installation of equipment for the early warning network in the project´s intervention areas (see Appendix 14 for details)

Output 2.4 Water availability assessments in four intervention areas

137. The GEARH, the INRH Directorate for Rational Use of Water (DURA) and the IAgric Extension Group will be responsible for implementing this output between PY3 and PY4. The

following activities will be carried out: 1) support the strengthening of the institutions in charge of implementing the Comprehensive Study on the Potentialities of Surface and Underground Water Resources in two demonstration sites (Hydraulic Complex and Guira de Melena) and alerting on the availability of water and agro-climatic regionalization on the basis of availability. This will allow adopting water use standards that guarantee a sustainable supply of water in quantity and quality to users over time; 2) establish a management plan for rational use of water in the intervention area, including hours for use, permissible consumptive volumes, proper irrigation method, and other measures for the improvement and conservation of water). This product will benefit resource managers who will know the potentially available water, and water users (MINag), who will access information that will facilitate management and scheduling of appropriate use of the resource.

Output 2.5 Monitoring of water use and management in four intervention areas

138. From PY3 to end of project, the INRH/DURA and the IAgric Extension Group will monitor the implementation of the management plan developed under Output 2.4 and the degradation issues associated with mismanagement of the water resources that persist. The following activities will be implemented: 1) design of the monitoring strategy in each demonstration site and selection of impact and monitoring indicators; 2) periodic monitoring in each demonstration site on the basis of the integrated water management approach and indicators (water quality, siltation of water systems, water erosion, pollution); and 3) strengthening of monitoring brigades through training, supply of equipment and inputs. Brigades are technical working groups in charge of monitoring degradation and the recovery of degraded areas; they carry out field tasks such as sampling, analysis, information dissemination, and assessment of quality, variability and distribution of water.

Outcome 3: Comprehensive management model for monitoring IWRM/SLM increases agricultural production in four intervention areas, with replication potential to other areas (GEF US$: 942,618; Cofinancing: US$ 10,329,858)

139. This outcome will contribute to achieve CPP Outcomes:

> 2.1: *Land use decisions in the project intervention areas are based on updated information*; and
>
> 2.3 *SLM solutions (technologies, practices, incentive systems, planning structures and regulations) have been demonstrated and validated at specific pilot sites in 5 intervention areas*

140. Outcome 3 seeks to test the M&E system as well as to develop and test local planning systems, decision-making tools, and regulations to achieve a rational use of water through increased irrigation efficiency and water productivity. To this end the project will develop an integrated water management system comprising three key aspects: i) the water balance plans; ii) control of the use of water from the source to the user´s water intake; and iii) adequate forecasting of the irrigation demand. This system will integrate the experiences in soil management developed by Project #1 with information provided by the National Meteorological Network and the establishment of hydrometric networks in the intervention areas. The outcome will also pursue the capacity development of users and water managers at local level. Implementation of the integrated system will build on strengths and opportunities that include the existing knowledge of the water demands of crops, soil maps at detailed level, the network of meteorological stations, and capacities strengthened through Outcome 1, the advantage that water management is focused on a single authority, and the state recognition of the need to increase water productivity. The INSMET, INRH and MINag will be responsible for achieving this outcome. These institutions have a state-established mandate to coordinate in the elaboration of

Water Balance plans, which are part of the National Economy Plan and will develop specific agreements and joint work plans to implement the outcome in the demonstration sites.

141. This outcome includes the following outputs: 1) Integrated water resources management model and demonstrations in four intervention areas; 2) Increased efficiency in water use for agricultural production; 3) Monitoring and evaluation of action plans, impacts and lessons learned; 4) Upscaling of the management model to new geographical areas.

Output 3.1 Integrated water resources management model and demonstrations in four intervention areas

142. This output will develop an integrated water resources management model with the objective of increasing irrigation efficiency and water productivity in agriculture. Implementation of the model will allow reducing the risk of soil salinization in susceptible areas, reducing water contamination by saline intrusion in areas where water is extracted through wells, reducing soil erosion due to excess water and implementing cropping patterns and soil management techniques that promote conservation of soil moisture. A final product will be increased crop yields with the use of lower volumes of water. This output will be implemented by IAgric, INRH, INSMET and IS.

143. In PY1 the project will carry out a diagnosis, including the identification of best practices, definition of equipment necessary to implement the model and will design the integrated model. Within the framework of the integrated water management model, the project will develop action plans to demonstrate and foster the adoption of best practices for water resources management in the four intervention areas. Action plans will include demonstration of best practices such as selecting crops adapted to the soil and climate conditions of the intervention areas, reforestation for conservation and protection of water resources, rainwater harvesting, solid waste management, irrigation methods adapted to each demonstration site, application of organic matter and green fertilizers, and integrated weed and pest management.

144. During PY1 and PY2 assessments will be carried out in the demonstration sites to identify recharge areas for protection purposes. The Project will raise awareness on the need to implement activities for protection of the natural recharge areas and/or to facilitate the artificial recharge of underground catchments (water harvesting, rehabilitation of water wells).

145. During PY2 the project will train managers and users of the model and will begin its implementation. To implement the model and facilitate monitoring, the project will develop a measurement system at source level and at the users´ water intake and output and will estimate the water demand per crop through a weather forecast that takes into account the needs according to weather patterns.

146. The project will work between PY2 and PY4 with the CGB and the SEF to support the implementation of the National Forest Development Fund (FONADEF) through harmonizing and updating of methodologies for ecosystem restoration and promoting reforestation to increase the coverage of forests for conservation and protection of water resources in the demonstration sites. Reforestation will be promoted in reservoirs and in the mouth of the Cauto River, in forest strips for protection of watercourses and in farms, with forest and fruit-tree species adapted to the soil and climate conditions of each area. The Project will support the implementation of best practices for solid waste management, including environmental and economic use of the treated wastes (e.g. vermiculture, composting, mulching, biogas) to reduce organic contamination originated in demonstration sites that affect the quality of the available water resources.

147. During PY3 the project will work in specific localities within the intervention areas (Güines in Havana-Matanzas and the Rio Cauto municipality in the Cauto River Basin) to set up demonstrations

on rainwater harvesting systems to increase the availability of water for human and animal consumption.

Output 3.2 Increased efficiency in water use for agricultural production

148. IAgric, INRH and ANAP will closely work together between PY2 and PY5 to update the values of water use efficiency and water productivity in agricultural production, in order to better plan the use of this resource hence increasing production and reducing the environmental impact of the use of excess water. Systematic collection and updating of information on the indicators of water use efficiency and productivity in agricultural production will allow estimating the efficiency of the comprehensive water management model (Output 3.1). To do so, the project will: 1) establish baselines to set the goals to be achieved in each specific site; 2) define the potentials to be achieved for each crop and site; and 3) determine the measures to be implemented according to the characteristics of each site and based on the potentials to be achieved, in line with the proposed comprehensive management model.

149. The water balance, which is the national planning instrument to measure the efficiency of consumption in regards to the availability of the resource, will be adopted in each intervention area. Between PY2 and PY5 the project will monitor in each demonstration site the flow in irrigation systems through the hydrometric network strengthened by the project (Output 2.3). The network will allow measuring, recording, calculating and analyzing the water volumes circulating in channels throughout the demonstration sites with the purpose of planning, correcting and improving the distribution of water. The project will engage users in the development of water management plans to improve conservation and to minimize losses of water; users will be trained to implement the water saving mechanisms identified in the plans (e.g. site-specific agro-climatic data; use of tensiometers; irrigating early morning or at the last hour of the day; using mulching to conserve soil moisture; and getting to know the water needs of each crop).

Output 3.3 Monitoring and evaluation of action plans, impacts and lessons learned

150. This output will allow monitoring and evaluating the results achieved with the implementation of the comprehensive management model in demonstration sites (Outputs 3.1 and 3.2). Planned activities include: 1) developing the monitoring and evaluation system for the comprehensive management model; 2) developing and validating a local planning system to facilitate elaboration of the water balance; 3) measuring the changes achieved in terms of quantity and quality of water consumed on the basis of environmental goods and services, according to the characteristics of each area; 4) assessing the degree of empowerment of water users taking into account the role of women leaders in management of irrigation and initiate a local level process of awareness raising on gender and IWRM targeting women, men and youths. Participatory management can be useful in efforts towards implementing IWRM, particularly in cases of jurisdiction or geographical disputes. Stakeholders and interest groups may need formal training in certain activities, for example, in the management of a community system, or in the use of participatory approaches for measurement and monitoring of water use in irrigation as well as support in accessing information and technical knowledge; and 5) developing an instrument for capturing information resulting from the monitoring and evaluation of impacts. INRH, IAgric and the Intervention Area Coordinators (Cauto River Basin Council, the Pedroso-Mamposton Hydraulic Complex, CITMA and the Government of the Province of Artemisa) will be in charge of implementing this output between PY3 and PY5.

Output 3.4 Upscaling of the management model to new geographical areas

151. IAgric and IS will be responsible for implementing this output between PY4 and PY5 by promoting replication of project activities in 100 farms within the "agriculture polygons" and other areas to be identified during project implementation. The so-called "polygons for conservation of soil, water and forests" are special areas comprised by groups of farms, created by the MINag/IS for integrated application of scientific results. These have been adopted within the framework of the CPP as areas for replication given that they provide an opportunity to demonstrate the integrated economic, social and environmental aspects of SLM. Currently 18 polygons have been developed and 15 more are being planned throughout the country for future operation.

Outcome 4: Project monitoring and evaluation, adaptive management and lessons learned (GEF US$ 122,398; Cofinancing: US$84,100)

152. This outcome will allow monitoring and evaluation (M&E) of the outcome and output indicators. Project M&E will be the responsibility of the INRH and IAgric technical coordinators within the CPP Coordination Unit in the Technical Unit for Desertification and Drought. This outcome will feed data on project progress and compliance of indicators into the M&E database of Project #5. The outcome comprises the following outputs: 1) Project monitoring system operational and providing six-monthly reports on progress in achieving project output and outcome targets; 2) Mid-term and final evaluations; and 3) Project best practices and lessons learned.

Output 4.1: Project monitoring system operational and providing six-monthly reports on progress in achieving project output and outcome targets

153. Between PY1 and PY5 the Project´s Management Offices (INRH and IAgric) will prepare annual work plans and procurement plans, as well as a six-monthly Project Progress Report (PPR) and annual Project Implementation Review (PIR). The PPR will include the project results framework with project outputs and outcomes indicators, baseline and six-monthly target indicators, the monitoring of the risk matrix, and will identify potential risks and mitigation measures to reduce those unexpected risks. At the end of each year, the Management Offices will support the preparation of the PIR. The PIR includes the project results framework with project outputs and outcomes indicators, baseline and yearly target indicators, the monitoring of the risk matrix, and will identify potential risks and mitigation measures to reduce those unexpected risks.

Output 4.2: Mid-term and final evaluations

154. After 36 months of project implementation, a mid-term project review will be conducted by an external consultant, who will work in consultation with UNEP, project team and other participating institutions. Three months before project closure a final project evaluation will be conducted by an international external consultant under the supervision of the UNEP Evaluation Unit, in consultation with the project team and other participating institutions.

Output 4.3: Project best practices and lessons learned

155. The project team will identify and systematize best practices and lessons learned throughout the project´s lifetime. In PY5 the project will issue a publication on best practices and lessons learned on SLM with emphasis in integrated water resources management, which will be disseminated among the relevant central, provincial and municipal government institutions and local stakeholders.

3.4. Intervention logic and key assumptions

156. To reduce land degradation and to promote the integrity of ecosystems and the achievement of the national goals for sustainable development and food security, the GoC implements the Country Pilot Partnership Program, comprising five projects, of which this project is Project #2. Analyses conducted during the preparation of the CPP identified six barriers[6] that constrain a comprehensive implementation of SLM throughout Cuba, which will be faced by the five CPP projects to achieve the proposed intermediate objectives: 1) *National capacity for integrated SLM is established, ensuring inter-sectoral coordination and effective implementation of land management plans and activities*; and 2) *Field level demonstrations of sustainable land management practices have halted, prevented and remedied land degradation in critical landscapes within Cuba, and produced effective models for replication*, and leading to achievement of the stated Goal "*Cuba has the capacities and conditions for sustainably managing land in a manner that contributes to maintaining ecosystem productivity and functions*" and finally the Purpose of "*reduced land degradation will allow Cuba to achieve its goals for sustainable development and increased food security*".

157. In line with the CPP, Project #2 will implement three outcomes: 1) Individuals and institutions have the human and material capacities to undertake SLM with emphasis on water management (relates to CPP barriers 1 and 2); 2) Strengthened biophysical monitoring and information management system for improved land use decision-making (relates to CPP barrier 4); 3) Comprehensive management model for monitoring IWRM / SLM increases agricultural production in four intervention areas, with replication potential to other areas (relates to CPP barriers 5 and 6).

158. These outcomes will remove barriers that hinder the efforts to strengthen adequate coordination of information and monitoring systems for management of water resources based on an SLM approach; and although these barriers are specific to the project, they are nevertheless related to the CPP barriers: 1) Inadequate incorporation of SLM considerations into extension and environmental education programs, with emphasis in water management; 2) Inadequacy of systems for monitoring of LD and management of related information; and 3) Planners have limited tools and knowledge for incorporating SLM considerations into plans, programs and policies.

159. By removing the barriers, the proposed outcomes will lead to: 1) the dissemination and upscaling of SLM principles in planning, policies and regulations; 2) an expanded knowledge base available and accesible for planning and decision making; and 3) the implementation by stakeholders of plans and development programs that properly deal with threats and barriers to adoption of SLM. In doing so, Project #2 will contribute to the CPP´s intermediate objectives of increasing national capacities for SLM and promoting successful and replicable approaches to reduce land degradation; and finally to the CPP goal and purpose. A graphic representation of causal relationships is presented in Appendix 18. Theory of Change.

160. As stated in the CPP document, achievement of project outcomes and objective is dependent upon a series of assumptions being met that affect the CPP as a whole and have been assessed in it. These are:

161. **Continued interest and willingness on the part of the GoC in applying SLM principles:** GEF investment in the CPP will be accompanied by, and dependent upon, significant amounts of co-financing from the GoC of programmes, projects and other initiatives directed at combating land

[6] CPP Barriers: 1) Limited inter-sector integration and inter-institutional coordination; 2) Inadequate incorporation of SLM considerations into extension and environmental education programmes; 3) Limited development of financing and incentive mechanisms for SLM; 4) Inadequacy of systems for monitoring of LD and management of related information; 5) Planners have limited tools and knowledge for incorporating SLM considerations into plans, programmes and policies; 6) Inadequate development of regulatory framework for combating LD

degradation and promoting SLM. The provision of these resources is dependent upon the commitment of the GoC to this theme; this commitment is expressed in the co-financing letters, which accompany the CPP.

162. The **institutional, planning and legal framework continues in favor of the environment:** The institutional and legal framework in Cuba is currently favorable for the promotion of SLM despite the current barriers. The continuation of this favorable environment is essential for the CPP, and specifically for the effective extension of SLM and the regulation of land management. Specific actions will be taken under the Project 2 to maintain and improve these favorable conditions specifically through the awareness raising of decision makers and policy formulators.

163. **Stability of staff in key institutions:** Linked to the above is the assumption that staff in key institutions enjoy certain levels of permanence. This is important in order for messages and mechanisms related to SLM to be adequately absorbed and validated at institutional level; once these processes of initial absorption and validation have occurred, institutional memory will have been developed (in the form of formalized mechanisms, systems, plans, policies and regulations) which will lend sustainability to the incorporation of SLM issues even if staff do subsequently change.

164. **Social and economic conditions in rural areas remain favorable for SLM:** The land management decisions in rural areas in Cuba, as in any other developing country, are typically strongly dependent on the social and economic conditions, which have immediate bearing on rural livelihoods. The limited extent of adoption of SLM practices based on effective and efficient management of water resources by farmers, is partly due to ignorance of their existence and of the long-term benefits they provide compared to more traditional practices, many of which have a high amount of water consumption, leading to negative impacts. Even when in principle they are convinced of its benefits, in practice there is the possibility that changing conditions affect farmers and these can be forced to make decisions on land uses that are not compatible with SLM. To date, the economic crisis faced by the country following the changes in geopolitical conditions of the 1980s and 1990s has had a number of positive implications for SLM, for example through reducing the levels of chemical inputs applied to the soil and stimulating the development of organic agriculture. On the other hand, economic constraints at family level tend to limit farm families' abilities to invest in labor-intensive SLM practices. The steady levels of rural depopulation, which have occurred over recent decades, have reduced the pool of labor resources available to invest in labor-intensive SLM. These processes that affect Cuba as a whole apply to the intervention areas covered by the project, this being reflected in the limited financial resources, which is one of the fundamental limitations of the farmers to adopt intensive production systems, such as high efficiency irrigation systems that increase productivity. Due to the limited availability of financial resources Project #1 has invested in raising awareness of decision makers and the development and promotion of SLM technologies that require low levels of financial resources. Project #2 will continue to invest in these measures to advance the creation of an enabling environment until Project #3, which involves financial mechanisms as its main objective, is commenced.

165. **Continued commitment on the part of local stakeholders:** Even when economic and other incentives are provided, the long-term sustainability of the adoption of SLM technologies is to a large extent dependent on farmers' personal convictions of their benefits and of their suitability to their livelihood systems, and the support of local governments through the Soil Conservation and Improvement Programme, the Hydraulic Programme and others that support SLM. The project will place heavy emphasis on awareness raising at all levels of the environmental and social benefits of SLM in the long term, and will also invest in training extension workers in the effective promotion of SLM, and will establish the mechanisms and strategies to keep the local governments informed.

3.5. Risk analysis and risk management measures

Table 3: Risk analysis and risk management measures

Risks	Probability of Occurrence	Measures taken for risk mitigation
Organizational risk: The institutional planning framework and the regulatory system do not fully incorporate the principles and concepts of SLM	Medium	The project will raise awareness of decision makers, promoting interinstitutional agreements for joint work and mainstreaming of the principles and concepts of SLM in institutional policies, for updating of existing regulations incorporating SLM and the development of new regulations that are necessary to ensure that SLM is adopted by all sectors.
Organizational Risk: Lack of staff stability in key institutions affecting the implementation of the SLM	High	The project will promote awareness raising strategies to ensure that project messages and mechanisms are quickly institutionalized; strengthening of the social capital of institutions in SLM; updating policies and regulations, and creating a working culture that promotes the dissemination of SLM.
Organizational Risk: Lack of interest and commitment of local stakeholders for the adoption of SLM / IWRM	Low	The project will promote the training of technicians to improve their skills in participatory and technology transfer methods that promote the inclusion of producers. It will promote awareness of local stakeholders in knowledge management. It will develop and validate local planning systems with the active participation of local stakeholders. The project will consider the role of women leaders in managing irrigation and will implement awareness raising activities on gender and IWRM issues at local level in the intervention areas aimed at women, men and youth.
Socio-economic risk: Social and economic conditions in rural areas do not remain favorable for SLM / IWRM	High	Awareness raising of decision makers to promote the allocation of resources for SLM. The project will identify best practices requiring low levels of financial investment that can be adopted by producers. Project #3 has the specific objective of promoting financial mechanisms.
Environmental Risks: Extreme weather events Forest fires.	Medium	Promotion of strategic alliances with the Civil Defense. The implementation of best practices to reduce land degradation that are being promoted by Project #1 and that will be promoted under Project #2 will contribute to adaptation and mitigation of climate change.
Financial Risk: Limited financial performance	High	Timely development of work plans and budgets of the institutions involved in the project. Awareness raising of authorities for the timely allocation of co-financing contributions within the framework of the annual institutional budgets. Effective financial performance.

H = High, M= Medium, L=Low

3.5 Consistency with national priorities or plans

166. Cuba signed the UNCCD on 15/10/94 (date of ratification 13/3/97), the Convention on Biological Diversity - CBD on 12/6/92 (date of ratification 9/3/94) and the Framework Convention on Climate Change – UNFCCC on 13/6/92 (date of ratification 5/4/94). Moreover, the National Focal Point of all three Conventions is the Ministry of Science, Technology and Environment (CITMA), which provides an opportunity for synergies between the said conventions. CITMA has played an

active role in the preparation and conduction of the CPP and its projects initially through the Center for Information, Environmental Management and Education (CIGEA) and currently through the Environment Agency (AMA). The Center is the Technical Focal Point of the UNCCD; it coordinates the National Group to Combat Desertification and Drought since 1995 and coordinates, oversees and monitors the implementation of the NAPCD.

167. The Project is aligned with Cuba´s 2014-2018 **UNDAF** Outcome 3: "Key productive sectors increase their productivity, efficiency and competitiveness, and activate supply chains in support of increase of exports and substitution of imports" and Outcome 7: "Productive and service sectors strengthen mainstreaming of environmental considerations, including energy and climate change adaptation, in their development plans".

168. The project is aligned with the **National Program to Combat Desertification and Drought** (NAPCD) and will contribute to its main elements: i) economic and social development of the areas affected by the processes leading to desertification; ii) development and implementation of legal and administrative instruments for implementation, monitoring and control of the progress of NAPCD; iii) integration and coordination of policies and strategies; iv) participation and environmental information and education; v) scientific research and technological innovation; vi) strengthening of institutions; and vii) international cooperation.

169. The project is also aligned with the **National Water Policy**, which provides the vision for future development of the water sector and its four strategic priorities: i) productive use of available water; ii) efficient use of the existing infrastructure; iii) management of risks associated with water quality, and iv) management of risks associated with weather events.

170. The project is consistent with the **National Programme for Soil Improvement and Conservation** which seeks to combat land degradation, protect the forests and manage the water resources by decreasing the gradual deterioration sufferd by the irrigation systems and irrigated areas in general, with the objective of maintaining the current areas in optimal conditions with the purpose of raising the productivity of irrigation and the efficiency of water use.

171. The project is also consistent with the **Environmental Law 81** which provides in Art 3 that it is the duty of the State, the citizens and society in general to protect the environment through: i) its conservation and wise use; ii) systematically combating the causes of deterioration; iii) implementing the corresponding rehabilitation actions; iv) steady increase in citizens' knowledge on the interrelationships between humans, nature and society; v) the reduction and elimination of environmentally unsustainable production and consumption patterns; and vi) promotion of demographic policies that are appropriate for the territorial conditions. The project is also consistent with other legal instruments such as **Decree 138 of 1993 on Terrestrial Waters, Law 85, of 1998 Forestry Law, and Decree No. 179 of 1993 on the protection, use and conservation of soils.**

172. The project is consistent with the **National Environmental Strategy 2011-2015**, and in particular with the following specific objectives related to the availability and quality of water: i) to contribute to the development of the hydraulic program through long term investments in order to more effectively face the problems of drought and rational use of water throughout the country, thereby raising the proportion of agricultural lands under irrigation, and ii) to strengthen measures for adaptation to climate change in the field of water resources management .

173. The project is also consistent with the **National Environmental Education Strategy 2010-2015**, particularly with Objective #5: "To strengthen environmental education processes within the Central Government agencies, other government institutions, national programs and environmental management projects and in priority ecosystems, so as to contribute to the solution or mitigation of environmental problems in their fields of competence".

3.6. Incremental cost reasoning

174. The project will contribute to remove three major barriers identified in the CPP that threaten the integrity of the ecosystem functions in the four intervention areas and nationally, namely: 1) Inadequate incorporation of SLM considerations into extension and environmental education programs, with emphasis in water management; 2) Inadequacy of systems for monitoring of LD and management of related information; and 3) Planners have limited tools and knowledge for incorporating SLM considerations into plans, programs and policies.

175. In the Business-As-Usual scenario, the degradation trends of productive lands in Cuba will continue. Currently, 76.8 % of the land is affected by processes leading to desertification, affecting the quality of life of more than 30% of the population. If this trend continues, and factoring in the worsening of the degradation processes due to droughts, the likely scenario is of increased deterioration of the structural and functional integrity of the Cuban ecosystems. While the country has the political will to support efforts to reduce land degradation, promote the integrity of ecosystems and achievement of the goals for sustainable development and food security, the national efforts without the GEF project would move at a slower rate than needed to overcome the current trends of environmental deterioration.

176. Without the GEF project, efforts to incorporate the principles and concepts of SLM in the plans, programs and institutions would be implemented on a small scale and progress would be slow. The centrally designed plans that determine the productive activities of individual farmers and cooperatives will continue to emphasize achievement of high yields by a limited number of crops in the short term, regardless of the actions with long-term implications such as SLM practices. Recognition of the impacts of management practices on soil condition and water resources (e.g. the implications of poor irrigation management on land degradation, inappropriate species selection and use of monoculture) will remain low. Intersectoral and interagency coordination between the institutions responsible for food security and SLM will remain low due to the limited capacity to provide knowledge and information to a larger number of planners and technicians.

177. Without the GEF Project, the land degradation Monitoring System will not be renewed with modern and appropriate technology for an adequate performance. The system will continue to provide isolated information and would lack integrated information to enable monitoring and evaluating of the status of variables and factors that cause the deterioration of natural, technological, economic and social resources (e.g. rates of soil erosion, forest cover and water quality, state of hydraulic infrastructure, etc.), thereby hindering the assessment and interpretation of the health, function or resilience of ecosystems. As a result, irrigation will continue to have a low overall efficiency, with water losses due to conduction and mismanagement; low rainwater harvesting at local level; and an urgent need to protect water resources with forest strips and establish hydro-sanitary perimeters around dams, rivers, springs, catchment areas of surface and groundwater basins, and to improve and maintain the deteriorated irrigation systems and water infrastructure.

178. Producers will continue to have a low capacity to make appropriate decisions regarding the management of their land, as well as for providing an efficient feedback of information for decision-making. This implies the continuity of the low level of implementation of appropriate technologies, particularly in hillside areas; improper nutrient management at each site and for each crop; poor management of soil moisture and efficient irrigation; limitations in handling intensive farming; inadequate crop diversification and rotation; low use of green fertilizers; forestry, and appropriate extension methods.

179. Without the GEF project, the capacity of planners to develop adequate land use and agricultural production plans that reflect the sustainable carrying capacity of the land will continue to be limited due to the lack of information. The need for adequate monitoring and information management is especially critical with respect to parameters such as soil nutrient status; water quality; soil salinity and

early warning of agro-climatic trends. The limited availability of information regarding short and long-term trends also implies a reduced ability to cope with increases in the frequency of extreme weather events (hurricanes, drought).

180. Under the GEF Alternative, the project will promote an enhanced coordination and collaboration framework for intersectoral planning, monitoring and evaluation; as well as an integrated information and monitoring system that will build on the early warning and land use system put in place by Project #1 and will emphasize on water management. To do so, the capacities of the key institutions for integrated water management for SLM will be increased, including in issues such as livelihoods; comprehensive approaches of the biophysical and socioeconomic aspects of productive ecosystems; participatory evaluation of traditional management practices; water harvesting; aquifer recharge and protection; solid waste management; increased productivity and irrigation efficiency and mechanisms for water planning in agriculture, among other subjects. The project will implement the following four outcomes: 1) Individuals and institutions have the human and material capacities to undertake SLM emphasizing in water management; 2) Strengthened biophysical and information management system in accordance with user interests for a better land use decision making; 3) Comprehensive management model for monitoring land degradation processes related to water resources in four intervention areas, with replication potential to other areas; and 4) Project monitoring and evaluation, adaptive management and lessons learned.

181. These outcomes are closely related and interlinked. Through capacity building of key stakeholders for SLM, Outcome 1 will create the conditions for updating and improving the monitoring system under Outcome 2, and in turn, both outcomes will contribute to the implementation of best practices for water management and monitoring in the four intervention areas under Outcome 3. Outcome 4 will ensure project M&E and systematization of experiences and lessons learned. Outcomes 3 and 4 will facilitate upscaling of project best practices, experiences and lessons learned.

182. Outcome 1 will continue to strengthen the achievements by Project #1. Training programs on SLM / IWRM will be developed for resource managers of key entities and agencies. The project will develop and implement the second stage of the *Strategy for Education and Awareness Raising*[7] at national and local levels emphasizing on issues related to the proper use of water for SLM. Strategic awareness programs will be developed to contribute to the stabilization and eventual recovery of overexploited aquifers and preserving those that are in balance or have a higher level of recharge than extraction. Territorial plans and programs related to water use and agricultural production will be strengthened through mainstreaming of SLM considerations. The environmental, social and economic benefits of IWRM will be published and disseminated. This outcome will also work on strengthening capacities for increasing forest strips for protection and conservation of water resources, and in methodologies for forest ecosystem restoration for water protection, laying the theoretical basis for development of Project #3.

183. Outcome 2 will strengthen the capacity to develop a system for integration of the parameters obtained in monitoring of droughts (meteorological, agro-meteorological or hydrological) to establish a system for prevention and adaptation to the impacts of drought and heavy rains. The system will be an important instrument for water management, thereby allowing a rational use of the resource and SLM; it will provide useful information to improve the efficiency and productivity in the project intervention areas as well as the proper organization of the Water Balance for a SLM. Inter-institutional relations for integration of the existing systems will be enhanced through inter-institutional agreements; joint work plans; training programs and evaluation of the effectiveness of the

[7] Project #1 prepared a *Strategy for Education and Awareness Raising* to organize and facilitate communication and awareness raising to the different target audiences. Project #2 will update the strategy to include new audiences related to water resource management (see further details in section 3.10 below)

system and its products, thereby creating an enabling environment for implementation of the monitoring system at country level.

184. Outcome 3 will allow integrated water management thereby increasing the efficiency of its use, raising production and decreasing negative environmental impacts. The development of the integrated water management model will reduce the risk of soil salinization in susceptible areas; pollution by saline intrusion in places where wells are the source of water; soil erosion due to excess water; and will allow achieving crop patterns and management techniques that conserve soil moisture. An end product of this model will be the increase in crop yields with less water volumes.

185. Outcome 4 will allow M&E of the project indicators thus facilitating the integration of project results and its contributions to the CPP goals into the M&E database of Project #5. In addition, this outcome will conduct economic and risk analysis, identify and systematize lessons learned; carry out an impact assessment; and ensure adaptive management as needed.

186. The project will accrue a number of **global environmental benefits**. It will train 2,800 individuals at national level in water resources management thereby increasing the incorporation of SLM concepts in the implementation of the environmental, water, soil and forest policies; strengthening of land use plans in the demonstration areas to include water management, and the review and updating of water related policy and regulatory documents under an SLM approach.

187. The project will deliver a modernized long-term monitoring and evaluation system for management of water resources that will generate updated information for SLM. Moreover, the project will also deliver an information coordination network between key institutions in the areas of intervention for the management of information related to the integrated management of water resources for SLM.

188. Furthermore, 680 producers and water resources managers (160 of them women) in the four intervention areas will have acquired the capacities to implement sustainable land management measures with emphasis in water management. These increased capacities will help to deliver the following global environmental benefits: 1) 9 water use and management plans containing crop consumption standards according to soil-climate conditions for sustainable land management in each demonstration site; 2) 5,120 ha of lands managed with greater efficiency, thereby increasing the productivity of water in the main crops (see Appendix 3 – Results Framework for the detailed expected increase in efficiency of water productivity per crop and intervention area); 3) Increased productivity of water used in each of the crops grown in the intervention areas (tobacco, rice, beans, maize, soy, *malanga*, potato, plantain, sweet potato) will improve crop yields and food security; 4) improvement in the availability of surface and groundwater resources through SLM practices that improve irrigation efficiency and water availability; 5) establishment of 100 demonstration farms for upscaling of best practices.

189. The project will promote a shift from current unsustainable water management practices to integrated water management practices that promote SLM. The best practices introduced will allow savings in water and fuel, and reducing negative environmental impacts, preserving soil moisture and reducing negative impacts from excess soil moisture, as shown in Table 3 below.

Table 3: Summary of alternatives to be introduced by the GEF project and expected benefits

Current deficiencies in water management	Alternatives to be introduced by the GEF Project	Expected Benefits
Lack of measurement of water delivery in the farm	• Measurement and control of irrigation water delivered to the farm with adequate equipment and the	Water savings and economy increased at the farm level

Current deficiencies in water management	Alternatives to be introduced by the GEF Project	Expected Benefits
	responsibility of the water user	
Poor planning of water use	• Water use planning based on scientific and technical tools to fulfill actual water needs.	Savings in water and fuel use, reducing negative environmental impacts.
Lack of accurate indicators of water productivity	• Development of accurate indicators of water productivity. • Efficient transportation of irrigation water. • Proper irrigation management	Improvement of agricultural production on the basis of available water. Increase in the irrigated area
Soil management practices that do not favor the conservation of soil moisture.	• Improved soil and water management practices that benefit infiltration and reduce erosion (soil coverage, live fences, stubble)	Soil moisture conservation. Reduction of the negative environmental impacts of excessive soil moisture.
Water harvesting is not practiced at the farm level	• Training in methods of water harvesting. • Demonstration projects in water harvesting techniques.	Savings and more efficient use of underground waters.
Water catchment areas are not protected	• Reforestation for protection of catchment areas and water bodies • Production of biogas from solid wastes to reduce contamination of groundwater and water bodies	Increased protection of catchment areas. Reduced levels of contamination of groundwater and water bodies.

3.7. Sustainability

190. The project has been designed to remove the identified barriers and create an enabling environment for SLM that emphasizes water management, reducing the threats resulting from the degradation of the productive lands and ecosystem integrity. The project will foster environmental, social, economic and institutional sustainability in several manners, as follows.

191. The project will favor environmental sustainability through actions that promote the sustainable management of water, forests and soils, which will be managed in ways that are in accordance with their long-term productivity and carrying capacity. This will be achieved in the following ways:

- Improvements in access on the part of decision makers to information on the scale, productivity, fragility and other characteristics of the resources in question, as a result of the strengthening of capacities for monitoring and evaluation and the development of mechanisms for the constructive flow and management of information.
- The promotion of technologies which minimize the negative impacts of land management on the condition of natural resources, such as soil conservation, efficient irrigation, integrated pest management and organic agriculture.

192. The **social sustainability** will be ensured by the following strategies:

- Promoting the development of awareness of key stakeholders of the integrated nature of land degradation and sustainable land management issues, including social aspects. As a result, policies, plans and other support will better address social issues and be based on solid

stakeholder analyses, and will therefore have a greater likelihood of acceptance among the target population and a reduced risk of unintended negative social impacts.

- Emphasizing the promotion of technologies which are tailored to the social and economic realities of the target population, having limited requirements for labor inputs, minimizing environmental risks (such as pesticide poisoning and contamination or exhaustion of water supplies) and providing diverse products and services required in rural livelihoods.

193. The **financial sustainability** will be ensured by:

- Raising awareness on the part of decision makers and policy formulators in central Government regarding the medium and long term benefits of SLM and associated support systems such as mechanisms for monitoring and information flow, in terms of sustained agricultural productivity in the long term and reductions in the social costs associated with environmental vulnerability. As a result, it is expected that the relatively modest budget required for the continuation of support to SLM and for the operation of monitoring systems will largely be met through a reallocation of central Government budget.

194. The **institutional sustainability** will be ensured through:

- The project will not create new institutions or designate new staff but will work with the existing institutions and strengthening their capacities and those of their staffs.
- The Project Implementation Unit and the Management Offices (see Section 4 below) comprise existing institutions (INRH and IAgric) and the Coordinators are at the same time members of the Technical Unit for Desertification and Drought, which already has legal status.
- The fact that all staff (managerial, technical and administrative) of the CPP and its constituent projects will be members of existing institutions under temporary secondment.

3.8. Replication

195. Mainstreaming of SLM principles and criteria in plans, policies and regulatory instruments, as well as capacity building of decision makers and technical staffs will contribute to replication of project results to other areas of the country and at national scale.

196. The biophysical monitoring and information management system on SLM will be applicable at national level. Moreover, the technical solutions to be developed for each intervention area will be replicable to other areas of the country with similar problems through the "Polygons for conservation of soil, water and forest". The polygons are special areas created by the MINag/IS for a comprehensive application of scientific results. These have been adopted within the framework of the CPP as areas for replication given that they provide an opportunity to demonstrate the integrated economic, social and environmental aspects of SLM. There are currently 34 polygons and 4 extensions throughout the national territory, covering a total surface area of 12,380 ha in 845 farms.

197. The project budget includes impact evaluation and systematization of experiences and lessons learned which will contribute to replication. Furthermore, Project #4 *Validation of SLM Models at Landscape Scale* will specifically focus in the consolidation of the processes for replication of the lessons learned under Projects #1, #2 and #3.

3.9. Public awareness, communications and mainstreaming strategy

198. A number of project activities will have a high visibility and will include mechanisms to ensure effective communication of the project´s messages. A *Strategy for Education and Awareness Raising*[8] was prepared under Project #1 to organize and facilitate communication and awareness raising to the different target audiences. Project #2 will update the strategy to include new audiences related to water resource management.

199. Capacity development activities under Outcome 1 will have an important visibility at the level of authorities and decision makers at both national and local scales (central, provincial and municipal government authorities) and the civil society stakeholders (producer cooperatives, professional associations and NGOs) that will participate in planning, implementation and monitoring throughout the project´s lifetime.

200. The training events under this outcome will support training and awareness raising of stakeholders and dissemination of information on SLM/IWRM and the results of the activities implemented by the project. Information materials and publications will support the communication of the project´s key messages under this component, including the benefits of SLM/IWRM, mainstreaming of SLM/IWRM in plans, policies and programs, and interinstitutional coordination and collaboration. All this backed by publications tailored to the different target audiences. The project will also make use of the platforms established under Project #1; the Eprints open access Digital Repository on SLM prepared by the Institute for Scientific Documentation and Information (IDICT) and AMA with the objective of facilitating access of Cuban institutions to information on SLM as well as to the progress and results of the CPP: http://mst.ama.cu and www.educambiente.co.cu/Desercuba/. Moreover the Project will make use of the INRH and INSMET websites: http://www.cubagua.inf.cu and http://www.met.inf.cu/.

201. The biophysical monitoring and information management system to be developed under Outcome 2 will also have a high visibility since it will generate and disseminate to the numerous stakeholders involved in SLM/IWRM updated and reliable information to improve efficiency and productivity in the project´s intervention areas as well as an adequate organization of the Water Balance for SLM.

202. Activities such as procurement of equipment and materials for the institutions engaged in the implementation of the monitoring system will contribute to Project visibility. Through the open access platform for Management of Geographical and Environmental Information – INFOGEO - located in the Tropical Geography Institute and used by both Projects #1 and #5, information will be available to users and Cuban scientific community.

203. IWRM best practices under Outcome 3 will be disseminated through methodologies such as demonstration projects, field days and farm visits by technicians. These will serve to transfer practical knowledge to the beneficiaries so that they will adopt the best practices. The contents of the training materials will be adapted to the characteristics of the target audience to facilitate communication. Workshops and training materials will serve the purpose of transmitting knowledge and raising

[8] The strategy´s mission is to *educate and sensitize the population in the need and importance of mainstreaming Sustainable Land Management for prevention of degradation processes, recovery and rehabilitation of the ecosystems, in accordance with the National Programme to Combat Desertification and Drought of the Republic of Cuba.* The strategy has three lines of intervention: i) **educational**, which seeks to increase the environmental awareness of the selected audiences; ii) **research**, to establish the current baseline and promote feedback to strengthen the future actions to be developed, and iii) **persuasive**, to communicate with the target audiences through a media and messages plan.

awareness of the beneficiaries on the key Project message under this outcome, which is the integrated management of water resources for sustainable land management.

204. Outcome 4 will contribute to communication and visibility through systematization of experiences and lessons learned, as well as their publication. Finally, the project will ensure mechanisms for maximum dissemination of the documents generated by the project, in particular the technical reports, the final report and the mid-term and final evaluation reports.

3.10. Environmental and social safeguards

205. The project design incorporates measures to achieve positive environmental and social impacts. The project will be implemented in accordance with UNEP and GEF standards and is consistent with the policies, programs and legislation of the Republic of Cuba, including - *inter alia* – the National Programme to Combat Desertification and Drought (NPCDD), the National Environmental Strategy 2011-2015 and the Water Policy. The project will also contribute to implementation of these policies and programs and will fully comply with the current national environmental and social legal framework.

206. The project will promote an enabling environment for implementation of SLM/IWRM through the interinstitutional collaboration and coordination between the stakeholders that are responsible for these issues at national level and in the intervention areas; capacity development and awareness raising; generation of updated and reliable information for decision making; and promotion of best practices. The proposed activities respond to the needs of the stakeholders identified during preparation of the CPP and Project #2.

207. The foreseen benefits include the reduction of the risks of salinization of soils; reduction of contamination of waters due to saline intrusion; soil erosion due to excess water; and improvement of crop production and productivity, which will improve the livelihoods of the small and medium sized beneficiaries of the project, and contributing to food security at national level. An additional benefit will be the increase of forests along riverbanks and other water bodies, which will reduce sedimentation, erosion and contamination of aquifers, and provide fruits and food for animals.

208. Stakeholder participation in planning, implementation and monitoring will be an important mechanism to ensure that the project reflects the social and environmental reality. Moreover, the mechanisms for information dissemination to all project partners and stakeholders on the progress of implementation and to obtain their feedback will allow a continuous assessment of the work being done by the project in regards to the social and environmental specificities of the intervention areas.

209. The project has prepared a M&E Plan with the objective of providing accurate and timely information as well as feedback, on the implementation and performance of the project, so that the project managers may take decisions as the project develops, thereby ensuring that the above mentioned assumptions are fulfilled during project execution and contribute to the achievement of outcomes and objective.

210. Appendix 16 includes UNEP´s Social and Environmental Checklist.

SECTION 4: INSTITUTIONAL FRAMEWORK AND IMPLEMENTATION ARRANGEMENTS

Implementing Agency (UNEP)

211. UNEP, as an implementing Agency of the GEF, will be responsible for overall project supervision to ensure consistency with GEF and UNEP policies and procedures and will provide guidance on linkages with related UNEP and GEF-funded activities. The Division of Environmental Policy Implementation (DEPI) will monitor implementation of the activities undertaken during the

execution of the project; it will be responsible for clearance and transmission of financial and progress reports to GEF. UNEP will provide the overall coordination and ensure that the project is in line with the UNEP Medium-Term Strategy and Work Program, as approved by the UNEP Governing Council.

Executing Agency

212. The **Ministry of Science, Technology and Environment** (CITMA), as Focal Point of the GEF and the UNCCD in Cuba is the governmental body responsible for the Country Partnership Programme (CPP). As such, CITMA guarantees the implementation of the CPP projects in conformity with the objectives and activities described in Section 3 of the Project document. CITMA will be represented by the Environment Agency (AMA) as the National Coordinator of the CPP and its projects.

213. For the purposes of implementation of the project the same mechanisms implemented under the CPP, will be used given their already proven functionality. The roles and key institutions have been adjusted in accordance with the specific needs of Project #2. The organization for the project comprises the following structures at national and local levels:

At the national level:

214. **Project Implementation Unit and Project Management Offices**: Project implementation will be coordinated through the Project Implementation Unit (PIU) headed by a Project Coordinator from the **National Institute of Hydraulic Resources (INRH)** who will also be a member of the Technical Unit for Desertification and Drought (TUDD). To ensure harmonized inclusion of the Project within the CPP as a whole and its compliance with the overall goals of the CPP, the Coordinator will also be a member of the PIU and Project #5 through which the CPP as a whole is coordinated, monitored and evaluated).

215. The project will comprise two management offices. One office will be located at the **National Institute of Hydraulic Resources (INRH)** as the agency responsible for directing, implementing and monitoring the implementation of the policy for planning and control of the country´s water resources. The other office at the **Institute for Agricultural Engineering Research** (IAgric) which is the body that represents the Ministry of Agriculture (MINAG) in terms of water use, and provides the technical and methodological support for the development of scientific research and technical services for irrigation and drainage, and agricultural mechanization in Cuba. Each of these Offices will be staffed with a Head of Office and a technical working group composed of technical staff related (to the extent that these are necessary). Appendix 11 includes the Terms of Reference of key personnel for the project implementation.

216. **National Steering Committee (NSC):** The Project will be guided by a Steering Committee (NSC) composed by MINCEX, CITMA, UNDP and UNEP. The NSC will meet regularly twice a year and whenever necessary. The NSC is responsible - among others - to adopt the project's strategic decisions, reports and approve annual work plans and financial procurement, as well as control of the use of financial resources.

217. **Technical Unit for Desertification and Drought (TUDD)**: The TUDD will provide support to the Project Coordinator through its technical staff assigned by the key institutions related to the project, namely: AMA, INRH. IAgric, IGT, IPF, CGB, INICA and others as may be required.

218. **Project Executive Group**: The Executive Group is responsible for organizing and preparing the documentation regarding decisions to be taken at meetings of the National Steering Committee (NSC). Its role is to periodically review work plans and procurement activities and submit reports to the NSC for approval, control and monitoring financial and administrative implementation of the Project.

At the local level:

219. In each of the four intervention areas, **Intervention Area Coordination Teams** will be established, directed by an **Intervention Area Coordinator** and made up of the principal stakeholders in each area. These include institutional representatives of the provincial delegations of CITMA, MINAG, INRH, IPF and AZCUBA, scientific and academic institutions, and organizations representing the local interests of stakeholders, including IAgric specialists in the provinces involved in the project, the National Association of Small Farmers (ANAP), the Federation of Cuban Women (FMC), the Cuban Association of Agricultural and Forestry Technicians (ACTAF), the National Union of Engineers and Architects of Cuba (UNAIC) and representatives of the Ministry of Higher Education (MES) in each demonstration site.

220. Concrete actions at local level to promote SLM in demonstration sites will be carried out by **Demonstration Site Work Teams**, which will include local institutions and stakeholders such as community leaders, leader farmers, extension agents, researchers and local Government representatives. **Intervention Area Coordinators**, together with their work teams, will be responsible for developing annual plans, for carrying out the activities which these specify, for monitoring and informing the operational staff of each project regarding impacts on the environment and for ensuring the efficient use of the material resources of the project in their area of influence. The close links between the Technical Unit and the local teams at Intervention Area and Demonstration Site levels will be maintained through periodic visits to the intervention areas, technical and financial audits, scientific and technical activities, and the transmission of information and periodic joint meetings of the project team, which should be held twice a year. The constant exchange and flow of information, including the dissemination of activities carried out and lessons learned, will be made effective through a virtual network which will link the Local Coordination Teams, the Technical Unit and key stakeholders. Intervention Area Coordinators for each intervention area are included in the following table:

Table 4: Intervention Area Coordinators

Intervention Area	**Coordinators**
Cauto River Watershed	Cauto River Basin Council
Habana-Matanzas	Pedrozo-Mampostón Hydraulic Complex CITMA Government of Artemisa Province
Pinar del Río	INRH Field Directorate (Demonstration Sites in the Municipalities of Consolacion, Los Palacios en Sandino)
Guantánamo	Guantanamo Soil Provincial Directorate (Demonstration Sites in the Municipalities of Guantanamo and Imias)

221. The roles and responsibilities of the key institutions in Project implementation are detailed in the following table.

Table 5: Roles and responsibilities of key institutions in project implementation

Expected Outcome	**Institution responsible for the outcome**	**Institutions with responsibilities in implementation of outputs/activities**
1. Individuals and institutions have the human and material capacities for SLM	CEDEL	IAgric – Research Directorate INRH – Directorate for Rational Use of Water INRH - (CTNR)

Expected Outcome	Institution responsible for the outcome	Institutions with responsibilities in implementation of outputs/activities
emphasizing in water management		CEDEL MES – College of Social Communication UNAIC Training Centers of ANAP, MINAG, AZCUBA, CEDEL and CGG
2: Strengthened biophysical and information management system for improved land use decision making	INICA	Tropical Geography Institute Meteorology Institute Environment Agency – Directorate of Programmes and Projects INRH – Entrepreneurial Group for Use of Water Resources (GEARH) INRH – Directorate for Rational Use of Water IAgric Extension Group
3: Comprehensive management model for monitoring IWRM / SLM increases agricultural production in four intervention areas, with replication potential to other areas	IAgric –Research Directorate	INRH IAgric Intervention Area Coordinators Soil Institute State Forest Service (SEF) Agroforestry Research Institute (INAF) INRH – Habana Enterprise for Hydraulic Research and Projects (EIPHH)
4: Project M&E, adaptive management and lessons learned	Central Coordination Unit	

222. Appendix 10 includes the project´s organization chart.

223. Inter-agency coordination between UNEP and UNDP as GEF Implementing Agencies of project #2 and the CPP respectively will be ensured through the NSC, making use of the most appropriate information mechanisms and instruments within this context. In order to accord proper acknowledgement to the GEF and UN Agencies as funder and implementing agencies of the project, their logos should appear on all relevant project publications and information dissemination means produced by the Project.

SECTION 5: STAKEHOLDER PARTICIPATION

Stakeholder involvement during the design phase - PPG

224. Project preparation involved the following activities: i) a 4 day project planning workshop held in June 2013 with the participation of representatives from the INRH, IAgric, INICA, IS, IPF, AMA, INSMET, INAF, Mayabeque GEAH, local representations of CITMA and INRH of the Province of Artemisa, and UNEP; ii) meetings with local governments and institutions of the four intervention areas to present the project and discuss local environmental and socioeconomic issues of relevance to the project; and iii) preparation of data sheets for each demonstration site by the local governments describing relevant environmental and socioeconomic characteristics, identification of water-related problems as well as local stakeholders and beneficiaries.

Stakeholder participation during project implementation

225. Throughout implementation, the project will seek to establish adequate channels for information, communication and consultation, based on a dynamic interaction between the formal spaces established through the project including the National Steering Committee, Project Implementation Unit and Management Offices, Technical Unit for Desertification and Drought, Local Teams and the stakeholders and beneficiaries.

226. The project management structure will ensure participation of key stakeholders during project planning, implementation and monitoring and evaluation (M&E). The National Steering Committee is made up of the political and technical representatives of the executing and implementing agencies and will provide overall guidance for project implementation. Other stakeholders may be invited to participate in the Steering Committee meetings where deliberation, negotiation, elaboration of strategic guidelines and approval of work plans will take place.

227. For each project outcome a leading institution has been identified based on roles and mandates within the project-related sectors, which will be in charge of achieving the outcome. Likewise, the institutions with responsibilities in implementing outputs and activities have been identified (see Table 5 above). Each lead institution will be responsible to coordinate the development of the outcome/output ensuring participation and collaboration of other stakeholders involved, including leading the participatory planning of the annual work plans; convening meetings of the stakeholders to plan and implement the foreseen activities; negotiating agreements between stakeholders; and reporting of project progress to the management structures. The Management Offices will oversee and support the lead institutions in preparing the annual work plans, will consolidate these plans into the project's global annual work plan, which shall be analyzed, validated and approved by the Steering Committee.

228. At local level, the Intervention Area Coordination Teams will comprise the main stakeholders in each intervention area (government institutions, academia, and non-governmental organizations). These include institutional representatives of the provincial delegations of CITMA, MINAG, INRH, IPF and AZCUBA; scientific and academic institutions; and organizations representing the local interests of stakeholders, including IAgric specialists in the provinces involved in the project, the National Association of Small Farmers (ANAP), the Federation of Cuban Women (FMC), the Cuban Association of Agricultural and Forestry Technicians (ACTAF), the National Union of Engineers and Architects of Cuba (UNAIC) and representatives of the Ministry of Higher Education (MES) in each demonstration site. The teams will ensure adequate planning and implementation of activities in line with the project objectives, local environmental and socioeconomic specificities and stakeholder priorities, as well as complementarity with ongoing and planned programs and projects.

229. The Steering Committee, the Technical Unit for Desertification and Drought, the Project Management Offices and the Intervention Area Coordination Teams will be closely linked, ensuring in this manner that stakeholder concerns are up-streamed into higher project management levels and likewise project management decisions and their impacts on the region are down-streamed to keep stakeholders duly informed.

230. The project will implement several approaches to engage stakeholders in project implementation:

- The national and local teams will provide the opportunity for discussing project strategic directions and advances, and at the same time will act as forums where stakeholders can provide inputs, express concerns, interests and suggestions.
- The project´s training and outreach programs will make use of both bottom-up and top-down approaches, integrating the different points of view of the local stakeholders and beneficiaries as well as those of the institutions, authorities and decision makers.

- On the ground interventions will serve the purpose of demonstrating that the alternative sustainable land and water management practices to be promoted are feasible, cost-effective, and provide a greater benefit compared to the current practices.
- The soil, water and forest polygons where project activities will be replicated will provide the opportunity for engagement of larger number of producers and upscaling of project results.
- Project M&E will promote participation through several mechanisms, such as (i) annual project reviews; (ii) Steering Committee reviews; (iii) workshops for verification of indicators; and (iv) mid-term and final evaluations. These mechanisms will make use of participatory tools to obtain inputs from stakeholders to verify project progress and adjust the project implementation strategy, whenever necessary.

SECTION 6: MONITORING AND EVALUATION PLAN

231. The project will follow UNEP standard monitoring, reporting and evaluation processes and procedures. Substantive and financial project reporting requirements are summarized in Appendix 8. Reporting requirements and templates are an integral part of the UNEP legal instrument to be signed by the executing agency and UNEP.

232. The project M&E plan (Appendix 7) is consistent with the GEF Monitoring and Evaluation policy. The Project Results Framework presented in Appendix 4 includes SMART indicators for each expected outcome as well as mid-term and end-of-project targets. These indicators along with the key deliverables and benchmarks included in Appendix 6 will be the main tools for assessing project implementation progress and whether project results are being achieved. The means of verification and the costs associated with obtaining the information to track the indicators are summarized in Appendix 7. Other M&E related costs are also presented in the Costed M&E Plan and are fully integrated in the overall project budget.

233. The M&E plan will be reviewed and revised as necessary during the project inception workshop to ensure project stakeholders understand their roles and responsibilities vis-à-vis project monitoring and evaluation. Indicators and their means of verification may also be fine-tuned at the inception workshop. Day-to-day project monitoring is the responsibility of the project management team but other project partners will have responsibilities to collect specific information to track the indicators. It is the responsibility of the Project Manager to inform UNEP of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely fashion.

234. The project Steering Committee (PSC) will receive periodic reports on progress and will make recommendations to UNEP concerning the need to revise any aspects of the Results Framework or the M&E plan. Project oversight to ensure that the project meets UNEP and GEF policies and procedures is the responsibility to the Task Manager in UNEP-GEF. The Task Manager will also review the quality of draft project outputs, provide feedback to the project partners, and establish peer review procedures to ensure adequate quality of scientific and technical outputs and publications.

235. At the time of project approval 100% percent of baseline data is available. Any possible baseline data gaps will be identified and addressed during the first year of project implementation. Project supervision will take an adaptive management approach. The Task Manager will develop a project supervision plan at the inception of the project, which will be communicated to the project partners during the inception workshop. The emphasis of the Task Manager supervision will be on outcome monitoring but without neglecting project financial management and implementation monitoring. Progress vis-à-vis delivering the agreed project global environmental benefits will be assessed with the PSC at agreed intervals. Project risks and assumptions will be regularly monitored both by project

partners and UNEP. Risk assessment and rating is an integral part of the Project Implementation Review (PIR). The quality of project monitoring and evaluation will also be reviewed and rated as part of the PIR. Key financial parameters will be monitored quarterly to ensure cost-effective use of financial resources.

236. UNEP will be responsible for managing the mid-term review/evaluation and the terminal evaluation. The Project Manager and partners will participate actively in the process. The project will be reviewed or evaluated at mid-term (tentatively in PY 3 as indicated in the project milestones). The purpose of the Mid-Term Review (MTR) or Mid-Term Evaluation (MTE) is to provide an independent assessment of project performance at mid-term, to analyze whether the project is on track, what problems and challenges the project is encountering, and which corrective actions are required so that the project can achieve its intended outcomes by project completion in the most efficient and sustainable way. In addition, it will verify information gathered through the GEF tracking tools. The project Steering Committee will participate in the MTR or MTE and develop a management response to the evaluation recommendations along with an implementation plan. It is the responsibility of the UNEP Task Manager to monitor whether the agreed recommendations are being implemented. An MTR is managed by the UNEP Task Manager. An MTE is managed by the Evaluation Office (EO) of UNEP. The EO will determine whether an MTE is required or an MTR is sufficient.

237. An independent terminal evaluation (TE) will take place at the end of project implementation. The EO will be responsible for the TE and liaise with the UNEP Task Manager throughout the process. The TE will provide an independent assessment of project performance (in terms of relevance, effectiveness and efficiency), and determine the likelihood of impact and sustainability. It will have two primary purposes:

i. to provide evidence of results to meet accountability requirements, and
ii. to promote learning, feedback, and knowledge sharing through results and lessons learned among UNEP and executing partners.

While a TE should review use of project funds against budget, it would be the role of a financial audit to assess probity (i.e. correctness, integrity etc.) of expenditure and transactions.

The TE report will be sent to project stakeholders for comments. Formal comments on the report will be shared by the EO in an open and transparent manner. The project performance will be assessed against standard evaluation criteria using a six point rating scheme. The final determination of project ratings will be made by the EO when the report is finalized. The evaluation report will be publically disclosed and will be followed by a recommendation compliance process.

The direct costs of reviews and evaluations will be charged against the project evaluation budget.

238. The GEF tracking tools are attached as Appendix 17. These will be updated at mid-term and at the end of the project and will be made available to the GEF Secretariat along with the project PIR report. As mentioned above the mid-term and terminal evaluation will verify the information of the tracking tool.

SECTION 7: PROJECT FINANCING AND BUDGET

7.1. Overall GEF project budget

239. The overall project budget is presented in detail in Appendix 1 (budget by project components, by year and UNEP budget lines) and Appendix 2 (co-financing by source and UNEP budget lines). The incremental cost necessary to achieve the Project objective and the corresponding global benefits is US$ 26,919,380 of which US$ 2,375,000 (9%) constitute the sum requested to the GEF. Co-

financing amounts to US$ 24,544,380 equivalent to 91% of the total amount required. A summary of the GEF budget by outcome is shown in Table 6.

7.2. Project co-financing

240. Co-financing by project budget lines is presented in Appendix 2. Co-financing amounts by outcome of the project are presented in Tables 6 and 7 below.

Table 6: Summary of GEF and Cofinancing resources by Project Outcomes (US$)

PROJECT OUTCOMES	GEF	TOTAL COFINANCING	PROJECT TOTAL
Outcome 1: Individuals and institutions have the human and material capacities to undertake SLM emphasizing in water management	376,416	3,495,838	3,872,254
Outcome 2: Strengthened biophysical and information management system for improved land use decision making	887,028	9,407,365	10,294,393
Outcome 3: Comprehensive management model for monitoring IWRM / SLM increases agricultural production in four intervention areas, with replication potential to other areas	942,618	10,329,858	11,272,476
Outcome 4: Project monitoring and evaluation, adaptive management and lessons learned	122,398	84,100	206,498
Project Management	116,040	1,227,219	1,343,259
PROJECT TOTAL	**2,444,500**	**24,544,380**	**26,988,880**

Table 7: Breakdown of cofinancing resources by project outcomes, institutions and related bodies (US$)

Co-financiers	Outcome 1	Outcome 2	Outcome 3	Outcome 4	Project Management	Project Total
Ministry of Science, Innovation, Technology and Environment (CITMA)	**154,664**	**371,300**	**212,000**	**22,000**	**24,219**	**784,183**
• Local Development Center (CEDEL)	15,633	-	10,000	-	10,800	36,433
• Meteorology Institute (INSMET)	90,000	289,000	159,000	-	-	538,000
• Tropical Geography Institute (IGT)	19,000	61,300	18,000	10,000	-	108,300
• Environment Agency (AMA)	30,031	21,000	25,000	12,000	13,419	101,450
Ministry of Higher Education (MES)	**1,080,000**	**-**	**-**	**-**	**-**	**1,080,000**
Ministry of Agriculture (MINag)	**450,107**	**1,603,715**	**2,613,515**	**35,100**	**157,000**	**4,859,437**
• Institute for Research and Agricultural Engineering (IAgric)	413,107	900,000	1,872,800	35,100	157,000	3,378,007
• Soil Institute (IS)	37,000	703,715	740,715	-	-	1,481,430
Hydraulic Resources Institute (INRH)	**882,300**	**6,148,570**	**6,478,990**	**27,000**	**986,000**	**14,522,860**
• Innovation and Technology Management Directorate (CyT-INRH)	575,300	340,650	371,650	27,000	156,000	1,470,600
• Water Management Entrepreneurial Group (GEARH)	307,000	5,370,340	6,107,340	-	430,000	12,214,680
• Havana Company for Hydraulic Research and Projects (EIPHH)	-	437,580	-	-	400,000	837,580
National Association of Small Farmers (ANAP)	**180,667**	**-**	**361,333**	**-**	**-**	**542,000**
Sugarcane Research Institute (INICA)	**500,000**	**1,191,750**	**500,000**		**60,000**	**2,251,750**
Physical Planning Institute (IPF)	**248,100**	**92,030**	**164,020**	**-**	**-**	**504,150**
Total	**3.495.838**	**9.407.365**	**10.329.858**	**84.100**	**1.227.219**	**24.544.380**

Note: Amounts in cofinancing letters are expressed in local currency (MN). Exchange rate US$: MN = 1:1

7.3. Project cost-effectiveness

241. Within the framework of the CPP the proposed project has the key objective of contributing to ensure the long term viability of the ecosystem functions in Cuba. To achieve this objective the project has identified three types of interventions. Firstly, institutional strengthening so that institutions and individuals may implement SLM emphasizing in water management. Secondly, the strengthening of the biophysical and information management system as per the interests and needs of the users to enable land use decision making. Finally, development and implementation of an integrated management model to monitor the land degradation processes linked to water resources in the four intervention areas, and replication to other areas.

242. Cost-effectiveness is reflected in the design as all three interventions are collectively attending the removal of the barriers that currently hinder the solution of threats to global environmental benefits. The project will build upon the baseline activities, existing capacities and infrastructure at national and local levels to contribute to advance toward the sustainable development objectives expressed in the national plans and programs.

243. To reduce land degradation and the vulnerability of the rural population in the intervention areas, the following strategies and methodologies have been identified and will be implemented within the framework of the project:

i) Capacity development to improve interinstitutional and intersectoral coordination and collaboration, to reinforce synergies, avoid duplication of efforts and reduce project implementation costs.

ii) Stakeholder participation (government institutions, cooperatives and NGOs) in all project stages will ensure that the mechanisms for decision-making and implementation of activities are aligned with the project objectives and the local development priorities, as well as complementarity with other ongoing initiatives in the intervention areas.

iii) Generation of updated and timely information through the biophysical monitoring and information management system will improve access to information on climate agro-meteorology and water management, thereby improving decision making by decision makers and users.

iv) The development of an integrated model for water management with best practices will help to improve the efficiency of irrigation and productivity of water in agriculture, thereby counteracting the environmental degradation and increasing crop yields with less water.

v) Training and awareness raising of producers to attain a shift toward sustainable SLM/IWRM practices and implementation of appropriate technologies.

vi) Systematization of experiences and lessons learned will contribute to a cost-effective replication of the project results.

244. The proposed strategies are cost-efficient because they will allow decision makers to improve decision making processes for agricultural and livestock production to satisfy the demand for food and the small producers to maintain and increase production and yields thereby recovering and maintaining the ecosystem services that are the basis for agricultural and livestock production. The soil, water and forest polygons will also favor the replication of project results in a cost-effective manner.

245. The project includes an M&E component that will support project management so that the project manages will take the most appropriate decisions for implementation of the project, thereby achieving the expected outcomes, and contributing to the CPP objectives.

Appendices

Appendix 1: Budget by project components and UNEP budget lines

(attached in Excel file)

Appendix 2: Co-financing by source and UNEP budget lines

(attached in Excel file)

Appendix 3: Incremental cost matrix

BASELINE	ALTERNATIVE	INCREMENT
(B)	(A)	(B) - (A)
Outcome 1. Individuals and institutions have the human and material capacities to undertake SLM emphasizing in water management		
Since inception of the CPP, training and awareness raising has been delivered to key stakeholders (central and local governments, producers). However, it is still necessary to reach stakeholders countrywide and as well as mainstreaming SLM concepts in plans and programs. Without GEF's intervention, progress in mainstreaming SLM in plans, programs and institutions will be slow. Central level planning of agricultural production will continue to prioritize achieving high yields in the short term without due consideration of SLM. Interinstitutional and intersectoral coordination in SLM issues will remain low due to limited knowledge and access to information.	The knowledge base on SLM / IWRM will be expanded and transferred to decision makers and technical assistance services to support decision making and extension with appropriate tools. SLM considerations will be mainstreamed in key programmes: i) Hydraulic Development Programme; ii) National Action Programme for Integrated Management of Hydrographical Basins and Coastal Areas; iii) National Climate Change Programme. Capacity development will enhance interinstitutional and intersectoral coordination and collaboration, reinforce synergies and avoid duplication of efforts	Scientific, political and institutional barriers undermining SLM/IWRM in Cuba addressed.
Outcome 2: Strengthened biophysical and information management system for improved land use decision making		
Monitoring systems have difficulties for adequate functioning since technological status is not good. Without GEF support the monitoring systems will not be renewed with modern and appropriate technology for an adequate performance for SLM and will continue to provide isolated information. As a result, irrigation will continue to have a low overall efficiency, with water losses. Maintenance of monitoring systems, irrigation systems and water infrastructure will remain low.	Enhanced inter-institutional cooperation and collaboration through an integrated monitoring system that collects and consolidates SLM-related monitoring information from the relevant institutional networks, produces reports and delivers information to decision-makers and users in an accessible language.	Technological barriers undermining SLM/IWRM in Cuba addressed. Access to timely information improves the efficiency and productivity as well as the proper organization of the Water Balance for SLM.
Outcome 3: Comprehensive management model for monitoring IWRM / SLM increases agricultural production in four intervention areas, with replication potential to other areas		
Unsustainable practices will continue to threaten the long-term availability of water (in quantity and quality) for sustainable agricultural production. Local livelihoods will continue to lack viable alternatives to embrace SLM/IWRM	Comprehensive management model involving best practices for SLM/IWRM will increase irrigation efficiency and productivity of water by adequately managing offer and demand of water for agricultural production. Producers and their organizations (cooperatives) will be directly involved in on-the-ground activities and direct investments to provide global and local benefits.	Reduction in the risk of soil erosion and salinization; and contamination of ground and surface waters. Increase in crop yield with less use of water. Upscaling of SLM/IWRM best practices that reduce land degradation to other areas of Cuba.
COST BASELINE **TOTAL: $ 18,000,000**	**COST ALTERNATIVE** **TOTAL: $ 44,988,880**	GEF: $ 2,444,500 Co-financing: $ 24,544,380 **TOTAL: $ 26,988,880**

Appendix 4: Results Framework

Intervention Logic	Objectively Verifiable Indicators	Baseline	Targets	Means of Verification	Assumptions and Risks	
Goal: Cuba has the capacities and conditions for sustainable land management in a manner that contributes to maintaining ecosystem productivity and functions						
Project Objective: Strengthened coordination of information and monitoring systems for management of water resources based on an SLM approach	National, provincial and municipal authorities have developed and implemented agreements and coordination mechanisms for water management and use on the basis of SLM principles, as evidenced by: a) Number of agreements by Scientific Councils b) Number of SLM methodologies adjusted	National Water Policy has been approved and regulations are being prepared 1 methodology (manual for implementation of SLM)	By PY3: a) 3 agreements (Scientific Councils of IAgric, INSMET and INICA/AZCuba) By end of project (EOP): b) 3 methodologies for efficient use of water for SLM and the irrigation regulation adjusted	- Agreements - Minutes of Scientific Councils - Publications containing the methodologies - External evaluations	The GoC continues to show its interest and willingness to mainstream and implement SLM principles to land use and production.	**Reference to UNEP MTS:** Ecosystems Management Subprogramme
	Number of development programs that take decisions on the basis of updated information on the biophysical and socio-economic conditions for SLM	National Programme for Soil Improvement and Conservation includes an SLM approach	By EOP: 3 development programmes incorporate SLM principles in their plans: i) Hydraulic Development Programme; ii) National Action Programme for Integrated Management of Hydrographical Basins and Coastal Areas; iii) National Climate Change Programme	- Programme resolutions / decisions - External evaluations		
Outcome 1: Individuals and institutions have the human and material capacities to undertake SLM emphasizing in water management	Resource administrators of key institutions and agencies are aware of and support the processes based on sustainable management of water resources for SLM, as evidenced by: a) Number of institutions with plans and programmes that mainstream SLM for implementation of policies (environment, water, soils and	a) 25 institutions b) 2 land use plans (Pinar del Rio and Guantamo intervention areas) c) 4 standards related with the use of water in agriculture	By PY3: a) 55 institutions b) 2 land use plans (Cauto River Basin and Havana-Matanzas) c) 10 standards and regulatory instruments	- Annual reports on implementation of sectoral environmental programmes - Reports on land use plans in demonstration areas - Standards and regulatory	The existing planning structures continue showing interest and willingness to mainstream SLM The legal and regulatory framework continues to provide an enabling framework for development	**MTS expected outcome:** Ecosystem Management - Expected Accomplishment (a): Use of the ecosystem approach in countries to maintain

Intervention Logic	Objectively Verifiable Indicators	Baseline	Targets	Means of Verification	Assumptions and Risks	
	forests) b) Number of land use plans that mainstream water resources management c) Number of standards and regulatory instruments reviewed and updated to incorporate SLM			instruments - Project reports		ecosystem services and sustainable productivity of terrestrial and aquatic systems is increased
	Local production entities in the intervention areas implement sustainable water resources management practices for SLM, as evidenced by: a) Number of individuals receiving technical assistance in water resources management b) Number of individuals trained in water resources management c) Number of individuals trained for an efficient use of water (water productivity)	a) 120 individuals in Project #1 intervention areas b) Technical assistance and training available from INRH, IAgric, INSMET, ANAP, AZCuba c) 400 individuals receive technical assistance	By PY3: a) 800 individuals (at intervention area level) b) 1,600 individuals (at national level) c) 1,200 individuals (at national level)	- Training reports - Lists of participants - Gender disaggregated data - Project reports		
Outputs of Outcome 1:						**PoW Ref. Nmbr.**
1.1 Territorial plans and programmes related with water use and agricultural production mainstream SLM considerations						3. Tools, technical support and partnerships to improve integrated water resource management including water quality using ecosystem management approaches
1.2 Technical standards and regulations on the use and management of water resources mainstream SLM considerations						
1.3 Increased SLM awareness of decision makers at national, provincial and municipal level						
1.4 Increased SLM knowledge of resource managers of key institutions and agencies at national, provincial and municipal levels, and local producers						
Outcome 2: Strengthened biophysical monitoring and information	A network for coordination of information among key institutions in the four intervention areas for IWRM / SLM established and operational	Networks for coordination of information on monitoring have a low level of integration. There are no information	By PY3: 1 coordination and information sharing network involving INRH, INSMET and IAgric	- Agreements between INHR, INSMET and IAgric - Rules of procedure	Institutions are willing to work in a coordinated manner, harmonizing procedures and	**MTS expected outcome** Ecosystem Management - Expected

Intervention Logic	Objectively Verifiable Indicators	Baseline	Targets	Means of Verification	Assumptions and Risks	
management system for improved land use decision making		sharing mechanisms		for operation and management of the network - Project reports	methodologies and sharing information within the framework of the integrated monitoring system	Accomplishment (a): Use of the ecosystem approach in countries to maintain ecosystem services and sustainable productivity of terrestrial and aquatic systems is increased
	Long term monitoring and evaluation system for management of water resources modernized and generating updated information for SLM	Existing monitoring systems have constraints (e.g. obsolete equipment, lack of integration between systems).	By EOP: 1 Monitoring System established and operational	- Institutional reports - Monitoring system reports - Project reports		
	Number of institutions that cite data of the SLM Repository and the Monitoring Network in their plans and programmes	15 institutions currently cite data of the SLM Repository and the Monitoring Network	By Project end: 25 institutions	- Institutional reports - Project reports		
	Number of Brigades for monitoring of biophysical indicators established, trained and equipped in the intervention areas	Existing Brigades are short of equipment and means	By EOP: 2 Monitoring Brigades	- Institutional reports - Project reports		
Outputs under Outcome 2:						**PoW Ref. Nmbr.**
2.1 Integration of data bases and monitoring systems						3. Tools, technical support and partnerships to improve integrated water resource management including water quality using ecosystem management approaches
2.2 Strategy for information dissemination to end users						
2.3 Strengthening of the hydrometric network, water quality laboratories and early warning systems						
2.4 Water availability assessments in four intervention areas						
2.5 Monitoring of water use and management in four intervention areas						
Outcome 3: Comprehensive management model for monitoring IWRM / SLM increases agricultural production in four	Number of hectares in 4 intervention areas where the efficient use of water and increase in productivity generate sustainable land management	- Pinar del Río: 100 ha - Havana-Matanzas: 1,600 ha - Cauto River Basin: 2,000 ha - Guantánamo: 60 ha	By EOP: - Pinar del Río: 400 ha - Havana-Matanzas: 2,000 ha - Cauto River Basin: 2,600 ha - Guantánamo: 120 ha	- Reports by provincial and municipal institutions - Project reports	Willingness of landowners to adopt SLM practices Provincial and municipal institutions have the political will to incorporate SLM	**MTS expected outcome:** Ecosystem Management - Expected Accomplishment (a): Use of the ecosystem

Intervention Logic	Objectively Verifiable Indicators	Baseline	Targets	Means of Verification	Assumptions and Risks	
intervention areas, with replication potential to other areas	Number of producers and water resources managers in 4 intervention areas that implement SLM measures with emphasis in water	- Pinar del Río: 100 - Havana-Matanzas: 120 - Cauto River Basin: 200 - Guantánamo: 130	By EOP: - Pinar del Río: 120 (20 women) - Havana-Matanzas: 150 (50 women) - Cauto River Basin: 250 (60 women) - Guantánamo: 160 (30 women)	- Reports by provincial and municipal institutions - Project reports	principles in their territories	approach in countries to maintain ecosystem services and sustainable productivity of terrestrial and aquatic systems is increased
	Increase in the productivity of water used in the main crops of each of the 4 intervention areas	Pinar del Rio: - Tobacco: 2,976 m^3/t - Rice: 5,788 m^3/t - Beans: 6,472 m^3/t - Maize: 7,284 m^3/t - Soy: 1,818 m^3/t - Malanga: 4,615 m^3/t Havana-Matanzas a) Artemisa - Rice: 6,967 m^3/t - Malanga: 1,519 m^3/t - Potato: 279 m^3/t - Sweet Potato: 355 m^3/t - Plantain: 823 m^3/t - Maize: 7,467 m^3/t - Beans: 3,729 m^3/t b) Mayabeque - Rice: 6,967 m^3/t - Malanga: 1,195 m^3/t - Potato: 315 m^3/t - Plantain: 943 m^3/t - Maize: 8,671 m^3/t Cauto River Basin - Rice: 9,429 m^3/t - Plantain: 1,823 m^3/t - Maize: 5,128 m^3/t	By EOP: Pinar del Rio: - Tobacco: 2,609 m^3/t - Rice: 3,946 m^3/t - Beans: 4,959 m^3/t - Maize: 5,364 m^3/t - Soy: 1,364 m^3/t - Malanga: 4,532 m^3/t Havana-Matanzas a) Artemisa - Rice: 4,479 m^3/t - Malanga: 1,214 m^3/t - Potato: 256 m^3/t - Sweet Potato: 288 m^3/t - Plantain: 675 m^3/t - Maize: 3,500 m^3/t - Beans: 2,880 m^3/t b) Mayabeque - Rice: 4,479 m^3/t - Malanga: 902 m^3/t - Potato: 225 m^3/t - Plantain: 752 m^3/t - Maize: 3,100 m^3/t Cauto River Basin - Rice: 5,587 m^3/t - Plantain: 1,046 m^3/t - Maize: 3,740 m^3/t	- Production contracts - Project reports		

Intervention Logic	Objectively Verifiable Indicators	Baseline	Targets	Means of Verification	Assumptions and Risks	
		Guantanamo - Sweet Potato: 1,441 m^3/t - Plantain: 1,757 m^3/t - Maize: 10,235 m^3/t	Guantanamo - Sweet Potato: 1,137 m^3/t - Plantain: 1,023 m^3/t - Maize: 8,700 m^3/t			
	Number of demonstration farms that replicate the comprehensive management model for monitoring water-related land degradation processes	83 demonstration farms	By EOP: 100 demonstration farms	- Institutional reports - Project reports		
	Number of plans for water use in agricultural production that incorporate consumption indices per unit of production or service	Plans for water use in agricultural production with outdated crop consumption standards	By PY3: 9 plans with crop consumption standards according to soil-climate conditions for SLM	- Plans - Institutional reports - Project reports		
	Number of comprehensive management plans to remediate, reduce and halt land degradation designed and implemented	a) Havana-Matanzas: swine production companies have deficient waste management systems b) Cauto River Basin: low availability of good quality water for human and animal consumption	By EOP: a) Havana-Matanzas: 1 comprehensive management plan to reduce the contamination of the aquifer (reduction of solid wastes and protection of recharge areas) b) Cauto River Basin: 1 comprehensive management plan to increase availability of good quality water for human and animal consumption	- Comprehensive management plans - Institutional reports - Project reports		
Outputs of Outcome 3:						**PoW Ref. Nmbr.**
3.1 Integrated water resources management model and demonstrations in four intervention areas						3. Tools, technical support and partnerships to improve integrated water resource
3.2 Increased efficiency in water use for agricultural production						
3.3 Monitoring and evaluation of action plans, impacts and lessons learned						
3.4 Upscaling of the management model to new geographical areas						

Intervention Logic	Objectively Verifiable Indicators	Baseline	Targets	Means of Verification	Assumptions and Risks	
						management including water quality using ecosystem management approaches
Outcome 4: Project M&E	Project results achieved and demonstrating sustainability		By PY3: 80% implementation By EOP: 100% implementation	- PPR - PIR - External evaluations		
	Project Progress Reports and Project Implementation Reviews		By EOP: 2 Bi-annual Progress Reports (PPR) and 1 Project Implementation Review (PIR) per year	- PPR - PIR		
	Mid-term and final evaluations		By PY3: 1 Mid-term evaluation report By EOP: 1 final evaluation report	- Mid-term evaluation report - Final evaluation report		
	Project best practices and lessons learned published and disseminated		By EOP: 1 publication on best practices and lessons learned	- Best practices and lessons learned document		
Outputs of Outcome 4:						
4.1 Project monitoring system operational and providing six-monthly reports on progress in achieving project output and outcome targets						
4.2 Mid-term and final evaluations						
4.3 Project best practices and lessons learned						

Appendix 5: Workplan and timetable

Outcomes	Outputs	PY 1		PY 2		PY 3		PY 4		PY 5	
		S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
Outcome 1. Individuals and institutions have the human and material capacities to undertake SLM emphasizing in water management	1.1 Territorial plans and programmes related to use of water and agricultural production mainstream SLM considerations										
	1.2 Technical standards and regulation on use and management of water mainstream SLM considerations										
	1.3 Increased SLM awareness of decision makers at national, provincial and municipal level										
	1.4 Increased SLM knowledge of resource managers of key institutions and agencies at national, provincial and municipal levels, and local producers										
Outcome 2: Strengthened biophysical and information management system for improved land use decision making	2.1 Integration of data bases and monitoring systems										
	2.2 Strategy for dissemination of information to end users										
	2.3 Strengthened hydrometric network, water quality laboratories and early warning systems										
	2.4 Water availability assessments in four intervention areas										
	2.5 Monitoring of use of water in four intervention areas										
Outcome 3: Comprehensive management model for monitoring IWRM / SLM increases agricultural production in four intervention areas, with replication potential to other areas	3.1 Integrated water resources management model and demonstrations in four intervention areas										
	3.2 Increased efficiency in water use for agricultural production										
	3.3 Monitoring and evaluation of action plans, impacts and lessons learned										
	3.4 Upscaling of the management model to new geographical areas										

Outcomes	Outputs	PY 1		PY 2		PY 3		PY 4		PY 5	
		S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
Outcome 4: Project M&E, adaptive management and lessons learned	4.1 Project monitoring system operational and providing six-monthly reports on progress in achieving project output and outcome targets										
	4.2 Mid-term and final evaluations										
	4.3 Project best practices and lessons learned										

Appendix 6: Key deliverables and benchmarks

Outcomes/Outputs	Key Deliverables	Benchmarks
Outcome 1. Individuals and institutions have the human and material capacities to undertake SLM emphasizing in water management		
Output 1.1 Territorial plans and programmes related to use of water and agricultural production mainstream SLM considerations	• TORs • Consultant Contracts • Consultant reports • Sub-contracts to gov´t agencies • Sub-contract reports • Plans and programs mainstreaming SLM • Land use plans (Cauto River Basin and Havana-Matanzas)	• PY1: Production of TORs/Contracts/Sub-contracts • PY1-PY2: Meetings/ workshops for mainstreaming of SLM in plans/programmes • PY2-PY3: Proposals of plans/ programmes incorporating SLM • PY2-PY3: New plans/programs adopted
Output 1.2 Technical standards and regulations on use and management of water mainstream SLM considerations	• TORs • Consultant Contracts • Consultant reports • Sub-contracts to gov´t agencies • Sub-contract reports • Standards and regulatory instruments mainstreaming SLM	• PY2: Production of TORs/ Contracts/Sub-contracts • PY2: Standards and regulations selected for revision • PY2-PY3: Meetings/ workshops for review of standards and regulations • PY3-P4: Proposals for new standards/regulations • PY3-P4: New standards and regulations adopted
Output 1.3 Increased SLM awareness of decision makers at national, provincial and municipal level	• Awareness and training programs on SLM • Awareness raising materials • Training reports	• PY2: Production of programs and materials • PY2-PY3: Workshops/ awareness raising events
Output 1.4 Increased SLM knowledge of resource managers of key institutions and agencies at national, provincial and municipal levels, and local producers	• Training programs on SLM • Training materials • Training reports	• PY2: Production of programs and materials • PY2-PY3: Training workshops
Outcome 2: Strengthened biophysical and information management system for improved land use decision making		
Output 2.1 Integration of data bases and monitoring systems	• TORs • Consultant contracts • Consultant reports • Sub-contracts to gov´t agencies • Sub-contractor reports • Inter-institutional coordination agreements	• PY2: Production of TORs/ Contracts/Sub-contracts • PY2: Workshops for integration of data bases/systems • PY3: Coordination and information sharing network established
Output 2.2 Strategy for dissemination of information to end users	• Communication materials • Meetings/workshops reports • TOR • Contract	• PY3: Production of TORs / Contract • PY3: Production of promotional and

Outcomes/Outputs	Key Deliverables	Benchmarks
	• Contractor reports	communication materials • PY3-PY4: SLM Digital Repository updated constantly • PY3-PY4: Information and communication materials disseminated to decision makers and producers
Output 2.3 Strengthened hydrometric network, water quality laboratories and early warning systems	• TORs • Consultant contracts • Consultant reports • Sub-contracts • Sub-contractor reports • Equipment specifications • Equipment (laboratory, computer, others)	• PY2: Production of TORs/ Contracts/Sub-contracts • PY2: Production of specifications for equipments • PY2-PY3: Equipment procured • PY2-PY3: Equipment installed • PY3-PY5: Monitoring system operational
Output 2.4 Water availability assessments in four intervention areas	• TORs • Sub-contracts to gov´t agencies • Sub-contractor reports • Water availability assessment reports • Management plans	• PY3: Production of TORs / Subcontracts • PY3-PY4: 4 Water availability assessments • PY3-PY4: 4 Management plans prepared
Output 2.5 Monitoring of use of water in four intervention areas	• Monitoring equipment/ modules • Monitoring brigades • Monitoring reports	• PY3: Monitoring equipment/ modules purchased • PY3: Monitoring brigades established and trained • PY4-PY5: Monitoring of IWRM indicators
Outcome 3: Comprehensive management model for monitoring IWRM / SLM increases agricultural production in four intervention areas, with replication potential to other areas		
Output 3.1 Integrated water resources management model and demonstrations in four intervention areas	• TORs • Consultant contracts • Consultant reports • Sub-contracts to gov´t agencies • Sub-contractor reports • Action plans • Training programs and materials	• PY2: Production of TORs/ Contracts / Sub-contracts • PY2: 4 management plans elaborated • PY2: Training workshops (water management)
Output 3.2 Increased efficiency in water use for agricultural production	• TORs • Sub-contracts to gov´t agencies • Sub-contractor reports • Water balance • Equipment specifications • Equipment (laboratory, computer, irrigation, hydrometry) • Training programs/ materials	• PY2: Production of TORs / Subcontracts • PY2: Production of specifications • PY2: Equipment procured • PY2: Equipment installed • PY3-PY5: Training events (water balance, use of equipment, efficiency assessments)
Output 3.3 Monitoring and evaluation of action plans, impacts and lessons learned	• Monitoring equipment/ modules • Monitoring reports	• PY3: Monitoring equipment/ modules purchased • PY4-PY5: Monitoring of action plan/water balances/indicators

Outcomes/Outputs	Key Deliverables	Benchmarks
Output 3.4 Upscaling of the management model to new geographical areas	• Demonstration farms	• PY4-PY5: Demonstration farms in replication areas identified
Outcome 4: Project M&E, adaptive management and lessons learned		
4.1 Project monitoring system operational and providing six-monthly reports on progress in achieving project output and outcome targets	• PPRs • PIRs	• PY1: 2 PPRs / 1 PIR • PY2: 2 PPRs / 1 PIR • PY3: 2 PPRs / 1 PIR • PY4: 2 PPRs / 1 PIR • PY5: 2 PPRs / 1 PIR
4.2 Mid-term and final evaluations	• TORs • Consultant contracts • Mid-term evaluation report • Final evaluation report	• PY3: Production of TORs/ contracts for mid-term evaluation • PY3: Mid-term evaluation • PY5: Production of TORs/ contracts for final evaluation • PY5: Final evaluation
4.3 Project best practices and lessons learned	• TORs • Consultant contract • Best practices and lessons learned document	• PY5: Production of TORs / contract • PY5: Best practices and lessons learned published

Appendix 7: Costed M&E plan

Type of M&E activity	Responsible Parties	Budget from GEF (US$)	Budget co-finance (US$)	Time Frame
Inception Workshop	• INRH-IAgric • AMA • UNEP	5,400	20,000	Within 2 months of project start-up
Inception Report	• INRH-IAgric • UNEP	0	0	1 month after project inception meeting
Measurement of project indicators (outcome, progress and performance indicators, GEF tracking tools) at national and global level	• INRH-IAgric • Project Team	0	In kind support of national and local counterpart agencies	Outcome indicators: start, mid and end of project Progress/perform. Indicators: annually
PPR/PIR	• INRH-IAgric • Project Team	10,000	13,100	PPR: Within 1 month of the end of reporting period i.e. on or before 31 January and 31 July PIR: Annually
Project Steering Committee meetings	• INRH-IAgric • AMA • UNEP	8,498	0	Once a year minimum
Reports of PSC meetings	• INRH-Iagric • Project Team • UNEP	0	0	Annually
Monitoring visits to field sites	• INRH-Iagric • UNEP	0	In kind support of national and local counterpart agencies	As appropriate
Mid Term Review/Evaluation	• INRH-Iagric • Project Team • UNEP • External Consultants	20,000	20,000	At mid-point of project implementation
Terminal Evaluation	• INRH-Iagric • Project Team • UNEP • External Consultants	30,000	23,000	Within 6 months of end of project implementation
Audit	• INRH-Iagric • Project Team • UNEP • External Consultants	12,000	8,000	Annually
Project Final Workshop	• INRH-IAgric • Project Team • UNEP	15,000	In kind support of national counterpart agencies	Within 2 months of the project completion date
Project Final Report	• INRH-IAgric • Project Team • UNEP	0	0	Within 2 months of the project completion date

Type of M&E activity	Responsible Parties	Budget from GEF (US$)	Budget co-finance (US$)	Time Frame
Co-financing report	• INRH-IAgric • Project Team	0	0	Within 1 month of the PIR reporting period, i.e. on or before 31 July
M&E reporting costs (publications)	• INRH-IAgric • Project Team • UNEP	21,500	0	Annually, part of Semi-annual reports & Project Final Report
Total M&E Plan Budget		**122,398**	**84,100**	

Appendix 8: Summary of reporting requirements and responsibilities

Reporting requirements	Due date	Format appended to legal instrument as	Responsibility of
Procurement plan (Goods and services)	2 weeks before project inception meeting	N/A	PM, M&EOs
Inception Report	1 month after project inception meeting	N/A	PM, M&EOs
Expenditure report accompanied by explanatory notes	Quarterly on or before 30 April, 31 July, 31 October, 31 January	Annex 11	PM, M&EOs
Cash Advance request and details of anticipated disbursements	Quarterly or when required	Annex 7B	PM, AAP
Progress report	Half-yearly on or before 31 January	Annex 8	PM, M&EOs
Audited report for expenditures for year ending 31 December	Yearly on or before 30 June	N/A	Executing partner to contract firm
Inventory of non-expendable equipment	Yearly on or before 31 January	Annex 6	PM, AAP
Co-financing report	Yearly on or before 31 July	Annex 12	PM, AAP
Project implementation review (PIR) report	Yearly on or before 31 August	Annex 9	PM, M&EOs, TEs, Tas, TM
Minutes of steering committee meetings	Yearly (or as relevant)	N/A	PM
Mission reports and “aide memoire” for executing agency	Within 2 weeks of return	N/A	TM, DGEF FMO
Final report	2 months of project completion date	Annex 10	PM, M&EOs
Final inventory of non-expendable equipment		Annex 9	PM, AAP
Equipment transfer letter		Annex 10	PM, AAP
Final expenditure statement	3 months of project completion date	Annex 11	PM, AAP
Mid-term review or Mid-term evaluation	Midway though project	N/A	TM or EOU (as relevant)
Final audited report for expenditures of project	6 months of project completion date	N/A	Executing partner to contract firm
Independent terminal evaluation report	6 months of project completion date	Appendix 9 to Annex 1	EOU

Appendix 9: Standard Terminal Evaluation Term of Reference

At the time of the Terminal Evaluation the **Standard Terminal Evaluation ToR template** will be obtained from the Evaluation Office to make sure the latest version is use

Appendix 10: Decision-making flowchart and organizational chart

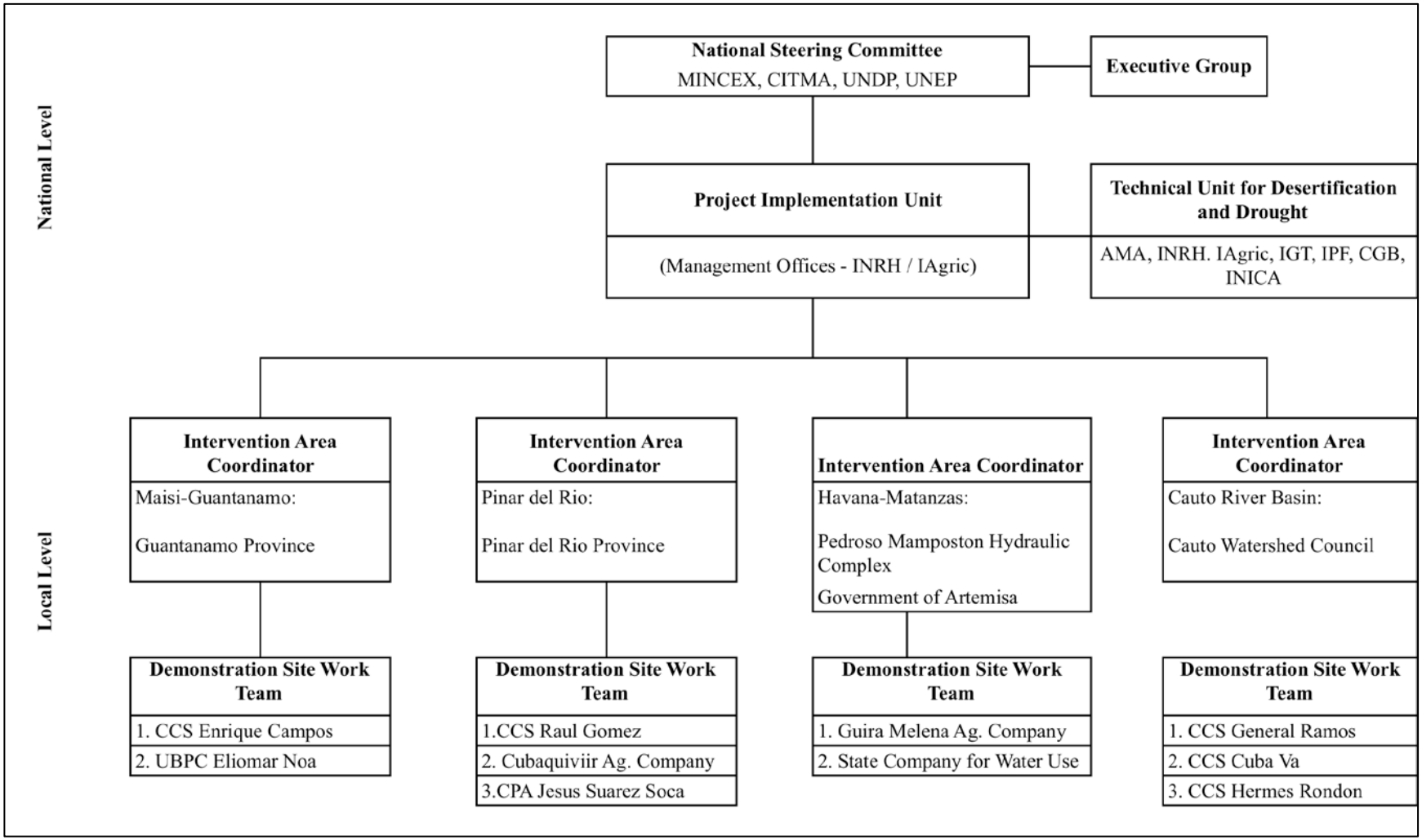


Figure 1: Project Organization Chart

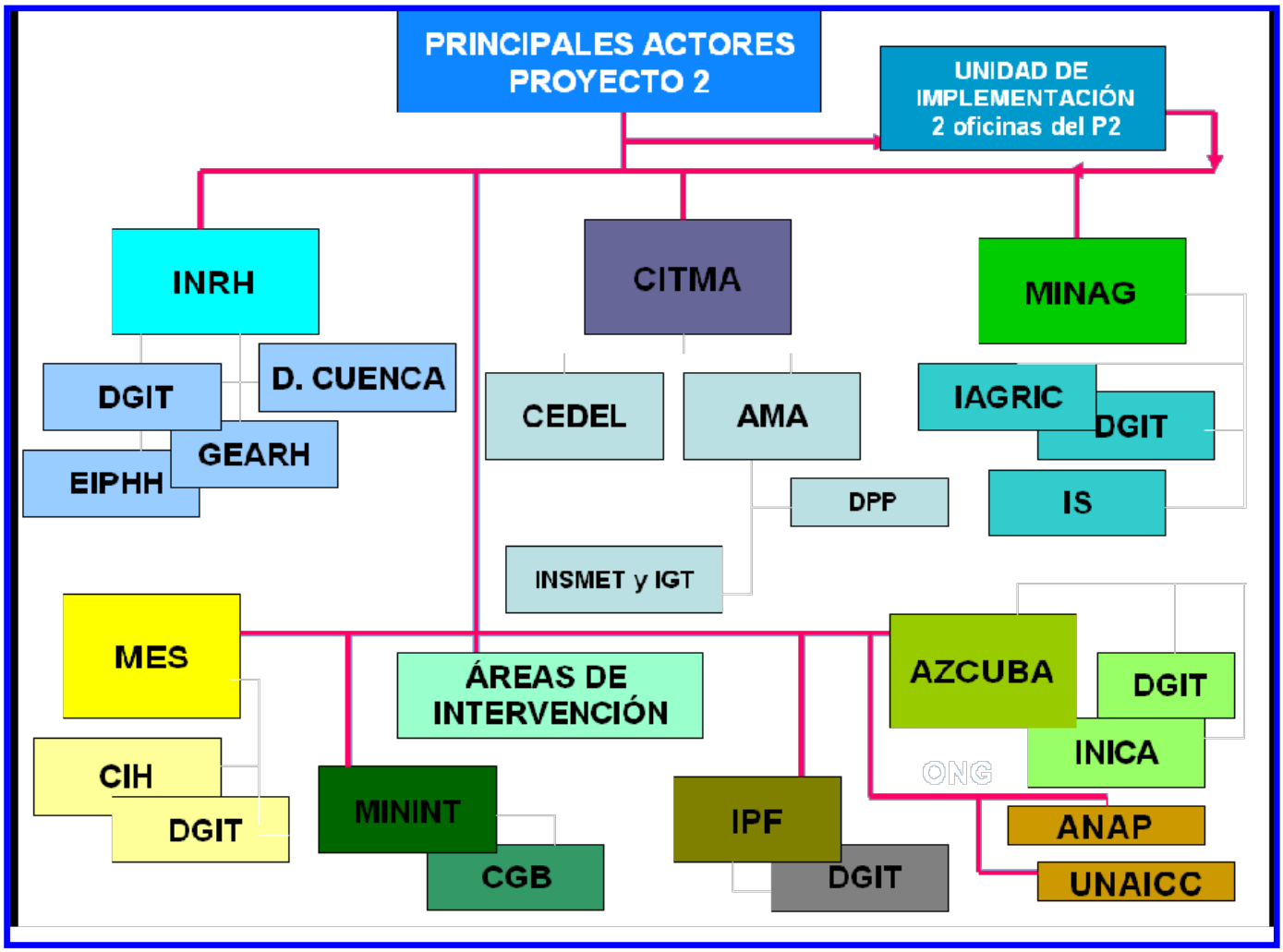


Figure 2: Key Stakeholders for Project Implementation

Appendix 11: Terms of Reference

Country Partnership Programme (CPP) Director

The CPP Director is responsible for convening the National Steering Committee (NSC) for overall guidance and coordination of the CPP and its projects. He/she will ensure planning, direction, control and supervision of the tasks assigned to the project personnel, consultants and participating institutions. The CPP Director will be responsible for issuing the no-objection of all project documents, management and financial reports and dissemination of the results of audits and their plans.

He/she will carry out the following tasks:

- Ensure together with the governmental and international institutions the support to implementation of the CPP and its projects, as well as the timely and effective contribution of the government;
- Approve the work plans and evaluation reports and submit them to UNEP and other relevant institutions;
- Promote the participation of governmental and local institutions, especially state institutions related with sustainable land management, such as MINAG, AZCuba, INRH, CITMA and MINCEX, among others, to implement the activities and reforms proposed by them;
- Guide and control the activities related with the proposed objectives, participation of all concerned institutions, private sector and NGOs, ensuring the dissemination and implementation of the lessons learned at all levels;
- Facilitate the annual project reviews, tripartite reviews as well as the full internal and external evaluation system.
- Review the financial plans, activities and periodic reports;
- Oversee, approve and certify the progress reports, audit reports and evaluation reports;
- Issue the final clearance of project reports and submit them to organizations that may request them, including donor organizations.

Project Director and Project Coordinator

The Project Director will work under the supervision of the CPP Director and will be responsible for informing the CPP Director in regards to project progress as well as the contribution of the project to the CPP as a whole. The Project Director will be supported by a Project Coordinator. Both the Project Director and the Project Coordinator will be members of the Technical Unit for Desertification and Drought to ensure the correct and harmonized integration of Project #2 within the CPP and the achievement of the CPP targets. They will also be members of the work team of Project #5.

The Project Director and the Project Coordinator will carry out the following tasks:

- Ensure the integrated implementation of the project, including the establishment and operation of the work groups and coordination of the participation of key stakeholders;
- Inform and be responsible for the technical and financial execution of the project in accordance with the established frameworks and evaluate progress, identifying lessons learned;
- Monitor progress of project implementation through monthly and quarterly meetings and field visits to the demonstration sites;

- Control and participate together with the Technical Office and the local groups in the elaboration and verification of Annual Work Plans (AWP); Project Progress Reports (PPR); Quarterly Reports (QOR); Project Implementation Reviews (PIR) and technical reports;
- Define the parameters, indicators and reference points to measure project impact, which will be validated and supplemented by more project specific indicators (Project #2 and other CPP projects);
- Develop plans for financial execution in close coordination with the financing and co-financing institutions, as well as the compulsory verification of the budget;
- Develop training plans;
- Facilitate the dissemination of documents and project products;
- Supervise the activities of project related personnel, as well as coordination of workshops and meetings;
- Participate in the procurement committee, reviewing contracting and tender processes;
- Supervise the installation and use of resources and equipment, as well as their conservation, maintenance and protection;
- Organize and participate in the mid-term review and final evaluation as well as technical consultancies;
- Coordinate technical assistance at national level through the Technical Group;
- Prepare technical documents to be assessed by the Expert Committee for publication;
- Supervise the financial execution of the Project, based on the established procedures;
- Make use of the existing monitoring and evaluation mechanism under the CPP, training personnel in its use and the establishment, development and maintenance of its databases.

Heads of the Project Management Offices

The Heads of the two Project Management Offices (INRH and IAgric) will carry out the following tasks:

- Supervise and be responsible for technical coordination and implementation of the project, including the establishment and operation of the work groups to achieve the outcomes and outputs foreseen in the project document;
- Prepare Annual Work Plans (AWP); Project Implementation Reviews (PIR); Project Progress Reports (PPR) and Quarterly Reports (QOR) with the participation of the national and local teams;
- Ensure effective and timely participation of the local stakeholders and counterparts;
- Prepare reports and works plans on project progress and be responsible for the information generated;
- Establish the work teams at national level (in charge of the capacity development outcomes and outputs) and local level (local institutions and work groups in the demonstration sites);
- Supervise the results of the evaluation teams;

- Be responsible for the technical resources available for the development of project activities and periodically inform on their status;
- Participate in the elaboration of budgets and their corresponding cofinancing throughout the different project phases;
- Submit the technical documents to be assessed by the Expert Committee for publication;

Local Teams

The local teams will carry out the following tasks:

- Coordinate the integrated planning and execution of the project at local level and establish links between the local and national teams;
- Provide guidance and supervise the project activities in each demonstration site;
- Convene the local institutions and stakeholders and engage them in project management and implementation (both horizontally and vertically);
- Promote the engagement of local stakeholders in implementation of sustainable land management activities.
- Monitor, evaluate and validate the implementation of the project at local level;
- Organize, supervise and disseminate information produced by the project at local level and ensure it is accessible to the relevant institutions;
- Prepare information and promotional materials;
- Participate together with the project central team in the evaluation of local barriers for definition of objectives, targets, stakeholders, beneficiaries, synergies and risks;
- Register, control, supervise, manage and ensure the appropriate use and maintenance of the project´s material resources;
- Support capacity development activities within the context of local integrated development;
- Facilitate audits and project control procedures at local level;
- Supervise project expenditures and local contributions for project activities and leverage additional local funding;

Administrative Support

The Administrative Support personnel will carry out the following tasks:

- Participate in preparation of budgets and corresponding cofinancing throughout the different stages of project implementation (annual work plans);
- Develop financial plans in close coordination with the financing and cofinancing institutions, as well as perform the compulsory verification of the budget;
- Supervise the installation and use of resources and equipment, as well as their conservation, maintenance and protection;
- Supervise the financial execution of the project on the basis of the procedures established by the GEF implementing agency;

- Provide periodical information on the implementation status of projects to the relevant institutions;

Profile required for the above-mentioned positions:

- Experience with international cooperation projects, preferably GEF projects;
- Proven managerial capacity;
- Proven capacity for coordination and planning;
- Proven technical capacity and knowledge of the project intervention areas;
- Proven general knowledge on sustainable land management in the country, trends, weaknesses and threats to its implementation and institutionalization, as well as policies related with the economic trends of Cuba.

Appendix 12: Co-financing commitment letters from project partners

(attached pdf files)

Appendix 13: Endorsement letters of GEF National Focal Points

(On file at GEF, UNDP and UNEP since the submission of the programme document for workprogram inclusion)

Appendix 14: Draft procurement plan

UNEP/GEF PROCUREMENT PLAN

UNEP Budget Line		List of Goods and Services required	Budget	Year {Note 1}	Brief description of anticipated procurement process {Note 2}
1200	Consultants				
1201	International Consultants	• Integrated monitoring and information systems specialist • Water resources management specialists • Plans and programmes for sustainable watershed management specialist	60,048	1,2,3,4	a) Through UNEP or UNDP: 1) TORs, 2) Call for tender, 3) selection of CVs, 4) contracting or, b) The project may propose a recognized expert on the requested field of expertise
1202	International Experts	• Water management expert	12,000	3	a) Through UNEP or UNDP: 1) TORs, 2) Call for tender, 3) selection of CVs, 4) contracting or, b) The project may propose a recognized expert on the requested field of expertise
2100	Sub-contracts (MOUs/LOAs for cooperating agencies)				
2200	Sub-contracts (MOUs/LOAs for supporting organizations)				
2201	Sub-contract to governmental agencies	• FINTUR (lodging) • FINCIMEX (fuel) • ETECSA (communications network) • VIAZUL (transportation) • Others to be determined upon project inception	68,700	1,2,3,4,5	Direct contracting. Contracts will be signed between the executing agency and the national agencies for provision of specific services to the project (e.g. lodging services during field visits, transportation, fuel, etc.)
2300	Sub-contracts (for commercial purposes)				
2301	Sub-contracts commercial purposes	• Donation Executing Company (EMED)	27,000	1,2,3,4,5	EMED is the national agency in charge of procurements and imports accredited by the Cuban Customs Service. The executing agency will sign a contract with EMED to provide procurement services
2302	Transport service contracts	• TRANSTUR • VIAZUL	40,500	1,2,3,4,5	Contracts signed between the executing agency and the national agencies.
4200	Non-expendable equipment				
4201	Computers and accessories	Computer equipment for 2 Training Centers and work teams in 9 demonstration	273,350	1,2,3,4,5	Procurement process through EMED: 1) call for tenders, 2) selection of supplier, 3) contract

UNEP Budget Line		List of Goods and Services required	Budget	Year {Note 1}	Brief description of anticipated procurement process {Note 2}
		sites; servers; laser printers; data show; external hard drives; laptop computers; plotter; scanners			between EMED and supplier, 4) supply and installation
4202	Laboratory and monitoring equipment	Potentiometers, conductivity meters, thermometers, sensors for H2S, NO3, PO4; spectrophotomer, level meter; compass; portable moisture and wind speed meters; echosounder; samplers; water speed sensors; laser rangefinder; agro-meteorological station; tensiometer; pycnometer; rain gauge; scale; EM-38, inflatable raft boat or 10 ft of slora, electric motor overboard, others	688,900	1,2,3,4,5	Procurement process through EMED: 1) call for tenders, 2) selection of supplier, 3) contract between EMED and supplier, 4) supply and installation
4203	Office furniture/laboratory	Laboratory furniture; office furniture (desks, chairs); furniture for Training Center (PC desks + chairs)	62,750	1,2,3	Procurement process through EMED: 1) call for tenders, 2) selection of supplier, 3) contract between EMED and supplier, 4) supply and installation
4204	Vehicles	Pickups and motorcyles with sidecars	263,000	1,2	Procurement process through EMED: 1) call for tenders, 2) selection of supplier, 3) contract between EMED and supplier, 4) supply and installation
4205	Air conditioning equipment	Air conditioning equipment for training centers	13,500	1	Procurement process through EMED: 1) call for tenders, 2) selection of supplier, 3) contract between EMED and supplier, 4) supply and installation
4206	Communications equipment	Radio	9,400	2	Procurement process through EMED: 1) call for tenders, 2) selection of supplier, 3) contract between EMED and supplier, 4) supply and installation
4207	Audiovisual equipment	Digital camera + accessories; TV + video & film editing	8,200	2	Procurement process through EMED: 1) call for tenders, 2) selection of supplier, 3) contract between EMED and supplier, 4) supply and installation
4208	Irrigation systems		132,300	2,3	Procurement process through EMED: 1) call for tenders, 2) selection of supplier, 3) contract between EMED and supplier, 4) supply and installation
4209	Cluster	• Power Edge R620 • Networking 5548 Switch • Power Vault MD3220i • 9PX rack/tower, UPS	65,000	2	Procurement process through EMED: 1) call for tenders, 2) selection of supplier, 3) contract between EMED and supplier, 4)

UNEP Budget Line		List of Goods and Services required	Budget	Year {Note 1}	Brief description of anticipated procurement process {Note 2}
		8000, VA/7200W			supply and installation
4210	Hydrometry equipment	• Mini current meter with aluminum propeller Θ 50mm (pitch 250 mm), measuring range 0.03 to m/sec. Complete set with digital counter (Z6 basic version), estension rods (1.5 m) with dm graduation, 4 m cable and case. Incl. Oil and Tools • Bailer sampler, stainless steel, standard set for sampling to a depth pf20 m • Sounding apparatus with acoustic and light signal, electrode 14 mm, plunging volume only 0.8 cm3, for all kinds of ground water (sensitivity 50 microS/cm to 180 milliS/cm), measuring range 30m, reading accuracy 1 cm. • Automaton for electrical protection water diverter for Pedroso Mamposton	55,000	3,4	Procurement process through EMED: 1) call for tenders, 2) selection of supplier, 3) contract between EMED and supplier, 4) supply and installation
4211	Biogas systems		15,000	2	Procurement process through EMED: 1) call for tenders, 2) selection of supplier, 3) contract between EMED and supplier, 4) supply and installation
	GRAND TOTAL		**1,794,648**		

Note 1 - Year when goods/services will be procured

Note 2 - Based on your organisation's procurement procedures, and in compliance with UNEP rules and procedures, briefly explain how the service provider/consultant/vendor will be selected

Appendix 15: Description of Project Demonstration Sites and Map of Intervention Areas

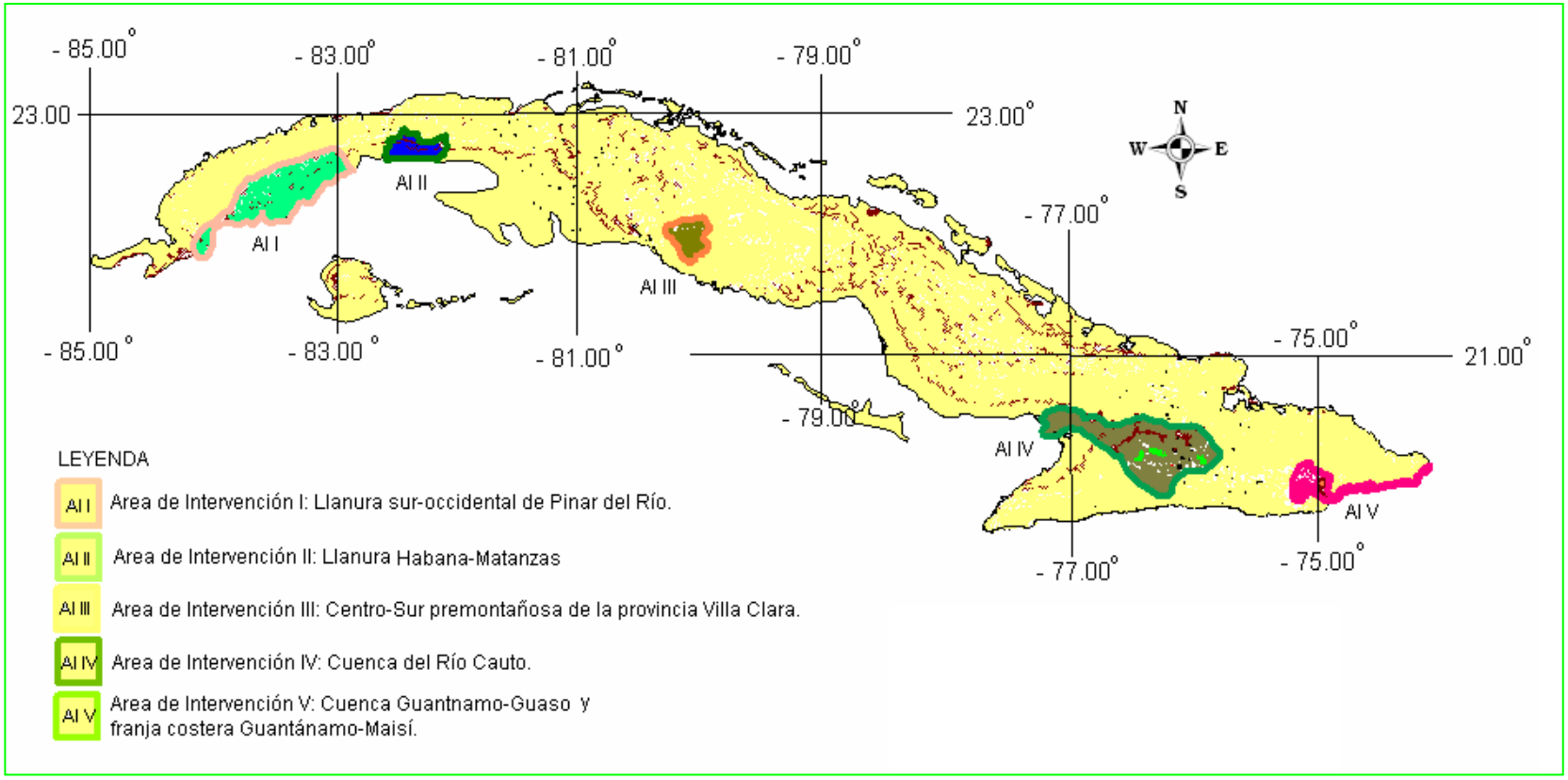
Intervention Areas	**Maisí-Guantánamo Coastal Plain**	
Main processes of degradation of the land in the Area	Highly degraded Ecosystem. Semi-arid climate	
Intervention Site	Cooperative for Credits and Services Enrique Campos Matabajo	Basic Unit of Cooperative Production “Eliomar Noa”
Location	Guantánamo, Province of Guantánamo	Imías, Province of Guantánamo
Extension	109 ha	1.772 ha
Population	2000	300 inhabitants
Main Characteristics	The landscape is mainly characterized by dry clay plains, dry hills with a sparse forest cover and xerophytic thorny vegetation. The water table is at least 2 m and has a degraded soil structure caused by improper handling. The rise in salinity can be clearly seen at the edges of the fields and the tops of the cultivated furrows. The area is also highly susceptible to flooding with low internal drainage and surface drainage system clogged. The following problems and weaknesses affect the area: 1) very fragile ecosystem, with a tendency to the occurrence of salinity, 2) Improper management of soil and water, leading to structural degradation, 3) Improper management of vegetation, 4) compaction due to tillage practices; 5) drainage network that does not work properly due to lack of maintenance; 6) high levels of salt in the water table; 8) little rain and high evaporation rates.	The UBPC Eliomar Noa is located on the strip between the Sierra del Purial and the south coast in an area known as Los Cerezos. The climate in the region is semi-arid or steppe (Bs). In the limits of the UBPC two sources of ground and surface water are identified. Surface currents are only active in the rainy season. The UBPC has a rural aqueduct "Los Cerezos" built in 2003, with a pumping station, conducting pipes and networks, to benefit the settlement of 300 inhabitants. An “Alpine” hydraulic infrastructure acts as intake and is located upstream of the Tacre River, with a conductive cast iron pipe of 3 Km and 300 mm diameter with a flow during drought seasons of 47 liters per second, for water supply to people, animals, and irrigation farming, which is reduced to 17l/seg due to obstructions by solids in the conductive pipes and damages during the rainy season. The site has a potential area to immediately irrigate around 30 ha in the flat area, engaged in the production of vegetables, bananas, fodder and fruit. The main problems are: 1) In dry years the effects on the water supply are critical causing losses in cattle stocks; 2) Deforestation, leading to strong erosion processes; 3) Difficult access, especially during the rainy season; and 6) Limited participation of women in the production process.
Key Stakeholders	CCS Enrique Campos Matabajo, ANAP; Provincial Land Office; Representatives of ANAP, INRH, Minag, CGB Local Coordinator: INRH Representative.	UBPC Eliomar Noa, Municipal Land Office of Imias, Representatives of ANAP, INRH, Minag, CGB, FMC Local Coordinator: Municipal Land Office of Imias

Intervention Areas	**Pinar del Rio Southern Plain**		
Main Processes of land degradation in the Area	Highly degraded Ecosystem and extreme climate events		
Intervention Site	Cooperative for Credit and Services Raúl Gomez García Farm Manolo	Agroindustrial Company Cubaquivir. Business Base Unit El Algodón (UEB). Los Palacios. Farm Julio	Agricultural Production Cooperative Jesus Suarez Soca,
Location	Sandino Town, Province Pinar del Rio	Los Palacios, Province Pinar del Rio	Consolación del Sur, Province Pinar del Rio
Extension	13.42 ha	40 ha	623 ha
Population	362	1150	2634
Main Characteristics	This property is located at the western end of Cuba, one of the areas of Cuba that is most regularly affected by hurricanes. The soils are very permeable, relatively low and rocky, with limited capacity for water retention. The source of drinking and irrigation water is an underground aquifer with high degree of connectivity with the sea making it highly vulnerable to saltwater intrusion in the case of prolonged droughts and when they are over-exploited. The main problems on this site are related to: i) the limited availability of water (associated with inefficient irrigation systems, high risk of soil salinization and limited knowledge for the management of water), ii) the use of inappropriate practices of cultivation (for example by plowing through contours) and inadequate crop rotation.	This demonstration site is located in the center of the south -western part of Pinar del Río plain in an area highly affected by human activity. The area has been modified for the development of a state enterprise dedicated to the production of rice, and was completely cleared for this purpose. Then, due to the reduction of the production potential, the area was transformed into a area for production of cotton and now this land has become part of a new company involved in the production of root crops, vegetables, fruit and cattle. Abandoned areas with low productivity have been divided into farms that have been distributed to individual farmers with the aim of repopulating the area. The main problems are: i) Poor drainage: the largest network of drainage channels has become irreparable and there is no network of drains at the field level, ii) Depopulation and limited availability of jobs at the rural level; iii) limited knowledge of SLM concepts and practices; iv) limited access during rainy seasons, v) compacted and structurally degraded soils with low fertility and high acidity, vi) Degradation of vegetation and invasion of undesirable species.	This site is located in the southeastern plains of Pinar del Río. The farm has a total area of 623 ha, including 134 ha of various crops, 27ha devoted to livestock, 70ha of tobacco and 250 ha of rural land and forest. The key problems include: 1) Water erosion; 2) Soil acidity; 3) Loss of soil fertility; 4) Insufficient forest cover, 5) Limited access to water for irrigation; 6) Problems with the quality of the community´s drinking water; 7) Low agricultural productivity; 8) limited awareness among staff on SLM.
Key Stakeholders	CCS Raúl Gómez García; Representatives of ANAP, INRH, Minag; CGB Local Coordinator: Representative of INRH	Empresa Agroindustrial Cubaquivir, Representatives of ANAP, INRH, Minag; CGB, FMC Local Coordinator: Agroindustrial Company Cubaquivir	CPA Jesús Suárez Soca, Representatives of ANAP,INRH, Minag; CGB; FMC, Local Coordinator: IS Representative

Intervention Areas	**Havana Matanzas Plain**	
Main processes of degradation of the land in the Area	Slightly degraded Ecosystem. Deficient water management.	
Intervention Site	Agricultural Company Guira de Melena: • Wells in operation in the prívate area. • Swine Breeding Company Camilo Cienfuegos Havana UEB • Monitoring the impact of recharge areas Alquizar town.	State Company for Hydraulics use and Guines Irrigation community
Location	Guira de Melena town, Artemisa Province	San Jose town, Mayabeque Province
Extension	17800	8000 ha
Population	38.989	65.797 inhabitants
Main Characteristics	Soils considered as the most productive in Cuba. In the territory there are no rivers, about 2,000 ha are irrigated with surface water and 4,017 ha with groundwater. The whole area is situated on an overexploited carsic aquifer and opened to the sea. It shows severe symptoms of contamination due to salt intrusion, and therefore requires a careful study of its water balance. Surface waters come from the Hydraulic Complex Mamposton Pedroso. It is a complex system with over 20 miles of canals and 152 km of pipes and a set of mechanized techniques. The infrastructure and resources to achieve the efficiency of the project are not complete. In all Güira there are 57 center-pivot machines 10 Volzhankas (lateral rolling), many portable systems for less than 15 ha, and most of the farms with areas smaller than 10ha are irrigated by furrow irrigation techniques. Lands in site are both state and privately owned, with the presence of UPBC and CCSF. Güira Melena guarantees 85% of the production of food and vegetable that is supplied to the city of Havana. 50-55% of potato production in the country is grown there, also a major producer of banana, sweet potato, garlic and other vegetables, corn, beans and fruit. Agricultural activities are generating jobs and resources for 90% of the population.	The EAH Mayabeque maintains a water infrastructure that stores as a whole a total volume of 293.70 million m3. It plays an important role in agricultural production in the country, benefiting 1,631 ha under irrigation in the Mayabeque Province for the production of various grains, meats and vegetable crops and 2,685 ha in Artemisa where between 75 and 80 % of the potato of the country is produced, as well as areas of the irrigation community of Guines. Additionally, El Gato and South basin aqueducts provide drinking water to over 200,000 people in the capital. The hydraulic complex presents several problems: i) Losses due to insufficient minor and constructive electromechanical maintenance; ii) Risk of damage to the water infrastructure due to lack of essential material resources to ensure efficiency and proper operation and exploitation of works; iii) Insufficient information of the actual consumption by users due to lack of communication and verification means or equipment; iv) Insecurity on salt tenors in the coastal zone; v) Difficulties in decision-making related to exploitation due to lack of transportation; vi) Lack of updating of hydrological and hydrogeological studies in the area of intervention; vii) Inefficiency in supply of services and provision of water for the population, agriculture and industry viii) Insufficient monitoring of water quality due to lack of equipment; ix) Conflicts over water in the town of Guines causing dissatisfaction of customers; x) Insufficient environmental education.
Key Stakeholders	Agricultural Company Güira de Melene, Representative of CITMA Güira town, Representatives of municipal ANAP, Representative of INRH, Experimental Station Güira de Melene, Artemisa´s irrigation chief Local coordinator: Representantive of municipal CITMA Güira	Representative of CITMA Güines, Representatives of municipal ANAP, Representative of INRH, Mayabeque´s irrigation chief . Local coordinator: Technical Office of the Pedroso Mamposton Hydraulic Complex.

Intervention Areas	**Cauto Basin**		
Main Processes of land degradation in the Area	Degraded Ecosystem		
Intervention Site	Strengthened Cooperative for Credits and Services General Ramos "El Horno"	Strengthened Cooperative for Credits y Services "Cuba Va"	CCSF Hermes Rondón Cauto Basin
Location	Bayamo town, Granma Province	Majibacoa town, Las Tunas Province	Rio Cauto town, Granma Province
Extension	302,24 ha- 85% irrigable	625 ha	4.000 ha
Population	1.000 inhabitants	Direct Beneficiaries: 740 Indirect: 43.000	2000 inhabitants
Main Characteristics	The CCSF General Ramos productive unit consists of 82 farms. The land is state-owned, belonging to the Tobacco Collection and Processing Company. It presents soil degradation by erosion, effective depth and low fertility, among others, presenting topography from flat to strongly undulated. Its agricultural production is diversified (tobacco, several crops, livestock, forestry, fruit and others. The nearby Cautillo dam is operated by the province of Granma. The main source is groundwater, there are 52 wells, which are sufficient for irrigation during a drought but most of these wells dry out during the drought season. The construction of a conductive pipe of 3 Km is in project. Parallel to this conservation polygon, two extensions thereof are being developed where one lies in the mountain in the coffee growing area and the other polygon in rice cultivation area where salinity develops; both of these polygons will contribute to the replication of actions.	The Cooperative has several crops: fruit, sugar cane, vegetables, and livestock. The crop yields are affected by land degradation and persistent drought. The areas devoted to pasture are depressed during the dry season for raising cattle and sheep. Only 50% of farmers have irrigation systems, covering 38% of the land under cultivation. Groundwater is used but the quality of irrigation water is not evaluated and controlled. Key issues: i) Insufficient and obsolete machinery and implements; ii) Limited knowledge of SLM; iii) Limited participation of women; iv) aquifer and soil salinization; iv) Limited availability of groundwater and surface water; v) Persistent meteorological drought vi) Natural resources are not monitored vii) Insufficient environmental protection measures; viii) Lack of an early warning system for agricultural production.	The cooperative has 365 members (of which 33 women) with 1,652 ha of sugarcane and 1,882 ha of rice and several other crops and livestock. Of the total area under cultivation, 1,449 ha are affected by salinity (36%) mostly cultivated with rice. Irrigation is carried out through the surface method without pumping, using channels with little or no regulation, which leads to a low value of conveyance, implementation and water use efficiency, which together with poor water management has led to the current state of salinization.
Key Stakeholders	CCSF General Ramos "El Horno"; Representatives of the Municipal ANAP, INRH, IAgric, CITMA, Soil Coordinador Local: Soil Representative	CCSF "Cuba Va"; Representantes de la ANAP Municipal, INRH, IAgric, CITMA, Suelo Local Coordinator: Representative of CITMA	CCSF Hermes Rondón; Representatives of ANAP, INRH, IAgric, CITMA, Soil Local coordinator: Representative of IAgric

Map 1 – Project Intervention Areas



Appendix 16: Checklist – Environmental and Social Issues

Please note that as part of the GEFs evolving Fiduciary Standards that Implementing Agencies have to meet is the need to address 'Environmental and Social Safeguards'.

To address this requirement UNEP-DGEF has developed this checklist with the following guidance:

1. Initially filled in during concept development to help guide in the identification of possible risks and activities that will need to be included in the project design.
2. A completed checklist should accompany the PIF
3. Check list reviewed during PPG phase and updated as required
4. Final check list submitted with Project Package clearly showing what activities are being undertaken to address issues identified

Project Title:	Capacity Building for Information Coordination and Monitoring Systems/SLM in Areas with Water Resource Management Problems		
GEF project ID and UNEP ID/IMIS Number		***Version of checklist***	***Project Phase - Requesting CEO Endorsement***
Project status (preparation, implementation, MTE/MTR, TE)	***Preparation***	***Date of this version:***	***20/01/2014***
Checklist prepared by (Name, Title, and Institution)	Dra. Gisela Alonso Domínguez Presidenta AMA/CITMA.		

In completing the checklist both short- and long-term impact shall be considered.

Section A: Project location:

If negative impact is identified or anticipated the Comment/Explanation field needs to include: Project stage for addressing the issue; Responsibility for addressing the issue; Budget implications, and other comments.

	Yes/No/N.A.	*Comment/explanation*
- Is the project area in or close to -		
- densely populated area	Yes	The project will intervene in rural areas. No negative impacts anticipated.
- cultural heritage site	Yes	
- protected area	Yes	
- wetland	Yes	
- mangrove	Yes	
- estuarine	Yes	
- buffer zone of protected area	Yes	
- special area for protection of biodiversity	Yes	
- Will project require temporary or permanent support facilities?	No	The project will be executed by the Ministry of Science, Technology and Environment

		(CITMA) through two Project Management Offices located one in the National Hydraulic Resources Institute (INRH) and the other in the Agricultural Institute (IAgric).
If the project is anticipated to impact any of the above areas an Environmental Survey will be needed to determine if the project is in conflict with the protection of the area or if it will cause significant disturbance to the area.		

Section B: Environmental impacts, i.e.

If negative impact is identified or anticipated the Comment/Explanation field needs to include: Project stage for addressing the issue; Responsibility for addressing the issue; Budget implications, and other comments.

	Yes/No/N.A.	*Comment/explanation*
- Are ecosystems related to project fragile or degraded?	Yes	According to official data, 76.8% of productive lands in Cuba are affected by land degradation and desertification processes. The project will address land degradation issues through capacity building and promotion of demonstration best practices to halt, prevent and remediate land degradation in key areas of the country.
- Will project cause any loss of precious ecology, ecological, and economic functions due to construction of infrastructure?	No	
- Will project cause impairment of ecological opportunities?	No	
- Will project cause increase in peak and flood flows? (including from temporary or permanent waste waters)	No	
- Will project cause air, soil or water pollution?	No	
- Will project cause soil erosion and siltation?	No	As stated in the expected outcomes and project objective, the project will reverse land degradation trends
- Will project cause increased waste production?	No	
- Will project cause Hazardous Waste production?	No	
- Will project cause threat to local ecosystems due to invasive species?	No	
- Will project cause Greenhouse Gas Emissions?	No	
- Other environmental issues, e.g. noise and traffic	No	
Only if it can be carefully justified that any negative impact from the project can be avoided or mitigated satisfactorily both in the short and long-term, can the project go ahead.		

Section C: Social impacts

If negative impact is identified or anticipated the Comment/Explanation field needs to include: Project stage for addressing the issue; Responsibility for addressing the issue; Budget implications, and other comments.

	Yes/No/N.A.	*Comment/explanation*
- Does the project respect internationally proclaimed human rights including dignity, cultural property and uniqueness and rights of indigenous people?	Yes	The project will assist Cuba in strengthening capacities of the national and local governments and stakeholders to reverse land degradation trends, ensuring sustained ecosystem services and meeting national priorities and goals for food production and water supply/quality
- Are property rights on resources such as land tenure recognized by the existing laws in affected countries?	Yes	
- Will the project cause social problems and conflicts related to land tenure and access to resources?	No	
- Does the project incorporate measures to allow affected stakeholders' information and consultation?	Yes	The project emphasizes stakeholder involvement and consultation to identify and implement best practices for sustainable land management, emphasizing in management of water resources for agricultural production
- Will the project affect the state of the targeted country's (-ies') institutional context?	Yes	The project will strengthen capacities of national institutions involved in land degradation issues and will enhance collaboration, information sharing and networking amongst key sectors/institutions
- Will the project cause change to beneficial uses of land or resources?(incl. loss of downstream beneficial uses (water supply or fisheries)?	No	
- Will the project cause technology or land use modification that may change present social and economic activities?	Yes	The project will assess environmentally sound practices and outline measures for development and/or transfer of these practices, subsequently, promoting technology change to reverse the current land degradation trends (e.g. soil erosion, salinization, loss of fertility)
- Will the project cause dislocation or involuntary resettlement of people?	No	
- Will the project cause uncontrolled in-migration (short- and long-term) with opening of roads to areas and possible overloading of social infrastructure?	No	
- Will the project cause increased local or regional unemployment?	No	
- Does the project include measures to avoid forced or child labour?	Yes	

- Does the project include measures to ensure a safe and healthy working environment for workers employed as part of the project?	Yes	
- Will the project cause impairment of recreational opportunities?	No	
- Will the project cause impairment of indigenous people's livelihoods or belief systems?	No	
- Will the project cause disproportionate impact to women or other disadvantaged or vulnerable groups?	No	
- Will the project involve and or be complicit in the alteration, damage or removal of any critical cultural heritage?	No	
- Does the project include measures to avoid corruption?	Yes	Application of UNEP's Fiduciary standards
Only if it can be carefully justified that any negative impact from the project can be avoided or mitigated satisfactorily both in the short and long-term, can the project go ahead.		

Section D: Other considerations

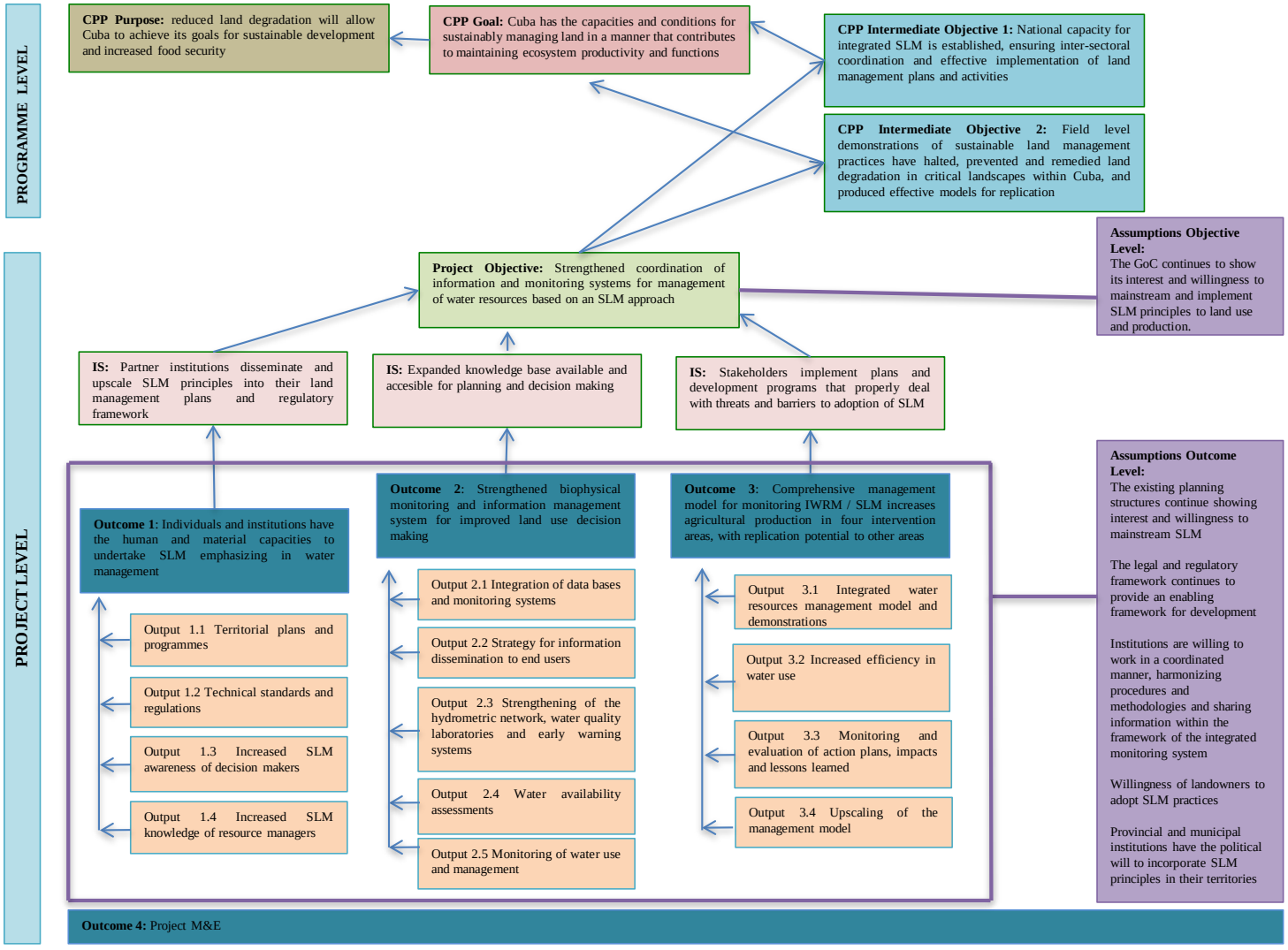
If negative impact is identified or anticipated the Comment/Explanation field needs to include: Project stage for addressing the issue; Responsibility for addressing the issue; Budget implications, and other comments.

	Yes/No/N.A.	*Comment/explanation*
- Does national regulation in affected country (-ies) require EIA and/or ESIA for this type of activity?	No	Not for project interventions and activities.
- Is there national capacity to ensure a sound implementation of EIA and/or SIA requirements present in affected country (-ies)?	Yes	
- Is the project addressing issues, which are already addressed by other alternative approaches and projects?	No	The project is one of five projects comprised within the GEF Country Partnership Programme
- Will the project components generate or contribute to cumulative or long-term environmental or social impacts?	Yes	Only positive impacts are envisioned as shown in the relevant indicators in the project framework as well as the ones in the GEF LD Tracking Tool
- Is it possible to isolate the impact from this project to monitor E&S impact?	Yes	The Results Framework (Appendix 3 of the Project Document) identifies the project outcomes, outputs and the relevant indicators to measure project performance and impact.

Appendix 17: LD Tracking Tool

(see attached Excel file)

Appendix 18: Theory of Change



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