



COUNTRY PILOT PARTNERSHIPS ON SLM PROGRAMMING FRAMEWORK GEF COUNCIL SUBMISSION

LEAD AGENCY'S ID: PIMS 3005
GEFSEC ID: 3427
COUNTRY: Cuba
TITLE: Supporting Implementation of the Cuban National Programme to Combat Desertification and drought (NPCDD)
DURATION: 10 years
GEF FOCAL AREA: Land Degradation
GEF OPERATIONAL PROGRAM: OP15 (Sustainable Land Management)
Lead CPP GEF IA: UNDP
GEF Agencies: UNDP, UNEP, FAO
GEF STRATEGIC PRIORITY: SLM1, SLM2
Pipeline Entry Date: Pipeline 15 March 2004
IA FEE: 900,000

FINANCING PLAN (US\$)	
GEF PROJECT/COMPONENT	
Project	9,652,500
PDF A	
PDF B	347,500
PDF C	
SUB-TOTAL GEF	10,000,000
CO-FINANCING*	
GEF Agency	
Government	76,806,474
Bilateral	
NGOs	2,631,025
Others	
Sub-Total Co-financing:	79,437,499
Total Project Financing:	89,437,499
FINANCING FOR ASSOCIATED ACTIVITIES IF ANY:	
LEVERAGED RESOURCES IF ANY:	

*Details provided under the Financial Modality and Cost Effectiveness section

CONTRIBUTION TO KEY INDICATORS OF THE BUSINESS PLAN: 10,953 km² of land under sustainable management.

RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENT(S):

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Date: August 31, 2005

Approved on behalf of the *UNDP*. This proposal has been prepared in accordance with GEF policies and procedures and meets the standards of the GEF Project Review Criteria for work program inclusion.

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Acronyms

ACPA	Cuban Association for Animal Production
ACTAF	Cuban Association of Agricultural and Forestry Technicians
AMA	Environment Agency
ANAP	National Association of Small Farmers
APR	Annual Programme Report
AWP	Annual Work Plan
CENHICA	Center of Hygiene and Water Quality
CIAL	Centre for Local Research and Learning
CIDA	Canadian International Development Agency
CIGEA	Environmental Education, Management and Information Centre
CITMA	Ministry of Science, Technology and the Environment
CPP	Country Pilot Partnership
DNRD	National Directorate of Irrigation and Drainage
ECA	Field School
EXA	Executing Agency
FMA	National Environment Fund
FMC	Cuban Women's Federation
FONADEF	National Fund for Forestry Development
GoC	Government of Cuba
IA	Implementing Agency
IIF	Institute of Forestry Research
IIHLD	Institute of Horticultural Research
IIMA	Institute of Agricultural Mechanization
IIRD	Irrigation and Drainage Research Institute
INICA	National Institute for Sugar Cane Research
INRH	National Institute for Hydrological Resources
INSMET	National Meteorological Institute
IFAD	International Fund for Agricultural Development
IPF	Institute for Physical Planning
IR	Inception Report
IW	Inception Workshop
LAC	Latin America and the Caribbean
LCT	Local Coordination Teams
LD	Land Degradation
M&E	Monitoring and Evaluation
MEP	Ministry of Economy and Planning
MES	Ministry of Higher Education
MFP	Ministry of Finance and Planning
MINAGRI	Ministry of Agriculture
MINAZ	Sugar Ministry
MINBAS	Ministry of Basic Industry
MINVEC	Ministry for Foreign Investment and Cooperation
NES	National Environment Strategy
NGCDD	National Group to Combat Desertification and Drought
NPCDD	National Action Programme to Combat Desertification and Drought
NSC	National Steering Committee
PGOTU	General Plan for Territorial Land Use Planning and Urban Development
PIR	Programme Implementation Reviews
RCU	Regional Coordinating Unit
SLM	Sustainable Land Management
TPR	Tripartite Project/Programme Review
TTR	Terminal Tripartite Review
TUDD	Technical Unit for Desertification and Drought
UNDP-CO	United Nations Development Programme Country Office

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1. PROGRAMME SUMMARY

a. PROGRAMME RATIONALE, OBJECTIVES, OUTPUTS/OUTCOMES, AND ACTIVITIES.

National context

Geography and climate

1. The main island of Cuba is the largest island in the West Indies, with a total land area of 104,945 km². The total area of the country as a whole, including the Isla de la Juventud (2,200 km²) and around 4,195 keys and small islands, is 110,860 km². The country lies between latitudes 20° 12' 36" and 23° 17' 09"N and longitudes 80° 53' 55" and 84° 57' 54"W. The topography is mostly flat to rolling, with rugged hills and mountains in the southeast and south-central area. The Cuban mountain range system is formed by four massifs covering 1,959,400 ha, equivalent to 18% of the surface of the Cuban archipelago. The surface cover of Cuba consists of cropland and crop/natural vegetation mosaics (44%), shrub lands, savanna and grasslands (24%), forests (23%) and wetlands (9%) (Source: Earth trends 2003).

2. Mean annual rainfall is 1375 mm, with a pronounced seasonal variation between the driest and wettest months. Rainfall levels vary widely across the country, from 300 mm annually in the Guantánamo area of the south to more than 3,000 mm in the north. Mean annual temperature is 25°C. Over the last three decades, significant variations have been detected in the country's climatic patterns (Centella et al 1997). Over the last 50 years the temperature has increased an average of 0.5°C. Climate models estimate that the temperature increase in Cuba will be between 1.6°C and 2.5°C by 2100 (O'Brien 2000). An overall increase in temperature has been accompanied by a reduction in annual rainfall totals of 10-20% and an increase in inter-annual variation in rainfall of 5-10%, with reduced rainfall in the rainy season and increased rainfall in the dry season (Lapinel et al 1993). At the same time, the frequency of unseasonal droughts has increased. Following a relatively quiet period in the 1970s and 1980s, the incidence of hurricanes in the Caribbean is on the increase, with an estimated frequency of 1.3 hurricanes per year in the northern Caribbean compared to only 0.4 per year that occurred between 1971 and 1994 (Goldenberg et al, 2001).

Socioeconomic and demographic context

3. The total population of Cuba in 2004 was 11.24 million. The annual growth rate of 0.7% over the 1975-2002 periods is predicted to drop sharply to 0.2% in the period up to 2015, partly due to reduced fertility rates which have dropped from 3.5 births per woman in 1970-75 to 1.6 in 2000-05. Urban population in 2002 made up 75.5% of the total (around 8.5 million, of which 2.2 million live in the capital Havana), compared to 64.2% in 1975; this is predicted to increase to 78.1% by 2015 (INIE 2004, ONE 2004).

4. Human development levels in Cuba are relatively favorable compared to neighboring countries in the Caribbean; the Human Development Index of Cuba in 2002 was 0.809 (52nd position worldwide) compared to 0.738 in the Dominican Republic, 0.463 in Haiti and 0.764 in Jamaica (UNDP 2004). Literacy rates are high (87.3% of the population over 15 in 2001), as are rates of enrolment in education (74.1% combined enrolment in primary, secondary and tertiary education in 2001). Cuba has favorable conditions with regard to gender equity; women participate strongly in social and productive areas, making up 50% of the labor force and 60% of technical personnel, including in the agricultural sector. In some areas, such as urban agriculture, women predominate.

5. Changes in the social structure of the countryside over recent decades have been strongly linked to changes in the agricultural and agrarian context (see paragraphs 17 and 25 below). Prior to the slump of 1992 and subsequent agrarian reform of 1993, investment in integrated rural development (including processes such as technification, industrialization, urbanization and the introduction of productive and social services) had resulted in a diversification of the social makeup of agricultural areas. The rural population decreased in numbers, while towards the end of the 1980s gaps opened in its social composition as many agricultural workers turned to smallholding activities. The development of market influences and the increasing scarcity of foodstuffs in subsequent years led to increasing socio-economic differentiation. Following earlier periods of decline, cooperative forms of organization have gained strength.

Regulatory and policy context

6. The key legislative instrument in Cuba which forms the basis for the regulation of the management of natural resources is the **Environmental Law** (No. 81 of 1997), which includes provisions for ensuring the compatibility between resource management activities and land conditions and capacities; the sustainable production of agricultural crops destined for human consumption or export; the avoidance of erosion, salinity buildup and other forms of degradation; and the application of soil conservation and rehabilitation activities. **Decree No. 179 of 1993** on the protection, use and conservation of soils provides more specific regulation, including for example additional norms on the quality of water that may be used for irrigation, and the application of fertilizers. The **Mining Law** (No. 76 of 1995) defines the mining policy and the related regulations, including provision for the closing of mines which lead to unacceptable environmental impact and for the restoration and rehabilitation of areas affected by mines. **Decree 138 of 1993 on Terrestrial Waters** regulates the use, control and protection of terrestrial waters. Legislation related to the conservation of hydrological resources and soils brings includes a range of different laws and resolutions on terrestrial waters (1993), the pricing of irrigation water (1999) and the protection and rational use of hydrological resources (1995). Important complementary instruments are Decrees 200 and 201, the first of which provides regulations for the Environmental Law No. 81 and the second of which includes provision for the National System of Protected Areas.

7. Cuba prepared its **National Strategy** and **National Action Plan** (NAP) for the Combat of Desertification and Drought in 2000. The analyses presented in the National Strategy document (CITMA 2000) identify the principal causes of desertification as the following: deforestation, inappropriate establishment of crops and plantations, inadequate management of agricultural exploitation technologies, incorrect utilization of irrigated lands and changes of land use. The general objective of the National Strategy is “to prevent and control the causes which contribute to the development of processes leading to desertification, through the application of necessary and adequate practical measures which allow these processes to be stopped and reversed, to mitigate the effects of drought and to contribute to the sustainable development of the affected zones, with the aim of improving the way of life of their inhabitants”. The principal elements of the NAP are i) the economic and social development of the zones affected by processes leading to desertification; ii) the perfection and application of juridical and administrative instruments for the application, monitoring and control of the progress of the NAP; iii) the integration and coordination of policies and strategies; iv) information, environmental education and citizen participation; v) scientific research and technological innovation; vi) institutional strengthening and vii) international cooperation.

8. The basis for legislation in the forestry sector is the **Forestry Law** (Law 85(L)) of 1998. This provides for the promotion and provision of incentives for forestry ‘repopulation’ with economic, protective and social objectives; conservation of the biodiversity associated with forest ecosystems; and the protection of forests against clearance, unplanned felling, fires, grazing, pests and diseases and other damaging factors. In accordance with the provisions of this law, the National Fund for Forestry Development (FONADEF) was established in July 2000, which provides finance to individuals and organizations for forestry management activities.

9. Cuba’s **National Forestry Action Plan** was issued in September 1992 and addressed the following issues:

- re-establishment of forest cover and reconstruction of degraded natural forests, with a view to protection and production;
- sustainable forest resources management for the production of timber products and the protection of catchments areas and fragile ecosystems;
- an increase and diversification in production, with the development of integrated forest industries;
- intensive use of the forest biomass to produce charcoal and fuel wood;
- rehabilitation of degraded ecosystems;
- application of management techniques to protected and special areas for the benefit of the local population and to protect biodiversity;
- Capacity building for research and training institutions.

10. The **Turquino Manatí Plan** was created in 1995, with the objective of achieving integrated and sustainable development in mountain regions. The Plan covers around 18% of the national territory and around 6% of the national population. From an environmental standpoint, the Plan seeks to promote the expansion of sustainable

use practices, forest protection, soil conservation, waste recycling and the application of agricultural, livestock rising and forestry practices aimed at increasing food production and the livelihood sustainability of the local population. Created as part of the National Commission for the Turquino-Manatí Plan, the provincial and municipal Reforestation Commissions implement the National Reforestation Program in their respective areas. Similarly, the Integrated Development Program for the Highlands: Turquino-Manatí Plan assists in the development of economically productive initiatives as well as the protection and conservation of the forests in the four mountainous regions of the island and the Ciénaga de Zapata wetlands.

Institutional context

11. The Environmental Law of 1997 also defines the **Ministry of Agriculture (MINAGRI)** as the lead institution responsible for administering, conserving and improving agricultural and forestry soils and ensuring compliance, in coordination with the **Ministry of Science, Technology and Environment (CITMA)**, the **Ministry of Basic Industry (MINBAS)**, the **Ministry of Sugar (MINAZ)** and other competent organizations.

12. The institutions responsible for hydrological resources and irrigation development are the **National Institute of Hydrological Resources (INRH)**, the **Irrigation and Drainage Research Institute (IIRD)** of MINAGRI and the **National Directorate of Irrigation and Drainage (DNRD)** of MINAZ.

13. The Forestry Law of 1998 provided for the establishment of the **National Forestry Directorate**, and **State Forest Services** as at provincial and municipal levels, with responsibilities being decentralized in each territory. The **National Protected Areas System** is led by CITMA. In addition, the **Corps of Forest Guards** of the Ministry of the Interior is responsible for forest protection at local level.

Planning mechanisms

14. Responsibility for land use planning is shared between a number of institutions. The **Institute of Physical Planning** has overall responsibility for defining allowable land uses, evaluating the proposals of different stakeholders and emitting permits accordingly. Agricultural uses are subject to certification by the **Ministry of Agriculture (MINAGRI)**, through the Soils Institute. The **Ministry of Sugar (MINAZ)** evaluates the physical potential of the areas under its control and on the basis of this determines those areas which should be used for sugar cane, those destined for other uses such as ranching, forestry and other crops, and those which should not be cultivated. The **Ministry of Basic Industry (MINBAS)** defines areas for mining activity and, with the approval of the IPF, provides for the use of such areas and their subsequent restoration. The **National Institute for Hydrological Resources (INRH)** regulates the use of waters, both superficial and subterranean, and projects, executes and exploits new reserves and reservoirs in response to changes in land use. The **Ministry of Science, Technology and Environment (CITMA)** following the recommendation of the National Council for Protected Areas is responsible for proposing protected area establishment, with the objectives of maintaining and preserving them. The planning of the management and use of coastal zones is the responsibility of CITMA. The **National Council for Hydrological Catchments** was established in 1997 with the objective of supporting the integrated environmental management of the country's main hydrological catchments.

15. At municipal level, the principal instrument for territorial land use planning is the **General Plan for Territorial Land Use Planning and Urban Development (PGOTU)**, the objectives of which in relation to soil use are to maximize the compatibility between the management of the land and its capacities and vocation, and the appropriate location of economic and social activities, taking into account environmental implications and the mitigation of disasters. These plans are developed by a Coordination Group of key institutions and the Municipal Directorates of Physical Planning. The resulting plans are subject to annual approval by the Council for Municipal Administration.

16. Planning of agricultural production is governed by the **National Economy Plan**, which is organized by the Ministry of Economy and Planning and in which MINAGRI and MINAZ define quantitative targets by crop type. These targets focus on those crops which are basic for food supply and export (tobacco, cocoa, coffee, sugar cane, rice, beans, potatoes, milk and others) and which, given their importance, require the guaranteed provision of inputs by the Government. Other minor crops, such as root crops, grains and vegetables, are planned regionally and locally in response to territorial needs. A structure exists, which spans national and local (municipal) levels, for the organization of this production through State enterprises and different forms of private production. Changes in the agrarian structure in Cuba in recent years (see paragraph 25) have been paralleled by a reduction in

the emphasis placed on centralized planning and increased incidence of market forces in the decisions of farmers regarding productive activities. Once they have fulfilled their productive obligations to the State, farmers can sow according to their needs and sell surpluses through Farmers' Agricultural Markets.

Land use and agrarian context

17. The total area of productive agricultural land in Cuba is 6,686,749 ha, equivalent to 62.7% of the total land area. Of this 55.4% is currently under production. The agricultural sector in Cuba has historically been dominated by large scale (*latifundista*) commercial production of sugar cane and has never, either before or after the 1959 Revolution, had a strongly developed smallholder sector. Even today, sugar cane accounts for almost 50% of agricultural land use (see ANNEX P). Irrigated agriculture covers around 841,000 ha, or around 12% of the total area of agricultural land. Agricultural production has experienced major fluctuations in recent years, with a negative growth of 35% between 1989-91 and 1996-8, and reductions in the production of cereals and root crops of 17% and 9% over the decade leading up to 1996-8. The most significant downturn followed the withdrawal of trade and other support from former Soviet bloc partners. Production levels of all principal crops fell by between 26.1 and 68.8% between 1990-2 and 1993.4. However within a few years production of most crops rebounded significantly, in some cases exceeding pre-slump levels. In 2004, 24% of the population was employed in agriculture, but the sector accounted for only 6.6% of Gross Domestic Product. Cuba's total renewable water resources are estimated at 38.12 km³; water withdrawal for agriculture in the year 2000 was estimated at 5.64 km³, or 15% of renewable water resources (AMA 2003).

18. Reductions in the availability of imported inputs during the 'special period' following the collapse of the Soviet bloc led the Government to launch a national effort to convert the nation's agricultural sector from high input agriculture to low input, self-reliant farming practices on an unprecedented scale (Rosset 2000). Because of the drastically reduced availability of chemical inputs, the State hurried to replace them with locally produced, and in most cases biological, substitutes. This has meant biopesticides (microbial products) and natural enemies to combat insect pests, resistant plant varieties, crop rotations and microbial antagonists to combat plant pathogens, and better rotations, and cover cropping to suppress weeds. Synthetic fertilizers were replaced by biofertilizers, earthworms, compost, other organic fertilizers, natural rock phosphate, animal and green manures, and the integration of grazing animals. In place of tractors, for which fuel, tires, and spare parts were largely unavailable, there was a sweeping return to animal traction. As a result. By mid-1995 the food shortage had been overcome, and the vast majority of the population no longer faced drastic reductions of their basic food supply. In the 1996-97 growing season Cuba recorded it's highest-ever production levels for ten of the thirteen basic food items in the Cuban diet. The production increases came primarily from small farms, and in the case of eggs and pork, from backyard production. To date 5,510 producers have formal organic certification. A proliferation of urban farmers, who produce fresh produce, has also been extremely important to the Cuban food supply; the numbers of such producers are currently estimated at almost 3,500. At the same time, national consumption of pesticides has declined from 30,000 tons annually in 1990 to 7,000 tons in 2005; of artificial fertilizers from 1,000,000 to 160,000 tons over the same period; of fuel for agriculture uses from 500,000 to 300,000 tons and of animal feed concentrate from 2,000,000 to 770,000 tons; as explained above, at the same time food security has been maintained.

19. Around 10% of the country's productive land is occupied by pasture. The land used for pasture is typically that which is unsuitable for other uses due to its low productivity (for example low fertility, topography, erosion, salinity buildup and acidity). Between the 1970s and the 1980s, Government policy was to substitute existing pastures with improved pastures, with higher productive potential but also higher input requirements in terms of water and nutrients. In common with agriculture, meat production suffered a major downturn between the 1980s and 1990s (production fell by 52% between 1989-91 and 1996-8), as resources such as irrigation water and fertilizer were dedicated to higher priority crops such as tobacco, potatoes and citrus, leading to the degradation of the artificial pastures; in addition, herd nutrition was affected by reduced access to grain which was formerly imported from Soviet bloc countries such as Poland.

20. At the beginning of the colonial era, 90% of Cuba was covered with forests (see ANNEX Q). Cutting trees for the construction of houses, buildings, and ships and the introduction of livestock and sugar cane cultivation resulted in the destruction of large areas of forests. At the beginning of the Cuban revolution in 1959, the area under forest cover was only 13.4 per cent of the total land base, a consequence of the deforestation caused by the expansion of sugar cane cultivation. By the end of 2003 the area under forest cover had risen to 2,618,700

hectares or 23.6% of the country. Of this total, 2,254,800 hectares are in native forest and 332,400 hectares are in plantations; mostly coniferous species (native *Pinus caribaea*) as well as exotic eucalyptus and casuarinas, and valuable hardwoods. In addition, there are 125,000 hectares of young plantations, less than three years of age. Based on land capability studies, it is estimated that 32% of the country is best suited for forestry purposes. Sixty percent of plantations have been established for environmental purposes, of which 41% were aimed at water and soil resources protection and 50% for watershed and coastal areas protection. Besides environmental purposes, a share of 27% of plantations is expected to produce timber and fuel wood and the remaining 13% were established for security reasons, or in urban areas. Most of plantations are state-owned and are included in medium and long-term plans (Diego Urfé et al 2000, GRC 1999). In addition, there has been a major initiative to establish integrated forest farms, with pilot experiences in Cauto catchment (source: UNDP). Families participating in this programme receive a loan according to the numbers of trees which they establish, an area of land for food production, family livestock and low cost building materials. It is estimated that plans to reforest the 70,000 ha which have been deforested to date in key catchments, and an additional 850,000 ha in areas currently used for sugar cane, will lead to an additional 142.3 million tons of CO₂ being added to Cuba's existing reserves over the next 13 years, with a value of around US \$426.9 million (assuming a price of \$3 per ton).

21. Forest products are very important to the national economy and play an important role in the production sugar, tobacco, citrus fruits, apiculture, construction, electrical and telephone services; as well as the critical role that forests play in the protection and conservation of natural resources and their contribution to improving the environment. Cuba's standing timber volume is estimated at 126 million cubic meters with an average annual increment of approximately 7.5 million cubic meters. The annual cut is of the order of 1.6 million cubic meters, of which 65 per cent is fuel wood. The state forest industry has 94 sawmills with a combined production capacity of over 230,000 cubic meters per year, the great majority of which have outdated technology. In addition, there is one wood preservation facility in Cuba with an annual capacity of 7,000 cubic meters.

22. In terms of the volumes produced and services currently provided Cuba's forestry sector accounts for only 0.6 percent of the country's gross domestic product and an average of 8.5 percent of agricultural, hunting, forestry and fishery activities in the past two years. These low figures are mainly a result of the fall in forest production since 1990; annual round wood production, for example, fell from a virtually stable level of almost 3 million m³ up until 1998, to less than 1 million m³ by 2001.

23. All forest heritage land, whether or not it has forest cover, is divided into seven established categories of forest: national park forests, recreation forests, wildlife protection and conservation forests, nature reserves, soil and water conservation forests, coastal protection forests, and production forests. Most of the forests in Cuba belong to State enterprises, while a smaller number belong to the cooperative and private sectors, although in the past three years there have been considerable modifications in the landholding system, with the usufruct of land being handed over to workers in State agricultural and livestock companies either in the form of cooperatives or as individuals (Diago Urfé 1992).

24. The nature of land use in different parts of the country is strongly dependent on local conditions of topography and climate. The extensive flat and undulating plains have traditionally been dominated by commercial, mechanized agriculture with irrigation, the principal crop here being sugar cane. Production of annual staple crops, by contrast, has tended to be carried out principally on hillsides towards the interior of the country.

25. The agrarian structure in Cuba has been subject to three major processes of reform over the last 50 years, resulting in three successive **Agrarian Reform Laws**: the first at the time of the 1959 Revolution, the second in 1963 and the third in 1993, following the withdrawal of trade support from the Soviet bloc which, coupled with the ongoing US-led blockade of the country, led to a severe economic and food crisis. The 1993 reform provided for land to be allotted under the following alternative regimes: the cooperative model (the most significant); participatory self-management in non-cooperative farms; individual management by persons or families; and a private business model. The objective of this centrally-devised reform was to create conditions which would reactivate agricultural, ranching and agro-industrial production. The scale of this reform was major: in little less than 3 years following 1993, more than 3.3 million hectares of State land were allocated to collectives and individual workers (see **ANNEX O**). Today, the cooperative is by far the dominant tenure type (see **ANNEX P**). A related policy, tried on a number of State farms before the 'special period' of economic crisis, was that of 'linking farmers to the land' (Rosset 2000). This system made small work teams directly responsible for all

aspects of production in a given parcel of land, allowing remuneration to be directly linked to productivity, and rapidly led to enormous increases in production. In general, changes from the earlier Soviet-style emphasis on large State farms, where broad-brush recipes for land management were applied across large areas, to a situation with smaller scale holdings and more direct individual linkages to the land, are very favorable for the promotion of sustainable land management.

The nature and processes of land degradation

26. The National Environment Strategy (NES) identifies land degradation as one of Cuba's five main environmental problems, with 76.8% of the productive land affected by processes leading to desertification, and the corresponding soils classified as having low to very low productivity (CITMA 1997). The remaining four problems identified in the NES also relate to land degradation directly or indirectly. These are deforestation, contamination of terrestrial and marine water, biodiversity loss and sanitation in communities.

27. Patterns of land use within the edapho-climatic and topographic conditions encountered in Cuba have led to increasing land degradation and desertification throughout Cuba. The land degradation processes described below vary widely across the country, depending largely on local variations in climate and topography which have determined both the types of land use applied and the vulnerability of land and water resources to degradation. The National Programme to Combat Desertification and Drought (NPCDD – see paragraph 168) indicates that, in 14% of the productive lands affected by desertification and drought, land degradation conditions are extreme. This is particularly the case in those areas in the low coastal plains up to 40 m.a.s.l. and those plains associated with the mountain ranges up to 500m. Additional areas have at least one of the main degradation processes significantly advanced. For example, 1.0 million hectares are affected by *salinity* (representing 14% of agricultural land); 2.9 m ha by medium to strong *erosion* (43% of agricultural land); 2.7 m ha by *bad drainage* (40% of agricultural land); 1.6 m ha by high levels of *compaction* (24% of agricultural land) 2.7m by high levels of *acidity*, pH KCL<6, (40% of agricultural land); and 4.7 m ha by *low organic material content* (70% of agricultural land) (CITMA 2000). These processes affect a range of agricultural circumstances, including mechanized and manual cultivation, irrigated and rain fed crops, permanent and shifting agriculture. Cuba has an estimated 970 reservoirs containing around 7,000 million m³, which face ever-increasing problems of sedimentation due to the high levels of soil erosion in the hydrological basins which drain into them. A number of important aquifers are affected by nitrate buildup originating from artificial fertilizers (up to 60mg/l in parts of the Havana Matanzas catchment, compared to established permissible levels of 45mg/l) (Roque et al 2005) while superficial water bodies suffer from eutrophication of the same origin.

28. The main processes which cause land degradation are anthropogenic in nature. The underlying causes and incentives which motivate these processes are discussed in the following section (see paragraphs 47-53). The occurrence and natures of these processes are strongly related to the different types of land use in the country, which in turn (as explained in paragraph 24 above) are dependent on local topographical and climatic variations. In general terms, two broad categories of landscape may be distinguished where the processes described below occur (see ANNEX K). 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. These lands present particular challenges, due both to the proportional importance of the agriculture carried out there to the country's economy, and to the range of different land degradation processes which affect them (see paragraphs 29-31). In hilly and mountainous areas (as typified by the southern part of the Villa Clara intervention area and the upper part of the Cauto catchment 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.

29. The **use of inappropriate machinery and cultivation practices in mechanized agriculture** on the flat and undulating plains, for example the use of excessively heavy tractors with inappropriate tires and ploughs, 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.

30. Another problem which is most pronounced in, but not confined to, mechanized agriculture on the plains, is **inadequate and inappropriate nutrient management**, which leads to acidification and crop failure. Cuba has

made major advances in organic agriculture in recent years, involving practices such as crop rotation, the use of 'green manure' 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 artificial fertilizers (see paragraph 18). However, although the use of artificial inputs has been significantly reduced, artificial 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 taking 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 artificial fertilizers and the difficulty in producing the vast quantities of organic fertilizer which would be needed to substitute them, mean 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 reduce levels of soil organic matter, a problem which affects 70% of agricultural land in the country.

31. It is also on the plains that irrigated agriculture is concentrated. Particularly in such areas, the **inappropriate use of irrigation** leads to depletion of aquifers, soil erosion and soil salinity buildup. In particular, the use of aspersion irrigation (rather than drip irrigation or practices aimed at conserving natural soil moisture such as mulching) is very inefficient in terms of water use, as a large proportion of the water evaporates either between the spray head and the plant, or from the plant's aerial parts, without reaching the roots. In 1996, this form of irrigation accounted for 46% of the total area of irrigation in the country (source: [FAO](#)). This form of irrigation also produces drop impact on the soil, leading to surface crusting and reduced infiltration; the erosive effects of the resulting surface runoff water are exacerbated when drainage systems are poorly planned, implemented or maintained in relation to the natural topography. The implications of inefficient water use are especially significant when irrigated agriculture is located in areas where aquifers are already depleted. The inappropriate siting of irrigated agriculture, without adequate consideration of the chemical composition of the water used, can also lead to soil salinity buildup when the water used is saline in nature. Among the intervention areas selected for inclusion in the CPP, these processes are particularly pronounced in the south-western lowlands of Pinar Del Río, where soil salinity buildup is exacerbated by intrusion of saltwater of marine origin, and Guantanamo, where there are problems of inadequate drainage. An additional problem in the Havana Matanzas intervention area is the deterioration of the existing irrigation and drainage infrastructure.

32. The **excessive use of monocultures** is most obvious in the case of sugar cane, which occupies almost 50% of agricultural land in Cuba, most notably on the plains. Such practices tend to place excessive demands on available soil nutrient reserves, as the rooting systems of such uniform crops only access a limited stratum of the soil, and the natural processes of nutrient cycling typically associated with systems with higher levels of structural and species diversity are inhibited. The problem is not, however, limited to the plains or to sugar cane plantations; in the absence of an adequate under-storey, mono-specific timber plantations on hill lands can lead to high levels of rain-splash impact due to the concentration of rainfall on their leaves and, despite commonly being established with soil protection at least partly in mind (see paragraph 20), can actually exacerbate problems of soil erosion.

33. On the steep slopes that dominate the interior of the country, for example in the centre-south of Villa Clara, **poor soil and vegetation management practices** in shifting agriculture expose the soil to rainfall impact, degradation of surface layers, reduced infiltration, increased runoff and loss of rooting matter in the soil, leading to sheet, rill and gully erosion, reduced aquifer recharge and limited soil moisture levels. Increases in the intensity of production, in the absence of appropriate nutrient management, lead to losses of soil fertility and organic matter content.

34. **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 which protects the soil against raindrop impact, leading to surface crusting, reduced infiltration and increased erosive cross-surface flow. It also affects soil nutrient status by leading to the loss of soil carbon and nitrogen. Soil degradation as a result of the inappropriate fire is a particularly pronounced problem in the Cauto, Villa Clara and Guantánamo intervention areas.

35. **Forest fires** are also a significant cause of forest degradation and loss, particularly in areas of dry forest. Between 1961 and 1999, there was an average of 232 fires per year, affecting an average of 5630 ha annually. From the year 2000 to the present day, this rate has increased, with an average of 306 fires and 10,068 ha affected

per year. It is estimated that 89% of the fires are anthropogenic in nature (66% due to negligence and 21% deliberate). During the period January-June 2004, 412 fires occurred, affecting 11,447 ha of which 53% were natural forest. The resulting economic losses over this period are calculated at around \$16,000,000.

36. **Inappropriate crop selection** in relation to soil productive potential, relief, water and nutrient availability and climatic patterns, leads to degradation of soil nutrient status, increased pressure on scarce water resources and increased soil erosion on steep slopes due to the inadequacy of soil cover.

37. **Poor livestock management**, including the free range grazing of animals and the use of excessive stocking levels, leads to the degradation of vegetation resources through grazing and browsing, and the compaction of soils through trampling. Vegetation loss reduces the rates of rainfall infiltration and consequent recharge of aquifers and soil humidity via plants' root systems, and also removes the soil's protection against raindrop impact, leading to surface crusting which further limits infiltration (Herrero 1993). Compaction, whether through raindrop impact or trampling, reduces soil porosity and thereby inhibits the development of pasture grasses and other plants.

38. The **conversion of natural forests to other uses** and the **extraction of timber**, without adequate attention paid to sustainable yield levels and the promotion of regeneration, lead to the degradation and loss of vegetation cover, while the use of heavy machinery for extraction and transport further degrades the remaining forest and causes compaction and erosion of vulnerable forest soils. The forests where these processes occur are principally located on mountainous areas in the interior of the country; the forests on the plains have already been almost entirely eliminated over the last several hundred years. The conversion of forests to pasture is a particular problem in the Villa Clara intervention area, where it is a cause of soil erosion on steep slopes.

39. A further problem is the **unsuitable conversion of agricultural land to other uses**, such as housing. This phenomenon is particularly pronounced in the peripheries of the growing urban centers such as Havana where the conversion occasionally occurs without an adequate land suitability analysis. This process implies the permanent loss of the productive potential of agricultural land and, when it occurs on flat, fertile soils suitable for high productivity agriculture, it has a high opportunity cost in terms of lost production and results in more pressure on remaining lands which are not suitable for agriculture, therefore triggering LD processes.

40. These human factors are further exacerbated by *natural factors*. Over much of the island the climate is strongly seasonal, with a marked dry period from November to April and a rainy season from May to October. The limited rainfall during the dry season poses severe limitations on agricultural production, especially in cases where soils have limited organic matter and vegetation cover to retain and conserve humidity, and means that irrigation is necessary in order to maintain production during such dry periods, with its associated negative impacts on soil conditions and aquifers. Rainfall in the wet season, meanwhile, is often torrential, and can cause high levels of degradation of surface layers through rain-splash, and erosion (both sheet and rill) when rainfall levels exceed the soil's absorptive capacity. These impacts are especially pronounced when the island is affected by hurricanes (to which it is frequently subject due to its location within the Caribbean), which can lead to flooding and life-threatening landslides (INSMET 2001). Although production systems have to a large extent evolved to take into account these annual variations, their capacity to do so has been affected during the last three decades by frequent climatic anomalies (associated partly with the El Niño phenomenon), which have had significant socio-economic impacts. It is estimated that the gradual increase in temperatures over this period has been associated with a reduction in total annual rainfall levels of 10-20% and an increased in inter-annual variation of 5-10%. It is estimated that the droughts that have affected the country have doubled in frequency in the last sixty years.

Local and global implications of land degradation

41. At local and national levels, land degradation is affecting the livelihoods and the quality of life of a large number of Cubans, by reducing agricultural productivity, disrupting hydrological flows which are essential for drinking water supply and irrigation, and increasing vulnerability to the effects of extreme climatic events such as landslides resulting from the torrential rainfall typically associated with hurricanes (IPF 2004).

42. These phenomena also have significant impacts at global level. Land degradation is seriously disrupting ecological and hydrological processes over large areas of the island; an estimated 14% of the country is affected by desertification and drought, 1.0 million hectares are affected by *salinity buildup*, 2.9 m ha by medium to strong *erosion*, 2.7 m ha by *bad drainage*, 1.6 m ha by high levels of *compaction*, 2.7m by high levels of *acidity* and 4.7

m ha by *low organic material content* (see paragraph 27) (CITMA 2000). The severity of these processes is such that in some cases the natural resilience of ecosystems, in terms of their potential to recover from change, is being jeopardized, implying that some of these changes risk becoming permanent or semi-permanent, as confirmed by a study in 1988 which found that in dry habitats and on oligotrophic soils in Cuba, savannization is usually irreversible (Borhidi 1988). In some places the option therefore remains to prevent land degradation processes before they reach a significant level; elsewhere it is still possible to slow or halt processes already started; and in some places rehabilitation would be required if ecosystem function and productivity were to be restored (Herrero et al 1995 and CITMA 2002). The disruption of the livelihoods of local people, particularly in rural areas, is exacerbating problems of demographic instability characterized by rural depopulation and emigration, placing social and environmental pressures on the target areas for migration. Given the scale of the area and the wide range of ecosystems affected by these processes, land degradation is no longer an isolated phenomenon but rather affects the landscape as a whole across a large proportion of the island, and also processes of inter-ecosystem connectivity rather than being limited to the functioning of individual ecosystems.

43. These processes have significant implications for other GEF focal areas. Increased erosion affects globally important **biodiversity in international waters**: Cuba is one of the principal sources of sediment runoff is affecting the health of corals and other marine fauna in the Greater Antillean Marine ecoregion, one of the Global 200 highest priority ecoregions worldwide identified by the World Wildlife Fund, and whose conservation status is defined as critical/endangered (IES 1998, World Wildlife Fund 2005). Soil loss from the estimated 2.9 million hectares in Cuba which are affected seriously by erosion is estimated at an average of 15-18 tons/ha/year and in some cases may reach 40 tons/ha/year. It is estimated that around 30% of this sediment reaches the sea, equivalent to around 2 million tonnes per year.

44. Terrestrial **biodiversity** is also under severe pressure (CITMA 2002). The Cuban Moist Forests ecoregion, which has exceptionally distinctive insular flora and fauna, has lost about 70% of its original habitat, and the rate of habitat conversion from original to disturbed during 1990-1995 was estimated at about 1% per year (World Wildlife Fund 2001a). Around 90% of the original area of Cuban Dry Forest has been lost to date and replaced by anthropic vegetation or converted to savannah (World Wildlife Fund 2001b). Around 70% of the original forests cover of the Cuban Pine Forest ecoregion, which is a centre of endemism housing a high number of bird and plant species, has been altered and fires are a major threat to the remaining forest (World Wildlife Fund 2001c).

45. Although in recent years Cuba has exhibited a net positive annual change in vegetation cover as a result of reforestation efforts (see **ANNEX Q**), land degradation processes, including deforestation and fires, reduce the net benefit of these achievements in terms of national carbon reserves and **climate change**. It is estimated that 199,681 tons of CO₂ are liberated annually as a result of forest fires. In addition, the breakdown of ecosystem function as a result of land degradation reduces the potential of ecosystems to adapt to climate change processes (Álvarez 2004).

The global problem to be addressed

46. Land degradation in Cuba (including soil erosion, salinity buildup, compaction and acidification, and loss of soil organic matter and soil fertility) is jeopardizing ecosystem function, resilience and productivity over large areas of the island, leading to impacts on the livelihoods of large numbers of local people and exacerbating unsustainable demographic trends. Globally important biodiversity is also affected in the Greater Antillean Marine ecoregion within which Cuba lies (IES 1998).

Root causes of land degradation processes

Producers have limited knowledge of LD processes and LM alternatives.

47. Significant advances have been made in Cuba with the promotion of organic and sustainable agriculture. At the same time, a variety of options of sustainable land management technologies exists at both national and international levels. These include live vegetation barriers and stone barriers to arrest cross-surface erosion, the use of cover crops for soil humidity conservation and weed control, and a wide range of agro forestry options aimed at promoting processes of nutrient cycling and diversifying and stabilizing production. Although these have been applied in some areas of Cuba (see paragraph 173) the levels of adoption are still far short of those required to have a significant impact on rates of land degradation (Instituto de Suelos 2001).

48. The limited extent of adoption by farmers is partly due to their lack of awareness of the practices and their long term benefits compared to more ‘conventional’ practices (described in paragraphs 29-39) many of which offer short term cost savings but lead to negative impacts in the long term. This problem affects farmers of all scales and types, ranging from individual smallholders, through to farmer cooperatives, commercial-scale sugar producers and ranchers. Similarly, foresters tend to focus exclusively on mono-specific, single storey and single age plantations aimed at achieving maximum growth and timber production in the shortest possible period of time. Due to their growth rate and adaptability to different soils, *Pinus* spp. (principally *P. caribaea* subspecies *caribaea*) are the most widely planted species, accounting for about 43% of plantation area, followed by *Eucalyptus* spp. and *Casuarina* spp. 11% each, and other broadleaved species (32%). Other broadleaved species have been planted to produce material for furniture, sleepers and ornamental products (Diago Urfé 1992). There is a general assumption that forests plantations *per se* are a solution to environmental problems such as land degradation, and there is little awareness of the potential of poorly planned plantations (with inappropriate species-site or silviculture-site match) actively to exacerbate erosive processes and to modify natural hydrological regimes.

49. Examples of alternative practices which are not extensively applied due to limitations in awareness of their benefits include the following: intercropping with nitrogen fixing species, crop selection and rotations with fallows, for improved nutrient management; drip irrigation, cover crops, rainwater harvesting and mulch management, for improved water management; vegetative or physical barriers, cover crops, mulches and multi-storey forest plantations for improved erosion control; semi-permanent stabling, fodder banks and improved pasture grasses for improved livestock/range management (Instituto de Suelos 2001 and Herrero et al 2003).

50. In addition to limited awareness of specific SLM practices, surveys carried out during the CPP preparation phase showed that general awareness of LD issues is limited among much of the population. Local community members tend to be aware of problems that directly affect their domestic surroundings, however awareness of soil erosion, biodiversity loss, soil contamination as a problem is limited, as is awareness of the links between biophysical and socio-cultural factors.

Producers have limited ability to meet the short term costs of SLM

51. Even when producers are aware of the technical details and long-term benefits of SLM practices, they are commonly unable to apply them as some require significant levels of investment in the short term. Such short term investment, with limited immediate financial return, is commonly incompatible with the characteristics of family economies among poor rural populations; poor farmers in rural areas tend to live ‘hand to mouth’ and have little opportunity to accumulate capital (financial or physical) for such investments and such savings that are accumulated tend to be used for issues more directly related to family well-being, such as housing and basic infrastructure. At the same time, shortages of rural labor, due to processes of rural depopulation and low wage rates (Enriquez 2000) make the typically labor-intensive practices which are currently available for arresting land degradation largely impractical. Examples of high-investment practices whose application is commonly limited by these factors include reforestation (including plant production, site preparation and post-planting maintenance) and the construction of physical barriers to arrest erosive cross-surface flow. The magnitude of the incentives available for environmental conservation and reforestation, through programmes such as the National Environment Fund, the National Programme for Soil Improvement and Conservation and the Forestry Development Fund (FONADEF), is currently not sufficient to make SLM economically attractive for large numbers of producers.

Policies, plans and incentives lead producers to marginalize SLM considerations

52. Under Cuba’s centrally-planned system, individual farmers’ agricultural activities respond in large part to production needs defined by the Government and expressed in policy instruments and plans (see paragraph 16), although changes in agrarian conditions in recent years have been paralleled with increases in flexibility regarding farmers’ productive activities and targets. The centralized planning which, despite these recent changes, still has significant influence, means that the priority is placed on the delivery of the established production targets, developed in order to ensure adequate supply of foodstuffs and other essential commodities at national level and to generate foreign exchange. The Government in turn guarantees that they have market access and base prices for their products, and also provides cooperative members with direct incentives in the form of a certain percentage of

the profits derived from yields surpassing a basic level in their area. These production targets are not necessarily compatible with goals of achieving sustainable land management, in terms of the crops or volumes which farmers have to produce and may mean, for example, that producers are required to maintain in cultivation land which would otherwise be fallowed and use large volumes of water for irrigation despite diminishing aquifer resources. The State also provides direct incentives (in the form of fertilizers and other agricultural supplies) for the production of high input monocultures such as tobacco, in recognition of the importance of such crops for the national economy (although significant advances have been made in increasing the sustainability of tobacco production systems such as the complete elimination of the use of methyl bromide and the introduction of integrated pest management) The fact that the State currently provides these kinds of perverse incentives is not a reflection of a lack of commitment to SLM (which is amply demonstrated by its major advances to date in the area – see for example paragraph 18) but rather the fact that Cuban agriculture is still going through a period of change in economic and agrarian terms, and that institutional coordination and capacities remain as yet to adapt fully to these changes.

Producers' activities are ineffectively regulated

53. In theory producers are subject to centrally devised plans and a sizeable volume of environmental legislation (see paragraph 6). In practice, however, it is commonly in producers' short term individual interests to carry out land management practices which lead to land degradation, as these may increase short term returns and minimize costs and requirements. Examples include the use of burning for the clearance of fallows in order to reduce labor requirements; the clearance of new areas of forest for cultivation instead of investing in restoring the fertility of exhausted agricultural soils; the construction of roads with inadequate engineering, to gain access to timber resources or to transport agricultural goods to market; and the use of obsolete irrigation equipment or poor quality irrigation water instead of investing in updating equipment or seeking new water sources. Producers are typically able to carry out such damaging practices with little fear of sanction, due to the limited human and physical resources available to the bodies responsible for regulation (such as the corps of inspectors of MINAGRI who are charged with ensuring compliance with Degree 179 and the corps of forest guards, whose responsibilities include preventing and combating forest fires). By 2001, for example, it was estimated that the State Forest Service had met around 50% of its needs of technical equipment (Garea Alonso 2001).

Barriers to sustainable land management

54. Analyses carried out during CPP preparation, identified a number of *barriers* which currently limit the possibilities of addressing the *threats* mentioned above and thereby ensuring the sustainable land management is introduced in a widespread manner throughout Cuba. The links between land degradation processes, their underlying causes, the barriers preventing the causes being addressed and the solutions to be implemented under the GEF alternative are shown in **ANNEX J**.

Barrier 1 Limited inter-sector integration and inter-institutional coordination

55. The problem of limited inter-institutional coordination, between the wide range of institutions related to natural resources in Cuba (see Stakeholder Analysis in ANNEX H) is transversal in nature, affecting all of the other barriers mentioned below, in relation to extension and education, finance and incentives, monitoring and information management, planning and regulation. It acts against the recognition of the complex and multi-sector nature of land degradation and the central importance of combating it through integrated solutions. For example, projects and programmes formulated by individual sector institutions tend to focus on isolated aspects of natural resources rather than addressing the interactions between soil, water and forest resources, leading to the risk of unintended impacts on elements of natural resources other than those directly targeted (examples include the possible impacts of inappropriate fertilizer use on water resources and of inappropriate silviculture on soil resources – see Threats Analysis, paragraphs 30 and 32). Monitoring provides isolated information on the condition of individual factors (such as soil erosion rates, forest cover and water quality) but does not permit assessment or interpretation of overall ecosystem health, function and resilience. With the exception of Cooperative Vigilance pilot scheme described in paragraph 60, different elements of natural resources are regulated by different institutions, resulting in an inefficient and ineffective use of the limited resources available.

Barrier 2 Inadequate incorporation of SLM considerations into extension and environmental education programmes

56. In general, Cuba has a well-developed system of agricultural extension and environmental education. The incorporation into this of considerations of land degradation and sustainable land management, however, is incipient in some issues like conservation agriculture, the use of biofertilizers, the establishment of real crop rotations and others. Key institutions singled out in analyses carried out during the CPP preparation phase as inadequately incorporating SLM considerations into extension include MINAGRI and the National Institute for Hydrological Resources (INRH).

57. The curricula of the technical colleges, universities and other educational institutions where the technicians responsible for implementing extension and education programmes are trained have advanced significantly in recent years in relation to the incorporation of issues of sustainable land management; however in general they still tend to address the different components of natural resources (for example soil, water and forests) separately and do not adequately address the essential integration between these elements, which is central to SLM. This problem is directly related to the inadequate levels of awareness and understanding of the complexity and integrated nature of land degradation and SLM issues found among the personnel of a number of institutions; this problem is particularly widespread at an institutional level, affecting institutions such as the MINAGRI (including its dependency the National Soils Institute), the Ministry of Sugar, the Ministry of Physical Planning and the National Institute for Hydrological Resources.

58. The lack of incorporation of SLM considerations is to a certain extent a result of the lack of exposure of technicians and trainers to demonstrations of the application of integrated SLM approaches in practice. Particular areas where increased emphasis is required in relation to SLM include, among others, the use of low-input, socio-economically appropriate technologies for hillside agriculture; low impact technologies for the cultivation of arable lands; appropriate low cost nutrient management in relation to site characteristics and crop needs; soil humidity management and water-efficient irrigation; intensive, low impact livestock raising practices appropriate to smallholders' needs; crop diversification; intercropping, agro forestry and variations such as 'successional agriculture'; and appropriate extension methods (such as participatory action research) which take into account farmers' conditions and characteristics, and value their existing knowledge.

Barrier 3 Limited development of financing and incentive mechanisms for SLM

59. The limited ability of producers to meet the short-term costs of applying integrated SLM is largely attributable to the fact that they have little access to financial support or other incentives for applying this approach, from Governmental or other sources, despite the fact that LD results in significant levels of externalities with negative implications for the well-being of the population as a whole and the effectiveness of Government programmes. The Cuban government does provide large amounts of direct support to producers, for example in the form of market and price guarantees for crops and, to a lesser degree, through direct subsidy programmes such as the National Environment Fund and FONADEF; however with few exceptions this is not specifically tailored to assisting producers to adopt the diverse range of SLM technologies which are available, in a manner that avoids creating dependency and thereby achieves sustained adoption in the long term.

60. Despite the Government's commitment to SLM, lack of access to financial resources is also a problem for key Government institutions related to the theme. This is partly due to inadequate inter-sector and inter-institutional coordination and planning in order to ensure that resources are appropriately and efficiently targeted and partly due to the limited capacities on the part of the institutions in question to generate proposals for funding, based on access to relevant and accurate information and with an appropriately integrated emphasis. Pilot experiences have been gained in this area, for example the "Cooperative Vigilance" approach whereby collaboration between staff from regulatory bodies responsible for different aspects of natural resources has been shown in practice, over a 3 year trial period to date, to lead to significant cost savings.

Barrier 4 Inadequacy of systems for monitoring of LD and management of related information

61. Farmers' abilities to take appropriate decisions regarding the management of their land, for example the selection of correct machinery for cultivation, the application of the correct types and quantities of nutrients and the definition of sustainable levels of water extraction for irrigation from aquifers, are hampered by the limited

degree of development and application of systems for the monitoring of the condition of soil and water resources, and for the efficient feedback of the resulting information into decision making. The same barrier limits planners' abilities to develop territorial land use and agricultural production plans which reflect the sustainable carrying capacity of the land. The need for monitoring and information management is especially critical in relation to parameters such as soil nutrient status, aquifer quality, soil salinity status and early warning of climatic trends. In this last case, the inadequacy of the network of instruments for meteorological monitoring is compounded by the limited knowledge on the part of staff of key institutions (principally the Meteorological Institute of the Ministry of Agriculture and the National Institute for Hydrological Resources) of how to interpret the climatic information that is generated and how to link it to SLM principles. The inadequacy of the monitoring and management of information therefore also affects the effectiveness of institutional actions as they have limited ability to determine the impacts that these are having on the conditions of natural resources and to adjust them accordingly.

62. Specific limitations of MINAGRI in this area are the failure to interpret or use the abundant scientific information available in an integrated or inter-disciplinary manner, reflecting the complexities of SLM issues; and the limited development and application of indicators related to land degradation and SLM. An additional shortcoming is that alternative, non-academic sources of information are not considered with adequate seriousness, with the result that opportunities are lost for building on the accumulated practical experience and knowledge of farmers; this is of particular concern given that, with the increasing tendencies of rural depopulation in Cuba, such traditional knowledge is under severe threat. The Ministry of Sugar, meanwhile, has limited technical and physical capacities for M&E; as with MINAGRI, the indicators that exist related to land management lack an integrated focus; and they are not routinely applied in guiding productive activities. The M&E capacity of the National Institute for Hydrological Resources is also limited by shortage of instruments, inadequate integration and poorly developed analytical capacities.

Barrier 5 Planners have limited tools and knowledge for incorporating SLM considerations into plans, programmes and policies

63. In order to ensure that the domestic agricultural sector meets the food security requirements of the population, the centrally-devised plans which determine the productive activities of individual farmers and cooperatives often place strong emphasis on the production of high yields of a limited number of food crops, in the short term. By contrast, actions with longer term implications, such as SLM practices, take relatively low priority. There is a limited degree of consideration, in such plans and programmes, of how to make short term food production and long term SLM objectives compatible. This in turn is to some degree a reflection of inadequately developed inter-institutional and inter-sector coordination, between those institutions responsible for food security and for SLM (principally the Institute of Physical Planning and the Ministry of Agriculture); it also results from limited awareness on the part of planners of technical and methodological options for combining these goals, for example through the incorporation of appropriate indicators into planning instruments, and the range of SLM options applicable to high-yielding food crops.

64. Plans determining land uses and production goals also have deficiencies on a number of other levels in relation to SLM. Planners typically have inadequate access to information (see Barrier 4) relating to the baseline conditions of soils and aquifers, and may lack the specialized technical knowledge required to take such information correctly into account in the development of plans, when it is available. They may also lack adequate technical knowledge of the impacts of land management practices in terms of the conditions of soil and water resources, for example the LD implications of irrigation, inappropriate species choice and the use of monocultures, a problem which is exacerbated by deficiencies in the systems for the monitoring and feedback of information on such impacts.

65. A further shortcoming of the existing planning system is that some plans (for example those related to the relative emphasis accorded to different crop types, see paragraph 16) have not adapted to changing conditions, for example in relation to tenure and climate. Between 1992 and 1998, for example (following the enactment of the third Agrarian Reform Law in 1993), State land ownership dropped from 75.2 to 33.4%, while cooperative ownership rose from 10.2 to 50.4% (see ANNEX O); the private sector and individual producers, meanwhile, remained relatively stable and limited in area (14.6 in 1992 and 16.2% in 1998, and 3.5 and 3.5% respectively). These social and economic changes constitute a 'new agrarian economy' and pose significant challenges for planners in order to avoid contradictions between individual actions, motivated by market forces, and

environmental goals, while maintaining market efficiency (conversely, as explained in paragraph 25, the move away from largely State-run farms to smaller cooperatives actually provides an improved environment for land stewardship). Technical norms, meanwhile, have not adapted to changes in climatic patterns; for example the norm on potato production still stipulates that sowing should occur in October despite the fact that the cold fronts on which this depends now occur more commonly in January.

66. A further problem is that the degree of implementation of plans is typically limited by financial and physical constraints on the part of the institutions involved. The limited availability of resources is considered under Barrier 3.

Barrier 6 Inadequate development of regulatory framework for combating LD

67. Although there is a substantial body of environmental laws in Cuba (see Section 1.b), regulations for their implementation are inadequately developed, particularly in relation to land degradation and SLM. A further problem is that, in common with planning instruments (see paragraph 64) technical norms governing land management practices are in many cases outdated in relation to recent changes in circumstances such as the evolution of land tenure conditions. Of particular importance in this regard will be the formulation of technical regulations for Decree 179 (see paragraph 6). Finally, the degree of application of laws and other regulatory instruments in practice is limited by the inadequacy of the communication of their contents to the public and the limited resources available for their enforcement. To date only the Forestry Law has been produced and disseminated in a manner which is easily accessible to the public in general. As in the case of planning instruments, regulatory instruments also typically face the problem of inadequate application in practice. This is principally a result of the limited financial resources available to the institutions responsible, as problem which is considered under Barrier 3. Conversely, while important experiences have been gained in achieving cost savings through models of institutional cooperation such as the “Cooperative Vigilance” described in paragraph 60, the regulatory adjustments (for example to the regulations to the Soils Law and Environment Law) required to formalize such models still remain to be made.

Baseline scenario

68. Land degradation is currently recognized as a major problem at all levels in Cuba, and investments are made accordingly, for example in the areas of agricultural extension and funding mechanisms (for example through FONADEF and FMA). Current investments of direct relevance to the promotion of sustainable land management under the National Programme for Soil Improvement and Conservation amount to around \$2,000,000 per year (see ANNEX G), for the combat of soil degradation, forestry protection and management and the management of hydrological resources. While significant, this sum is not adequate to ensure landscape-wide SLM. Heavy emphasis is also placed on the establishment of forest plantations; the forest development programme aims at establishing 700,000 ha of plantations by 2015, of which 404,800 ha should be for production purposes (FAO 1998). Agricultural extension programmes are currently receiving some support from FAO, but this is limited in scale and scope. Demonstrations of natural resource management that have been carried out to date have tended to focus on individual aspects of natural resources and have lacked the integrated approach which is central to SLM. The major gap in the baseline is that these investments do not adequately incorporate SLM considerations, particularly its complex inter-sector and interdisciplinary nature; this is to a large extent due to the lack of awareness among key stakeholders of such issues, which in turn is largely attributable to their inadequate consideration in educational and training programmes. Despite this, the high levels of achievement in education in general in Cuba mean that promising conditions exist for the adoption and dissemination at individual and institutional levels of SLM messages; 25,832 agricultural producers are superior level graduates and 62,200 medium level graduates.

69. Faced by the collapse of external support since the earlier 1990s, Cuba has gone to great lengths to increase domestic agricultural production (its dramatic recovery in the latter half of the 1990s is evidence of this) and to make the best use of the limited resources that are available, for example through maintaining equipment and thereby allowing it to be used well beyond its normal life span. Cuba has also made major advances in organic and urban agriculture, with the aim of reducing dependence on external inputs and promoting food security. On the other hand, there is still a heavy emphasis on large scale mechanized agriculture under irrigation (with 490

000 ha under irrigation and 1750 irrigation machines) but these are typically of low water-use efficiency and cause soil degradation.

70. The National Programme for Soil Conservation and Improvement is progressively increasing its coverage. To date its impacts have included an 18% increase in the application of simple soil conservation measures, an increase in Programme coverage of 3,600 ha between 2002 and 2003, the training of 11,709 producers in soil conservation in 2003, the production of 1,473,900 tons of humus and 8,499,200 tons of compost in 2002 and the application of 2,800,000 tons of mineral supplements in 2002 (Instituto de Suelos 2001).

71. Despite their technical and resource limitations, there is a strong baseline of institutional structures on which the programme will build, including information networks which may provide the basis for the dissemination of SLM. There are, however, deficiencies in institutional coordination, particularly with the Institute of Planning, that oversees land use planning, and other key line ministries. The land use plans that do currently exist have limited scope in relation to the complexity of SLM issues.

72. Although basic information resources do exist, such as a 1:250,000 national map of nutrient requirements in agricultural soils, these tend to be outdated and not to incorporate mechanisms which permit flexibility in response to changing conditions, or the integrated management of new information. Mechanisms exist for the monitoring of forest cover composition and dynamics, including fire occurrence, but response to changes or emergencies is hindered by communication problems and limited resources. Likewise, the country has a monitoring system for determining the quality of aquifer and irrigation water, but this is not accompanied by field level actions to ensure that regulations are upheld; in general, the provincial level enforcement services in relation to land degradation are poorly trained and equipped. Although there are laboratories throughout the country for soil and water analysis, their equipment is largely obsolete and their cartographic base is not up to date. There is research activity in the areas of soil degradation, nutrient status, soil erosion and soil cover, but access to the information that is generated on the part of decision makers and practitioners is limited and the information is typically not integrated adequately into decision making.

73. In summary, levels of commitment to addressing land degradation issues in Cuba are high, and there is a strong institutional and legislative framework within which to work. Key gaps in the baseline are the limited degree of recognition of the complex, multi-sector and multi-disciplinary nature of land degradation issues into Government programmes, in the areas of extension, education and incentives; the inadequacy of information flow to planners, and between planners and practitioners, in relation to land degradation processes and SLM; the outdated nature of the regulatory framework for combating LD, in the light of changes in agrarian conditions over recent years; and the lack of demonstrations of an integrated approach to SLM.

Objectives and outcomes

74. The **Goal** of the GEF Country Pilot Partnership (GEF-CPP) is that *“Reduced land degradation will allow Cuba to achieve its goals for sustainable development and increased food security”*. The GEF CPP will be crucial for ensuring the effective implementation of the National Action Programme to Combat Desertification and Drought (NPCDD) developed by the Government of Cuba’s National Group to Combat Desertification and Drought under the co-ordination of the Centre for Environmental Management, Education and Information (CIGEA). This NPCDD would provide programmatic guidance for implementation of the GEF Country Pilot Partnership

75. The **purpose** of GEF Country Pilot Partnership is that *“Cuba has the capacities and conditions for sustainable managing land in a manner that contributes to maintaining ecosystem productivity and functions”*. The CPP will therefore focus on removing the barriers (described above) to the achievement of SLM, with the application of a model of improved integration, vertically and horizontally, between different stakeholders (institutions and others) at all levels, and between field level actions and the policy, planning and regulatory context. This Partnership has been conceived to directly implement the programmatic guidance of the NPCDD and provide an overall framework for the implementation of projects assisted through various GEF agencies in a coordinated, synergic and logical manner. The result would be that by 2015, the global environmental benefits of reduced land degradation and promotion of ecosystem integrity would have been captured alongside the fulfillment of the NCDDP targets for sustainable development and increased food security - contributing to Cuba’s attainment of Millennium Development Goals for poverty reduction, environmental sustainability.

76. In line with emerging directions of GEF support to OP15 under GEF 4, the Country Pilot Partnership (CPP) will constitute a programmatic ‘umbrella’ for a structured 10 year investment by GEF in Sustainable Land Management in Cuba. Within this, 5 individual projects will be implemented, each with a different but complementary focus, in pursuit of the purpose of the programme as a whole. The adoption of such a programmatic approach will have a number of specific benefits in operational terms:

- Individual projects within the CPP will each enjoy a high degree of focus, with clear short-term goals, but at the same time will have clear roles to play in contributing to a programme-level goal;
- Individual GEF implementing agencies and collaborating agencies will work in partnership and coordination towards a common programmatic goal, but at the same time their individual contributions within the CPP will reflect their respective specialties and capacities;
- Although the 5 projects within the CPP will each be subject to individual approval by GEFSec and their commencement will depend on predetermined ‘benchmark’ conditions being met, the CPP approach offers increased predictability of financing and improved streamlining of project approval procedures.
- The programmatic approach provides the government with a long-term planning horizon within which it can progressively integrate the complex, multi-sector and multi-disciplinary nature of land degradation issues into Government policies and programmes.
- The approach also enables the government to secure long-term commitment and co-financing from the different sectors. Indications of additional co-financing sources are given in paragraph 242.

Objectives

77. The programme has two **intermediate objectives**, respectively reflecting the need to address ‘structural’ issues such as inadequate institutional capacities and planning frameworks, which currently pose barriers to SLM, and to carry out concrete demonstrations of effective solutions to LD:

- 1) National capacity for integrated SLM is established, ensuring inter-sectoral coordination and effective implementation of land management plans and activities.*
- 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.*

78. This two-level approach is in compliance with OP15 guidance. At both levels, programme interventions will be linked to the specific barriers (detailed above) to the achievement of SLM. Intermediate Objective 1 will focus on the removal of these barriers at the national level. Intermediate Objective 2 will focus on their removal in practice at specific pilot locations, and the validation under widely varying climatic, agronomic and social conditions in the different intervention areas of the model of vertical and horizontal integration described in paragraph 75. The removal of **Barrier 1** will be a cross-cutting theme of the CPP; inter-sector integration and inter-institutional coordination will be stressed in each of the Outcomes and in the CPP activities at both national and field levels.

79. Demonstration activities will be concentrated on 5 intervention areas within the country (see details in **ANNEX L**) and within these on selected demonstration sites (the locations of the demonstration sites are shown in the maps in **ANNEX L**). The intervention areas are among those prioritized in the National Plan of Action for Combat of Desertification Drought, as suffering from particularly severe problems of land degradation. The 5 areas eventually defined were selected as covering a wide diversity of geographical, climatic and land use conditions and suffering from a wide diversity of land degradation processes, thereby maximizing their replication potential. The process through which the 12 demonstration sites were selected within the 5 intervention areas is presented in **ANNEX N**. The sequence of Outcomes under Intermediate Objective 2 reflects the need to move from local capacity building to the actual demonstration of concrete results with the SLM interventions, and thence to their replication from the initial demonstration sites to other sites within the intervention areas.

80. The Outcomes under each of the two intermediate objectives are directly related to the barriers to the achievement of SLM, defined in the previous section, summarized below in paragraphs 82-116, are as follows:

Table 1. Summary of Outcomes

Intermediate Objective 1: National capacity for integrated SLM is established, ensuring inter-sectoral coordination and effective implementation of land management plans and activities	Intermediate Objective 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
Outcome 1.1. Planning structures and processes for land use and regulation take into account SLM principles, and facilitate the implementation of practices compatible with the conservation of ecosystem integrity	Outcome 2.1. Land use decisions in the project intervention areas are based on updated information
Outcome 1.2 Increased resources are available for effective investments in SLM	Outcome 2.2. Local stakeholders (resource users, extension workers, decision-makers) in project intervention areas have the knowledge and skills to undertake SLM
Outcome 1.3 Individuals and institutions have the capacities (human and material) to undertake sustainable land management	Outcome 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*
Outcome 1.4. Rural populations, resource managers and other stakeholders are aware of the environmental, social and economic benefits of sustainable land management and options for its application	Outcome 2.4. Best practices in SLM have been replicated at diverse sites throughout the 5 intervention areas and effective processes are in place for replication elsewhere throughout Cuba
Outcome 1.5. Information on land resource conditions and trends throughout Cuba is being applied by planners in decision making	

**Intervention areas are the Plain SW of Pinar del Rio, Havana-Matanzas, Central-South of the Villaclara pre-mountainous zone, Cauto Plain River Basin, Guantanamo- Maisí coastal area*

81. To achieve these Outcomes the GEF CPP will include five projects to be implemented over a period of 10 years. These will collectively address the most urgent problems of land degradation and the barriers facing the adoption of SLM in the country. Each Project will include a range of both capacity strengthening and field demonstration building in a progressive manner on the successes of the previous Project. In addition each Project will successively include a new element or focus so that at the CPP end capacities and demonstrations for SLM under the different bio-geographical, productive scenarios and sectors in Cuba will have been achieved. This includes agricultural land, livestock practices, forestry and water resources management in different ecosystems and LD types. The projects, described later in paragraphs 117 to 147 are as follows :

- 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

82. **Summary of Outcomes under Intermediate Objective 1** (National capacity for integrated SLM is established, ensuring inter-sectoral coordination and effective implementation of land management plans and activities)

Outcome 1.1 - Planning structures and processes for land use and regulation take into account SLM principles, and facilitate the implementation of practices compatible with the conservation of ecosystem integrity

83. In order to ensure that plans related to land use and agricultural production take considerations of SLM adequately into account, guidance documents on SLM mainstreaming will be developed for internal use by each relevant institution, including the Ministry of Agriculture (MINAGRI), the Institute of Soils, the Ministry of Sugar (MINAZ) and INRH. This will result in this guidance being adopted and, where appropriate, approved by the national Cabinet. This Outcome, which will address **Barrier 5** (*planners lack tools and awareness to incorporate SLM considerations into plans, programmes and policies*) and **Barrier 6** (*inadequate development of regulatory framework for combating LD*) identified above will be achieved during the first 5 years of the CPP, under **Project 1** (see below).

84. The Institute for Physical Planning within the Ministry for Economy and Planning will be a key actor with respect to this outcome, given that its roles include the development of territorial land use plans. In response to needs expressed by the IPF in consultation meetings held during the programme preparation phase, support will focus on mainstreaming SLM considerations into such plans, and ensuring that they are based on adequate understanding of LD processes and access to information on the condition of soil and water resources, with the full participation of diverse national and local stakeholders (governmental and non-governmental organizations and the local population). An important result of this support will be that plans respond more accurately to local variations in conditions with, where possible, increased participation of local stakeholders and decentralized authorities in their formulation. Another major planning instrument whose development the CPP will support will be the National Environment Strategy, which will guide Government actions in environmental management and protection. In addition, the CPP will contribute as required to the preparation of the pending technical regulations for Decree 179 (see paragraph 6).

85. Within MINAGRI, attention will be paid in particular to mainstreaming SLM considerations into plans for agricultural production, in order to ensure that crop selection and production targets are compatible with land productivity potential and take into account ongoing processes of investment in developing soil health, nutrient status and resilience (for example the planning of irrigation on the basis of predictions of precipitation, evapotranspiration and crop needs). Attention will also be paid to plans for investment in technology development, extension and education, in order that they adequately prioritize areas, themes and target audiences most strongly linked to land degradation problems, and that adequate human and financial resources are dedicated to promotion of SLM. In addition, MINAGRI will be assisted through the CPP in the development and/or modification of technical norms and regulations related to land tenure, use and management, in order to ensure that they adequately take into account SLM considerations. Similarly, with MINAZ attention will be paid to ensuring that sugar production targets do not jeopardize the productive capacity of the soil or cause other forms of degradation of soil or water resources through excessive application of inorganic nutrients or water, and to ensuring the adequate financial provision is made for maintaining irrigation and drainage infrastructure. Programme support to INRH will focus particularly on mainstreaming SLM considerations into plans and regulations related to the use of superficial and subterranean waters for irrigation, in order to ensure that water off-take rates do not exceed recharge capacity, that water of suitable quality is used for irrigation and that appropriate equipment and infrastructure is used for irrigation and drainage, in order to avoid problems of aquifer depletion, soil salinization and erosion.

86. In each of the above areas and institutions, the plans in question will also benefit, through the programme, from improved availability of accurate and useful information on the conditions of soil and water resources, land degradation processes and sustainable land management options (see Outcome 1.5 below). Although the main emphasis on the collection, organization and dissemination of information will be during Project 2 it will commence during Project 1, enabling the planning and decision making that will be supported during Project 1 to commence without delay.

87. Given the overlap of themes between the functions of these respective institutions, it is also essential that the Programme support the development of mechanisms for inter-institutional integration, which complement and develop existing mechanisms such as the National Council for Hydrological Catchments. Of particular importance, for example, will be the programmes support to integration between MINAGRI, MINAZ and INRH in order to ensure that the production targets set by the former two ministries are in accordance with projections and regulations of water use, and with the National Soils Institute in order to ensure that production targets are compatible with prescriptions for fertilizer application defined by that Institute. In order to ensure that small farmers' needs are adequately taken into account and that possible negative impacts on them are avoided, the National Association of Small Producers (ANAP) will be involved in inter-institutional discussions and plans related to SLM. Adequate inter-institutional coordination will also be vital in order for the information flows foreseen under Outcome 1.5 to operate effectively, for example for information on the condition and potential soil and water resources, held by the National Soils Institute and INRH respectively, to be accessible to MINAGRI and MINAZ in their planning. Coordination is also required in order to ensure that the research and development activities undertaken by the National Soils Institute are tailored to the needs of agencies directly involved in the management of soil and water resources, such as MINAGRI and MINAZ. Capacity building investments during Project 1 will therefore focus on the integration of the actions of the following institutions: Institute of Soils, National and Provincial coordinating authorities, agricultural extension workers (ANAP, MINAGRI, MINAZ), IPF, INSMET and INRH. An example will be the linkage of the development by INSMET of a monitoring system for extreme climatic events in the region of Pinar del Rio, with the application of the results of the system in agricultural areas by ANAP, MINAGRI and MINAZ.

Outcome 1.2 – Increased resources are available for effective investments in SLM

88. Although agriculture and other forms of land use in Cuba are governed by centrally devised plans (see paragraph 16), changes in agrarian conditions in recent years mean that farmers' production decisions are increasingly influenced by considerations of profitability at farm level. Under these conditions, and given that the high initial costs of SLM are often a barrier to its adoption (see *Barrier 3- limited development of incentive systems favoring SLM*), it is important that capacity building and awareness raising activities within the CPP are accompanied by strategies which shift the economic balance in favor of SLM. Support to the development of financing mechanisms for SLM will principally be provided through Project 3 (see below), which will be implemented between years 5 and 8 of the CPP.

89. Mechanisms already exist in Cuba for channeling finance to environmental projects, as do the associated regulatory instruments required for the levying of fines, fees and taxes to capitalize these funds¹. These mechanisms include the National Environment Fund², the National Fund for Forestry Development (FONADEF)³ and the National Programme for Soil Improvement and Conservation. Funds generated through these mechanisms and invested effectively in SLM are currently limited (\$70,000, \$90,000 and \$2,000,000 per year, respectively). Under the CPP, support will be provided to help broaden the range of sources from which these mechanisms obtain income, through lobbying and advice on modifications of the internal regulations of such funds, and the application, where feasible and appropriate, of new fines, fees and taxes. Eventually sources of funds are likely to include direct budget allocations from the Government's central budget; fees paid for environmental licenses and permits; fines and compensations paid for environmental infractions; donations from international and bilateral cooperation agencies, non-governmental organizations, private enterprise and individuals; debt for nature swaps; fees for entry to national parks; taxes on activities related to natural resource use; and schemes for compensating land managers for ensuring the continued provision of environmental services.

¹ For example Resolution 50/96 (Tax on the utilization and exploitation of natural resources and for the protection of the environment, Resolution 51/97 (which establishes norms for the application of taxes on mining) and Resolution 99/2002 (which defines norms for the functioning of the National Environmental Fund).

² Among the uses currently permitted for the National Environment Fund are soil conservation and improvement, the combat of desertification and drought, and forestation and reforestation in critical areas.

³ FONADEF funds can be used for forest management projects, forest planning and inventory activities, studies related to forestry problems, training, and the protection and conservation of forest soils and the construction and maintenance of forest roads.

90. In addition to increasing the amount of funds available for SLM through funding mechanisms, programme support will be used to facilitate access to these funds, reduce transaction costs and improve the effectiveness and efficiency of their use. Access to the funds available through the National Environment Fund and FONADEF requires the formal submission of project proposals, and as a result these mechanisms are not necessarily easily available to individual producers or those lacking the organizational and technical ability to prepare proposals. The programme will support the definition and development of alternative, decentralized funding mechanisms which are more widely available, such as schemes for the compensation of environmental service provision which involve direct payments to individual producers, subject to field level inspections but not to the preparation of formal project proposals.

91. In addition to the environmental funds described above the Government of Cuba provides large amounts of investment and incentives to agricultural production (see paragraph 69), however due to the inadequate mainstreaming of SLM considerations into the plans and policies which direct this investment (see Barrier 5) this currently contributes little to SLM and in some cases may provide perverse incentives for land degradation. The project will assist planners in mainstreaming SLM considerations into these investments and incentives in order to increase their compatibility with SLM objectives.

92. Project level activities in relation to financing mechanisms for SLM will include detailed studies of the potential magnitude of the population potentially subject to fines, fees and taxes; surveys of willingness to pay for the provision of environmental services; analysis of transaction costs, definition and negotiation of modifications to existing mechanisms and needs for additional mechanisms; and support to the drafting of the required modifications to existing regulations. In addition, in order to ensure that the limited funds available are used in the most effective and efficient way possible in support of SLM, guidance will be provided to potential candidates for funding on how to incorporate SLM considerations into their proposals, and also to those responsible for reviewing proposals submitted for funding (such as the Evaluation Group of the Environmental Agency, in relation to the National Environment Fund) on how to evaluate whether SLM concerns are adequately incorporated. This may lead, for example, to increased priority being placed on low-input forms of agriculture (such as the management of natural regeneration in fallows and the use of natural mulch) instead of high investment forest plantations whose environmental balance is at times questionable.

Outcome 1.3 - Individuals and institutions have the capacities (human and material) to undertake sustainable land management

93. The programme will develop capacities within the Government (and, where appropriate, non-Governmental actors) for supporting SLM. This will be an essential pre-requisite for achieving increased awareness among rural populations, resource managers and other stakeholders regarding SLM and its benefits (Outcome 1.4; Outreach and Awareness). The principal emphasis of the programme on strengthening capacities will be during its earlier stages, most notably through Projects 1 and 2 (yrs 1-7).

94. A central component of this capacity strengthening will be the provision of training to key staff. Cuba possesses a large number of very capable, high caliber staff at both technical and strategic levels; however SLM is a field in which practical and theoretical innovations are constantly occurring, both within and outside the country, and many technicians, schooled in more 'conventional' and uni-dimensional approaches to land management, have not had the opportunity to maintain themselves abreast of the most recent developments. Important research and development activities have been carried out in Cuba, through a range of institutions including the Institutes of Agricultural Mechanization (IIMA), Forestry Research (IIF), Horticultural Research (IIHLD), Irrigation and Drainage Research (IIRD) and the Tropical Livestock Institute of MINAGRI and the Pasture and Forage Research Institute of MES. In addition to bringing in new ideas from overseas, the training provided will therefore also involve include a 'horizontal' element whereby members of these institutions train their counterparts in other institutions and Ministries. The programme will also provide advice and support inter-institutional planning on the orientation of the research programmes carried out by the research institutes listed, in order to ensure that they contribute appropriately to fulfilling information and training needs. This kind of support to the generation and management of information will contribute to addressing **Barrier 4** (*inadequacy of systems for monitoring of LD and management of related information*).

95. To ensure sustainability and maximize impact, the programme will also focus on the ‘training of trainers’, ensuring that LD and SLM issues are adequately incorporated into the syllabi of key educational institutions training extension agents, agronomists and rural development specialists, such as the National Institute for Agricultural Sciences, the Animal Science Institute, the José Antonio Echeverría Superior Polytechnic Institute and the Universities of Havana, Bayamo, Pinar del Río and Ciego de Ávila. Particularly important themes in this regard include the development of new approaches to extension methods, based on the ‘endogenous’ development of practices rather than their external imposition, for example through the use of participatory ‘field schools’ (ECAs) and ‘centers for local research and learning’ (CIALs); and the use of low-input approaches to land management (such as mulch management, organic agriculture and integrated pest management) as alternatives to high-input practices such as the construction of physical barriers to runoff and the use of inorganic fertilizers and pesticides. Examples of key recipients of such training will include extension agents in MINAGRI, who are directly responsible for supporting producers and resource managers. In this way the CPP will address **Barrier 1** (*inadequate incorporation of SLM considerations into extension and environmental education programmes*).

96. At the more strategic level, training will be provided to planners, for example in the Institute for Physical Planning of the Ministry of Economy and Planning, in mainstreaming SLM considerations into plans and programmes, thereby addressing **Barrier 5** (*planners lack tools and awareness to incorporate SLM considerations into plans, programmes and policies*). Specifically, for example, this training may relate to concepts of integrated ecosystem and watershed management and how to take into account long-term factors such as global climate change into planning, in order to ensure sustainability. In addition to the training described above, the programme will support the Institute for Physical Planning through the provision of software and hardware for information management, thereby also contributing to the achievement of Outcome 1.1 and Outcome 1.5. The programme will also support the capacities of the National Institute for Sugar Cane Research (INICA) in relation to territorial land use planning and decision-making, through the application of Geographical Information Systems (GIS), again also contributing to the achievement of Outcome 1.1.

97. In pursuance of Outcome 1.5 (SLM Information), the programme will support the institutional capacity of the National Soils Institute for the operation of its network of monitoring stations and soil analysis laboratories, through the provision of focused training and equipment. Similarly, the capacities of the National Meteorological Institute (INSMET) will be strengthened through the provision of technical materials and equipment, thereby allowing the consolidation of the National Weather Vigilance System and in particular the Drought Early Warning System, contributing again to Outcome 1.5 and the removal of **Barrier 4** (*inadequacy of systems for monitoring of LD and management of related information*).

98. In addition to strengthening their human resources through training, the programme will help to ensure that key institutions and organizations have access to adequate financial resources to carry out their roles effectively in relation to the combat of LD and the promotion of SLM, thereby contributing (alongside Outcome 1.2) to the removal of **Barrier 3** (*limited development of financing mechanisms for SLM*). This will be achieved through a variety of strategies, in part linked to other outcomes. Information on the significance of LD will be provided to decision-makers and planners within the Government (for example in the Ministry of Economy and Planning, the Ministry of Finance and the Ministry of Overseas Investment), in order to ensure that SLM-related activities are sufficiently prioritized in budget allocations and requests for financial assistance from international and bi-national cooperation agencies. The capacity of institutions specifically related to land degradation issues (such as the National Soils Institute, the Forest Research Institute, the National Meteorological Institute and the Irrigation and Drainage Research Institute) to prepare project proposals requesting external funding for SLM-related activities will be strengthened through training. As a result, these institutes will have increased budgets for SLM-related activities, as will provincial and municipal authorities and producer bodies (for example cooperative farms, basic productive units and state businesses).

Outcome 1.4 - Rural populations, resource managers and other stakeholders are aware of the environmental, social and economic benefits of sustainable land management and options for its application

99. The programme will ensure that key stakeholders fully understand the benefits of SLM, and therefore support and participate in its application, thereby addressing *Barrier 1* and *Barrier 5*. This will be achieved through a range of strategies. The field level demonstrations carried out through the different projects which will make up the programme (see Outcomes 2.1-2.5) will generate important and highly practical lessons on SLM, applicable across a wide range of sites and conditions. The results of these activities will be systematized and disseminated to diverse stakeholders, in formats which take into account their diverse roles and characteristics. This will be complemented by seminars and other events to be supported through the programme, which will allow feedback and discussion of results and the development of proposals for their application in practice.

100. In order for policy, legal and regulatory changes to be effective, it is essential that they are fully internalized by the institutional personnel responsible for their application, and that the local stakeholders to whose actions the instruments refer in practice are fully aware of their provisions. In order to achieve this, informative documents will be produced and disseminated in accessible language, backed up by 'slots' on television and radio programmes.

Outcome 1.5 - Information on land resource conditions and trends throughout Cuba is being applied by planners in decision making

101. Sound planning and decision-making in relation to SLM is dependent on the availability and utility of accurate information on the condition of natural resources (see *Barrier 4*). This issue will be addressed particularly through Project 2 of the CPP, between years 3 and 7, and through Project 5, which will last for the whole duration of the CPP.

102. Programme support will ensure that such information is generated through a network of monitoring stations located throughout the country, building on pilot level activities under Outcome 2.1. These will include climate monitoring stations managed by the National Meteorological Institute (INSMET), which form an essential element of the Drought Early Warning System, enabling producers to take measures in anticipation of drought, such as rationing water use and sowing drought resistant crops and green manures; and soil quality monitoring facilities and laboratories managed by the National Soils Institute to detect incipient problems of soil degradation and advise producers on remedial measures. These monitoring facilities already exist over much of the country but are typically outdated and the information generated is not managed in a useful and integrated manner. At national level, the equipment and training required to ensure that these stations are operative will be provided under Outcome 1.3; and at local level, in the intervention areas, under Outcome 2.1. The emphasis of the incremental support provided under this Outcome will be on ensuring that, at national level, the stations are managed as an integrated system for the generation of information. Similarly, Programme support will also improve the effectiveness of fire early warning systems and response mechanisms.

103. By year 4 of the CPP, an Information Network will have been made operational for the management of information relevant to SLM, including that generated through the monitoring systems described above and also that obtained from other sources, such as satellite imagery and the results of previous research. This Network will involve all key institutions active in SLM, or example the National Soils Institute, INDRHI and INSMET, and, at the strategic level, the planning departments of MINAGRI, MINAZ, CITMA, MEP and others.

104. By the end of the programme, a system for the long term monitoring and evaluation of SLM in Cuba will be operational. It is foreseen that funding for operation of this system will come principally from the recurrent budget of central Government, as a result of increases in the awareness of Government policy makers regarding the economic benefits to be gained through effective monitoring and in particular the early warning of climatic events such as droughts. The principal institutional actor responsible for the application of this system will be the Ministry of Science, Technology and Environment (CITMA). This system will evolve out of the monitoring and evaluation system of the CPP itself, and will represent a management tool of major significance for decision-makers and planners in Cuba, providing them with an overall view of the status of soil and water resources and enabling thereby to direct actions appropriately and take corresponding corrective actions as necessary.

105. **Summary of Outcomes under Intermediate Objective 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*). Also see descriptions of the CPP projects (paragraphs 122-147)

106. Outcomes under this Objective will be concentrated principally on 5 intervention areas within the country and within these on selected pilot demonstration sites. The sequence of Outcomes starts from building local level information management, and the practical application of incentive schemes, planning systems and regulations. It continues to the demonstration of technical solutions under different biogeographically and production scenarios not only to test and validate these, but as an essential aspect of the strengthening of capacities of extension agents to incorporate and promote SLM the technologies themselves. The combination of pilot demonstration at specific sites and the application of incentives and regulations at local level along with capacity strengthening in municipalities will enable the progression of the sequencing to the replication within the intervention areas. Finally this and national level work on incentives, planning and capacity through Immediate Objective 1 will provide the framework for the replication throughout Cuba in locations outside of the five intervention areas, following the CPP.

Outcome 2.1 - Land use decisions in the project intervention areas are based on updated information

107. In each of the five intervention areas included within the programme, and through the successive projects, systems will be established for the monitoring and evaluation of land degradation processes and of the impacts of sustainable land management initiatives. These will represent local-level applications of the country- and programme-wide M&E system to be established under Outcome 1.5. As activities under the CPP are initiated at each successive intervention area under successive projects, easily measurable yet relevant and useful indicators will be defined for each area through an initial joint planning process involving the key institutions which will work there (including at least the National Soils Institute, INRH, CITMA and MINAGRI). These indicators will to a certain extent reflect the thematic focus of the programme in each area (for example they will emphasize soils in Project 1, water resources in Project 2 and forests in Project 3); however there will in addition be cross-cutting indicators applied in each area to ensure that these aspects of the natural resources are not viewed in isolation and that social and productive considerations are taken into account. The development of indicators and M&E systems for each successive area will also taken into account lessons learnt in the areas incorporated previously.

108. Basic components of each information management system will include databases on key parameters related to soil and water conditions and productive activities, accessible through the internet by all participating institutions, and regular analytical digests of trends in these parameters and their implications. Outputs of the systems will also include synthesis documents comparing the effectiveness of different technologies and approaches on the basis of the results of the M&E systems, and thereby defining 'best practice' and key lessons learnt.

Outcome 2.2 - Local stakeholders (resource users, extension workers, decision-makers) in project intervention areas have the knowledge and skills to undertake SLM

109. In each demonstration site, particular attention will be paid to strengthening the capacities of key stakeholders (resource users, extension workers and decision-makers) in relation to SLM. This will entail outreach and preparation for the local-level and practical application of many of the country- and programme-wide regulations, incentives and information management skills developed through Immediate Objective 1. It will also include a series of hands-on training and extension events closely linked with pilot site demonstrations of technological solutions developed through Outcome 2.3. As activities under the CPP are initiated at each successive intervention area, outreach and capacity strengthening for planning, decision making and regulatory systems within these will increasingly reflect the SLM needs for that area and thematic focus of the programme. For example, actions under this Outcome in Project 1 will place particular emphasis on local capacities for mechanisms and enforcement of halting, preventing and restoring severely degraded ecosystems; in project 2 on sustainable management of water resources for agricultural production in different biogeophysical scenarios and in project 3 SLM for forest and livestock production.

110. Awareness building and capacities in projects 4 under this outcome would expand the target audiences gradually to all areas of the project demonstrations areas and at selected sites in Cuba to be enabling the replication of pilot demonstrations and increase capacities for addressing SLM at landscape level and nationally. Thus by the end of the CPP the effectiveness of extension services for the particular SLM needs at different intervention sites will have increased, farmers will be aware of and know how to apply the most appropriate SLM technologies for their lands facilitated by a local and national level regulatory and incentive framework

Outcome 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

111. In each of the five intervention areas different sites have been selected to implement pilot projects to test and validate technologies and practices for addressing land degradation processes under different biogeographical and production scenarios. This will include on the ground testing of technologies and practices as well as the setting up of the required associated support mechanisms, such as incentives and the processes needed for uptake over a larger areas, such as incorporation into municipal level regulations and land use planning. The development and ground-testing of technologies will pay close attention to addressing common key obstacles to SLM technology to date, including their high requirements of human, financial and physical resources and their vulnerability to failure in the event of extreme climatic events. In addition to being low-input in nature, the technologies will therefore normally have the capacity to withstand environmental shocks, for example by making provision for soil humidity conservation to ensure against the effects of drought, and by ensuring multi-storeyed rooting systems in order to protect against land slippage in the event of hurricanes.

112. As described above, the uptake and replication will also be facilitated by Outcome 2.2. Described in more detail in the summary of projects (paragraphs 123-147) and also in the descriptions of the intervention areas in ANNEX L, the pilot projects under this Outcome will address the following in successive CPP projects:

- Project 1: will demonstrate soil conservation techniques for halting, preventing and restoring severely degraded ecosystems in Guantanamo and a monitoring system for the early alert of extreme climatic events in Pinar del Río.
- Project 2: will demonstrate techniques for sustainable management of water resources for agricultural production including conservation of rainwater and efficient irrigation systems in severely eroded areas (Guantánamo) sustainable management of water resources in arid lands (Cauto) and ground water management for agricultural production (Havana Matanzas). Following the setting up of a monitoring system for extreme climatic events in Pinar del Río, project 2 in this locality will demonstrate the application in the agricultural land of measures in responses to extreme climatic events such as rationing water use and sowing drought resistant crops and green manures.
- Project 3: demonstrations will place particular emphasis on SLM techniques for livestock production in dry forest and for forestry management in dry forests of the pre-montane zone (both in the Centre-South Villa Clara intervention area). It will also work on forest management in the dry forests of the Cauto catchment. Following on from advances made in Project 2, it will apply water management techniques in both the Cauto catchment and the Villa Clara pre-montane zone. Together with incentives, planning and reforestation practices, these activities will be applied at medium scale.
- Project 4 will up scale the small and medium scale demonstrations of SLM to landscape levels in Guantanamo Guaso basin and Cauto River Basin

Outcome 2.4 Best practices in SLM have been replicated at diverse sites throughout the 5 intervention areas and effective processes are in place for replication elsewhere throughout Cuba

113. Initial replication will be in demonstration sites within the intervention areas and then elsewhere in the country. The magnitude of the target area for this replication will be ensured by the selection of the intervention areas, which between them approximately represent the diversity of biophysical and socioeconomic conditions faced by land managers in Cuba.

114. The first step in ensuring effective replication will be adequate monitoring, systematization and documentation of the processes in each demonstration site and of the impacts, whether positive or negative, of the technologies and mechanisms tested. On the one hand, this will be ensured through investment (under Project 5) in a sound monitoring and evaluation system at the level of the CPP as a whole. Equally essential will be the participation of local stakeholders, both from within the demonstration sites themselves and the target areas for replication, in monitoring, systematization and documentation. Such participation will ensure that the lessons learnt regarding the technologies and mechanisms are fully appropriated for application in the replication target areas, and will also foment processes of farmer-farmer communication which will contribute to sustainability and ensure that practices are appropriately modified to fit farmers' locally-specific needs and conditions.

115. The second step in the replication process will be the actual dissemination of the lessons learnt. When producers from target areas are involved in monitoring, systematization and documentation, this will be partly achieved by they themselves taking the lessons back to their areas of origin. On its own, however, this will not be adequate as it will not guarantee the subsequent communication of messages to other farmers. An essential complementary strategy will therefore be the publication and dissemination of results through alternative media. These will include, for example, radio programmes, bulletins and television slots. In addition, the lessons learnt will be transmitted to extension agents and, more importantly from the point of view of sustainability, to the curricula of the educational and vocational training institutions where natural resource professionals are trained. Messages on lessons learnt will also be communicated through briefing documents and seminars to decision-makers, policy formulators and planners at central and decentralized levels in order to promote the creation by them of enabling environments for the replication of successful SLM practices.

116. Finally, effective replication will depend on adequate monitoring and evaluation of uptake. This will be measured not only in terms of direct duplication of the practices in the short term, but by evidence of subsequent spontaneous adoption and adaptation, which will suggest that farmers have fully identified with the practices. The results of this monitoring will be used to modify replication strategies as necessary in order to maximize their effectiveness.

Projects within the CPP

117. The CPP will consist of 5 overlapping projects. Following initial approval of the CPP by GEF Council, individual projects (described in this document in paragraphs 123-147) will be subject to GEFSec for approval. Projects 1 and 5 will be prepared and submitted to GEFSec following the submission of the CPP as a whole (using preparatory funds which have already been approved), with the aim that they will be approved immediately following the approval of the CPP as a whole by Council. Individual projects will be technically cleared by GEFSec, sent to Council members for comments and then subject to CEO endorsement. Projects 2, 3 and 4 will be prepared during years 2, 4 and 6 respectively (using preparatory funds to be disbursed separately).

118. Reflecting the two intermediate objectives of the Programme as a whole, each of these projects will contain a 'structural' level element, aimed at improving the policy, institutional and/or regulatory context, and a 'field' level element, aimed at validating fully integrated models for SLM under a wide range of conditions. These solutions will be characterized by integration at different levels; between the different components of natural resources (e.g. soil, water and forests); between diverse stakeholders, both institutional and individual; and between field level actions and the 'structural' level context which affects them. The diversity of the ecosystem conditions, degree and type of threats, land-use practices and scales of intervention represented in the different projects and sites will maximize the replication potential of the models over a wide area of the national landscape.

119. Field level activities will be focused on 5 intervention areas (described in detail in **ANNEX L**), selected as between them being representative of the diversity of land degradation problems encountered in Cuba (erosion, acidity, poor drainage, soil compaction, soil salinity, aridity, loss of vegetation cover, inadequate management of water resources and fire) and providing the opportunity to demonstrate solutions to each of the barriers to SLM identified in the country. Within these 5 intervention areas, 12 individual demonstration sites have been defined (see **ANNEX N**).

Project sequence

120. The definition of the sequence of the projects within the CPP is based on the following considerations:

- In the earlier stages of the CPP most of the capacity building needed (related for example to planning, information management and monitoring) will be carried out, and the results of the capacity building will be tested and validated at field level; while the later projects will focus on replicating and/or up scaling the demonstration models developed in the earlier projects.
- Capacity building will be sequenced so that the activities of the earlier projects (planning systems, regulatory frameworks, testing of extension activities, education to build support) address national priorities and the most urgent needs to allow demonstration projects to succeed, while the activities of the later projects (integrated information systems, sustainable financing mechanisms to ensure success over the long term).
- Projects are sequenced so that the earlier demonstrations take place in smaller landscapes and the later demonstrations (in progressively larger landscapes) respond to less urgent priorities and incorporate the results of earlier activities.

Scales of operation

121. As described above, the programme will work at small, medium and large scales.

- **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. Diverse Cropping 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).
- **Landscape scale:** for example micro-catchment, sub-catchment, valley, and mountain massif, plain. The area in this case exceeds 150ha. Generally, these are State lands, although they may also include private tenants. Their multiplicity of uses, not only agricultural but also industrial and including human settlement areas, implies a far greater level of management complexity than at the small or medium scale.

122. The projects within the CPP are summarized below and their sequencing shown in **ANNEX B**.

Project 1. (Years 1-5): Capacity Building for Planning, Decision Making and Regulatory Systems & Awareness Building/Sustainable Land Management in Severely Degraded Ecosystems

GEF implementing agency:UNDP

Technical cooperation agency:FAO

Funding for implementation:GEF \$3,500,000⁴, GoC \$21,181,000.

123. The primary focus of this initial 5-year project will be on the promotion of a model of integration and cooperation between stakeholders at institutional and local levels. This will be achieved through **capacity building** at the national, provincial and local levels, which will support national planning and coordination needs and demonstration activities within this project and other projects of the CPP. This project will thereby contribute directly to *Outcome 1.4* of the CPP, which relates to the development of institutional capacities, and support *Outcome 1.1*, which relates to the development of planning frameworks. Key areas of emphasis of the project at national level will be on promoting inter-sector planning, monitoring and evaluation systems (which is also the main focus of Project 2), drought surveillance, land use enforcement systems, and education and awareness building (thereby contributing to *Outcome 1.4*).

124. The project will support the development and implementation of frameworks for institutional coordination in order to ensure the integration of planning processes, at national, regional and local levels. This will address the problem of limited inter-sector and inter-institutional planning which currently results in, for example, incompatibilities between short-term goals of agricultural production in order to meet food security needs and longer-term goals of sustainable land management (*Barrier 5*). This support will also facilitate the flow of integrated information, from ground-level, on diverse parameters of soil and water quality, to decision-makers, thereby contributing to addressing *Barrier 4* and supporting Project 2. Support will be provided for the preparation of outstanding planning instruments and technical regulations, to ensure that they adequately incorporate SLM considerations, thereby addressing *Barrier 6*. Technicians in key institutions will be trained in extension methodologies suited to the promotion of SLM, which for example include livelihood aspects, integrated consideration of biophysical and socioeconomic aspects and participatory evaluation of traditional land management practices, thereby addressing *Barrier 1*. This process will be made more sustainable by investing in the training of trainers, specifically the staff of technical agricultural colleges and agricultural universities (such as the National Institute for Agricultural Sciences, the Animal Science Institute, the José Antonio Echeverría Superior Polytechnic Institute and the Universities of Havana, Bayamo, Pinar del Río and Ciego de Ávila) which produce field technicians and those involved in the formulation of extension programmes. In addition, advice will be provided on the content of environmental education programmes (including syllabi of educational institutions), specifically to promote the incorporation of SLM messages.

125. At the **field level**, the project will focus on two intervention areas: *Guantánamo* and *Pinar del Río*. In both of these areas, the project will work in small scale landscapes.

126. *Guantánamo* has been selected for attention at the beginning of the Programme as it is characterized by particularly severe problems of soil erosion, which is one of the aspects of LD which is of greatest concern in Cuba. The project will focus here on halt land degradation and rehabilitating salinized and eroded areas in dry lands and xeric scrub regions. It will establish a series of pilot project that would implement different suites of actions and technologies to test and validate best approaches for addressing the main forms of LD in this scenario and the most appropriate land uses to prevent the aggravation of existing degradation processes. Using pilots the project will also strengthen capacities of local level resource managers and extension agents in SLM practices, extension work and environmental awareness, and of the experts/agencies with responsibility for soil erosion (e.g. Soils Institute), as well as water resource managers and other agencies. Field level work will also develop and test local level (municipal) planning systems, decision making tools, and regulations, with a focus on landscapes with severe soil erosion problems and of a small scale, thus validating the related actions under taken at the national level and fine tuning them to the specific conditions of this LD/environmental and production scenario.

⁴ Project preparation was funded by a GEF PDF-B grant of \$347,500 which also covered the preparation of the CPP Document as a whole and of Project 5.

127. The *Pinar del Río* area, meanwhile, provides the opportunity to address the barrier to SLM (which is particularly strongly represented there) of inadequate monitoring and information management related to climatic events, with which the soil erosion processes found there are closely linked. The project will focus there on the development and implementation of a monitoring system for severe climatic events, including an early warning system for droughts and a long-term monitoring system for the effects of climate change.

Key partner agencies

128. The principal institutional partner with which this project will work will be the Institute of Soils of MINAGRI, particularly in relation to the monitoring of soil conditions. However there will be a high degree of collaboration and integrated actions in between different institutions. For example in the region of Pinar del Río, the Institute of Meteorology (INSMET) is responsible for the developing of a monitoring system for extreme climatic events, but the responses to this will be applied in the agricultural land by the other institutions (ANAP, MINAGRI, MINAZ). Other important institutional partners will include national and provincial coordinating authorities, in relation to inter-institutional coordination; the National Association of Small Farmers (ANAP), the Ministry of Agriculture (MINAGRI) and the Ministry of Sugar (MINAZ), in relation to agricultural extension messages and methods; the Institute of Physical Planning (IPF) in relation to the incorporation of SLM into plans and programmes; as mentioned above the INSMET in relation to monitoring of meteorological phenomena and the National Institute of Hydrological Resources (INRH) in relation to the monitoring and management of water resources.

Timing of Activities:

- During **years 1-5**, this project will undertake capacity building at the systemic (inter-institutional) level, with particular initial focus on developing receptivity for the introduction of information management systems during Project 2;
- During **years 1-2**, the institutional and individual capacity building will focus primarily on capacity for sustainable management of severely degraded ecosystems, so as to support the demonstration activities in Guantánamo and the monitoring system for early alert to extreme climatic events in Pinar del Río.
- During **years 3-5**, the institutional and individual capacity building will extend its focus to include other resource areas (water, forests etc.), so as to support the demonstration activities of the other projects

End Results

129. This project will be of fundamental importance in establishing the conditions for the success and sustainability of the CPP as a whole. At its end (year 5):

- **systems for planning, decision making and coordination** will be operational at national, provincial and local level;
- **education and awareness activities** will have been developed, implemented, and tested/validated at national and local levels;
- an **integrated model for sustainable land management** of severely degraded dry land ecosystems, for application in small scale landscapes, will have been tested and implemented, with potential replication at many other sites within Cuba, and
- A **model for monitoring of severe climatic change and land degradation** will have been implemented and tested, with potential replication at many other sites within Cuba.

Project 2. (Years 3-7): Capacity Building for Information Coordination and Monitoring Systems/SLM in Areas with Water Resource Management Problems

GEF implementing agency: UNEP

Technical cooperation Agency: FAO

Funding for implementation: GEF \$2,375,000, GoC \$18,538,000

Funding for preparation GEF \$125,000.

130. This 5-year project will build upon the advances achieved in Project 1 in satisfying fundamental capacity needs, focusing more specifically on the development of the capacities required to ensure that decision-makers have adequate access to useful information on the conditions of soil and water resources. It will thereby address Barrier 4.

131. At the **national level**, capacity building activities will focus on supporting the definition of information requirements for decision-making related to SLM in Cuba; the provision 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 the provision of support to the establishment of a system for the management of the information generated, in order for it to be used by the diverse institutions involved in activities related to SLM in a way that permits integrated (inter-sector) decision-making.

132. This project will include significant activities at both the national and local levels, including pilot activities on M&E in the pilot sites. It would benefit as well from the M&E activities for the CPP as a whole that constitute Project 5, as well as the initial testing of site level M&E for severe climatic events that constitute a part of Project 1 (Pinar del Rio province).

133. At the **local level**, the project will continue and complement the work initiated under Project 1 in *Guantánamo* and *Pinar del Río*. In both of these sites, the project will work at medium scale, 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 newly developed M&E and information management activities in degraded landscapes. In *Pinar del Río*, it will build on the monitoring and evaluation system for severe climatic events established in Project 1 to establish an overall land degradation monitoring system that incorporates national and local level information systems, on agricultural lands of small scale; and will implement sustainable land management practices that integrate soil and water management practices.

134. In addition, two new intervention areas will be incorporated into this project: *Matanzas* and *Cauto River Basin*. The southern part of *Matanzas* is of vital importance for the production of food to supply the capital, Havana. Its selection provides the opportunity to demonstrate how to address problems of soil compaction and the use of low efficiency irrigation with associated soil impacts. *Cauto* was also selected for inclusion in this project due to the importance there of water management issues; its inclusion also allows the project to address additional factors including the excessive use of monocultures and the use of crops and livestock which are inappropriate for local conditions, that include slopes of more than 15 % (not recommended for livestock); high levels for salinity that are unsuitable for low saline resistant crops; and water quality not suitable for irrigation. In *Matanzas*, operations will focus on medium scale landscapes whereas in *Cauto* they will commence at the small scale.

135. In *Matanzas*, the project will implement sustainable land management practices that integrate soil and water management practices, with emphasis on conserving subterranean water reserves, and developing models for their sustainable management. It will also test and implement M&E and information management practices newly developed during Project 1. Likewise, actions in the *Cauto* river basin will focus on sustainable management of water resources and limitation of the consequences of drought.

Key partner agencies

136. Given the focus of this project on the sustainable management of water resources, the principal institutional partner will be the National Institute of Hydraulic Resources (INRH). Other institutions involved will include MINAGRI (specifically in relation to its role in the areas of irrigation and drainage), MINAZ and the Ministry of Higher Education (MES).

Timing of Activities

- During **years 3-7** of the CPP, the project will undertake activities to develop systemic (inter-institutional) capacity for monitoring and information management and dissemination at the national and local levels;
- During **years 3-5**, institutional and individual capacity building in monitoring and information management will focus on capacity for soils and water management, to support demonstration projects in Guantánamo, Pinar del Río, Havana Matanzas and Cauto;
- During **years 6-7**, institutional and individual capacity building in monitoring and information management will extend its focus to include forests and other areas, so as to support demonstration activities in other projects.

End Results

137. By the end of this project (**year 7** of the CPP):

- **systems for information coordination and monitoring** at national and local levels will be operational, and tested and validated at the local level
- **integrated models for sustainable management of water resources in agricultural zones at the small and medium scale** will have been tested and implemented, with potential replication at many other sites within Cuba
- **an integrated model for monitoring of land degradation processes** will have been implemented and tested at four sites (with the most advanced in Pinar del Rio) with potential replication at many other sites within Cuba.

Project 3. (Years 5-8): Capacity Building for Sustainable Financing Mechanisms / Sustainable Land Management in Dry land Forest Ecosystems and Cattle Ranching Areas

GEF implementing agency:UNDP

Technical cooperation agency:FAO

Funding for implementation:GEF \$1,425,000, GoC \$18,000,000

Funding for preparation:GEF \$75,000.

138. At the **national level**, this four-year project will strengthen national capacity to develop and apply sustainable financing mechanisms for SLM, thereby addressing Barrier 3. The project will also emphasize field level activities: at the **local level**, it will introduce into the CPP the theme of forest ecosystems, specifically those in dry land areas which are at particular risk from degradation processes. The project will work in 2 intervention areas, namely Cauto and Villa Clara. In demonstration sites within both of these intervention areas, the project will develop and test sustainable land management practices (including reforestation) in dry forest regions of medium scale, and test and implement the sustainable financing mechanisms and incentives developed through the project's actions at national level. In **Cauto**, where operations commenced under Project 2, seeking to build on the SLM experiences in water management by increasing the forest cover of the watershed and demonstrating the viability of integrated forest farms for preventing LD and for supporting the reforestation of catchments, providing energy and non timber products. In Villa Clara. The forests of Villa Clara are under particular pressure through conversion to pasture, and the areas affected are subsequently subject to further degradation by soil erosion, particularly on slopes, poor pasture management and fire. **Villa Clara**, demonstrations would include pilots of mixed forest exploitation alongside cultivation of shade coffee. They will also address ranching issues, specifically the application of livestock production technologies compatible with SLM, taking into account the sustainable financing mechanisms developed and validated through this project.

Key partner agencies

139. Given its emphasis at local level on addressing the problem of land degradation in forest ecosystems, a key partner agency will be the Forest and Livestock Department of MINAGRI. Key partners in relation to the development and validation of finance mechanisms in support of SLM will be the Ministry of Finance and Prices (MFP) and the Planning Ministry (MEP).

Timing of activities

- During **years 5-8** of the CPP, the project will undertake activities to develop systemic (inter-institutional) capacity for long-term sustainable financing mechanisms at the national and local levels
- During **years 5-8**, institutional and individual capacity building in monitoring and information management will focus on capacity for forest management, to support demonstration projects in Villa Clara and the Cauto River Basin.

End results

140. By the end of the project (year 8 of the CPP):

- **National and local level sustainable financing mechanisms and incentives** will have been developed and validated, to ensure long-term funding for sustainable land management activities
- **Integrated models for sustainable management of dry land forest ecosystems and cattle ranching areas** at the medium scale will have been tested and implemented, with potential replication at many other sites within Cuba.

Project 4. (Years 7-10): Validation of SLM Models at Landscape Scale

GEF implementing agency:UNDP

Secondary implementing agency:UNEP

Technical Cooperation Agency:FAO⁵

Funding for implementation:GEF \$1,290,500, GoC \$19,063,000.

Funding for preparation:GEF \$62,000

141. This project will focus overwhelmingly on up scaling and validating at landscape level the models of integrated SLM demonstrated at local level in the previous 3 projects. As needed, the project may also further strengthen landscape level planning processes and mechanisms established in Project 1.

142. In the *Cauto River Basin* intervention area, the project will focus on replicating (and scaling-up to landscape level) best practices from Project 3 for sustainable land management in dry forest regions. It will combine actions directed at agricultural ecosystems and dry forests, and will also the sustainable management of micro- or sub-catchments combining hydrological and forest resources.

143. In the *Guantánamo* intervention area, the project will develop, test and validate sustainable land management practices from Projects 1-2, including soil management and irrigation management, on agricultural lands at landscape level. The project will place strong emphasis on social factors, relating landscape level up-scaling to the important social considerations in this catchment, namely the expansion of important urban areas.

Key partner agencies

144. Given its emphasis on scaling-up the activities demonstrated in the other projects, this project will continue to work with many of the same institutional stakeholders, including MINAGRI, MINAZ, INRH, provincial, local and/or watershed level management agencies and coordinating authorities.

Timing of activities

- During **years 7-10** of the CPP, the project will focus on replicating and scaling-up demonstrations of sustainable land management.

End result

145. At the end of the project (year 10 of the CPP):

- sustainable land management practices from Projects 1-3 will have been replicated successfully within a landscape level management framework;
- Integrated models for sustainable management of various ecosystem types at the landscape scale have been tested and implemented, with potential replication at many other sites within Cuba.

Project 5. (Years 1-10): Coordination, Monitoring and Evaluation of Cuba CPP

GEF implementing agency:UNDP

Funding for implementation:GEF \$800,000⁶, GoC \$2,648,000 million.

146. This medium-sized project, which will last for the whole duration of the CPP, will focus on the coordination of the CPP as a whole, including the establishment of a monitoring and evaluation system for the Cuba CPP. Under this project, structural, technical and material capacities will be established for the internal direction of the CPP, its orientation, development and monitoring, the supervision of its actions, the harmonization and integration of the results of the different stages of the programme and its projects, the coordination of national and international partners and the interlinking of the actions promoted in the individual projects. The other individual projects within the CPP will also have their respective management mechanisms, which will fit into this overall CPP-level system. Rather than being solely an internal management tool for the CPP, this project will also aim to

⁵ The position of UNEP as a GEF implementing agency and FAO as a Technical Cooperation Agency does not necessarily reflect the relative importance of the two agencies in the implementation of this project.

⁶ Project preparation was funded by a GEF PDF-B grant of \$347,500 which also covered the preparation of the CPP Document as a whole and of Project 1.

support long-term monitoring and evaluation capacity for sustainable land management within Cuba, including the national level systems established in Project 1, and field level systems established at each demonstration site (in particular, in Pinar del Rio during Project 1). It will thereby permit the compatibility and integration between the results of each stage of the programme. Another objective of particular importance will be the coordination of the actions of all of the national and international partners and their linkages with the actions promoted in the projects.

End result

147. By the end of the project (**Year 10** of the CPP):

- an overall coordination unit will have successfully guided the implementation of the CPP as a whole;
- conditions will have been created which will have allowed the effective and efficient management of the individual projects within the CPP;
- mechanisms for management and participation will have allowed the CPP as a whole to function effectively and to respond to stakeholders' needs;
- M&E mechanisms will have been established which will have guided decision-making in the CPP as a whole and which will remain in place to guide ongoing SLM initiatives in Cuba.

Benchmarks for project sequencing

148. The 5 projects within the CPP are logically linked and interdependent. The commencement of each successive project will be subject to the required conditions for its success having been established through previous projects. To this end, clear 'benchmarks' have been defined in relation to project impacts, the achievement of which will trigger the commencement of subsequent projects. It is foreseen that Projects 1 and 5 will be approved at the same time as the CPP.

Table 2. Benchmarks for commencement of successive projects within the CPP

Project 1.	Capacity Building for Planning, Decision Making and Regulatory Systems & Awareness Building/Sustainable Land Management in Severely Degraded Ecosystems
	<ul style="list-style-type: none"> Approval of CPP
Project 2.	Capacity Building for Information Coordination and Monitoring Systems/ SLM in Areas with Water Resource Management Problems
	<ul style="list-style-type: none"> Awareness of SLM issues has been created during the first 2 years of implementation of Project 1 among the institutional actors who will adopt and manage the information management and monitoring systems to be established through this project and who will use the information generated; <i>30% of key staff in line ministries (MINAG, MINAZ, INRH, CITMA and IPF) must have an understanding of sustainable land management strategies and practices</i>
Project 3.	Capacity Building for Sustainable Financing Mechanisms/Sustainable Land Management in Dry land Forest Ecosystems and Cattle Ranching Areas
	<ul style="list-style-type: none"> Awareness of SLM issues has been developed during the first four years of Project 1 among the institutional actors who will be involved in the development and implementation of sustainable financing mechanisms for SLM; <i>40% of key staff in line ministries (MINAG, MINAZ, INRH, CITMA and IPF) must have an understanding of sustainable land management strategies and practices.</i> Favorable conditions have been developed during the first four years of Project 1) in the regulatory and policy framework, facilitating the development and introduction of sustainable financing mechanisms; <i>at least one major policy instrument must specifically refer to the intention of the GoC to develop alternative financial mechanisms for SLM, and no legal impediments must exist to their development.</i>
Project 4.	Validation of SLM Models at Landscape Scale
	<ul style="list-style-type: none"> Capacities and awareness have been developed through Project 1 among extension agents and other technicians, enabling them effectively to replicate and scale-up the SLM activities first demonstrated through Projects 1-3; <i>80% of extension agents and technicians in the intervention areas must have technical knowledge and awareness of SLM, and access to logistical resources, required for them to support the replication of SLM activities.</i> Demonstrations at small and medium scale have been either completed or successfully established, enabling these to be up-scaled to the landscape level during this project; <i>small-scale demonstrations must have been completed in Guantánamo (through Project 1, which will end in year 5), medium-scale demonstrations must have been successfully established there (during Project 2, which will overlap with this project), and small and medium-scale demonstrations must have been successfully established at Cauto (during Projects 2 and 3, both of which will overlap with this project).</i> Favorable policy, planning and regulatory conditions (developed through Project 1) which support the large-scale replication of SLM practices to be promoted through this project; <i>at least one major policy document must express GoC commitment to supporting the large scale application of SLM (through the dedication of resources to extension, regulation and M&E, the incorporation of SLM considerations into planning and the removal of perverse incentives), and medium- and long-range plans covering each of the intervention areas must directly take SLM considerations into account, as must long-range strategic plans for the environmental sector in the country which will form the basis for the approval of resources.</i>
Project 5.	Coordination, Monitoring and Evaluation of Cuba CPP
	<ul style="list-style-type: none"> Approval of CPP

b. KEY INDICATORS, ASSUMPTIONS, AND RISKS (FROM LOGFRAME)

Indicators

149. A range of types of indicators is called for at the programmatic (CPP) level, reflecting both the complexity of the implications of land degradation and of the benefits of sustainable land management, and the need for a multi-level approach, in accordance with GEF OP15 guidance. The relation of the indicators to the design logic of the CPP is set out in the logical framework (see **ANNEX A**).

150. Achievement of the **Programme Purpose** level will be determined principally by the degree of adoption of SLM activities in practice, which is considered to be the true measure of whether Cuba has actually achieved the ‘capacities and conditions for managing land in a sustainable manner that contributes to maintaining ecosystem productivity and functions’. Indicators will distinguish between direct impacts of the CPP within the five intervention areas where activities will be concentrated, and indirect impacts throughout the rest of the country resulting from replication. Another key indicator will be the existence and implementation of plans governing land use which adequately incorporate SLM considerations, and use not only a local but also a regional or watershed level perspective.

151. **Intermediate Objective 1** relates to the establishment of capacities for SLM at national level, ensuring inter-sectoral coordination and effective implementation of land management plans and activities. One indicator of this will be the number of “key institutions”⁷ nationwide participating in coordinated and integrated sustainable land management. Another indicator will be the existence of agreements and systems between authorities and organizations at national, provincial and municipal level, formalizing this coordination in relation to SLM. Key indicators at the **Outcome** level will be:

- The degree of adoption of principles and operational guidelines for SLM by key ministries;
- The finalization of favorable regulatory and planning instruments for SLM;
- The functioning of a system for climatic monitoring;
- The levels of funding that are channeled to SLM through the budgets of Government agencies and productive entities, and financing schemes, and the number of producers receiving such funding and using it for SLM;
- The scale of the human resources dedicated to SLM-related activities in key ministries;
- The levels of awareness and knowledge of SLM among staff of key institutions;
- The level and quality of support provided to producers for implementing SLM;
- The level of dissemination of information on policy, legal and regulatory changes related to SLM, and its effectiveness in terms of raised awareness among the target populations;
- The establishment of a monitoring evaluation system and an information network on LD and SLM involving key institutions.

152. **Intermediate Objective 2** relates to the generation in the five intervention areas of effective models of SLM. The achievement of this objective will be determined by the effectiveness of these models within the intervention areas themselves. This will be measured by their levels of adoption by local producers and the areas which they cover, and also the impacts of the practices in terms of reductions in rates of soil erosion, extent of forest cover, efficiency of water use, livelihood and food security and crop yields. At the **Outcome** level, key indicators will be:

- The functioning of a monitoring and evaluation system sites to track changes in the intervention areas and to allow for adaptive management;
- The application of tools in the intervention areas for information management and sharing;

⁷ ‘Key institutions’ are defined as Government Ministries or Institutes, provincial and municipal governments, or national or regional organizations of farmers or other stakeholders.

- The degree of incorporation of SLM considerations into extension and regulation initiatives in the intervention areas, as a measure of local capacity for demonstration and replication;
- The number of plans incorporating SLM considerations in the demonstration sites and intervention areas, respectively;
- The number of land management entities carrying out SLM activities in the demonstration sites and intervention areas, respectively.

Assumptions

153. Achievement of programme outcomes, intermediate objectives and purpose is dependent upon a series of assumptions being met.

Continued interest and willingness on the part of the GoC in applying SLM principles

154. GEF investment in the CPP will be accompanied by, and dependent upon, significant amounts of co-financing from the Government of Cuba of programmes, projects and other initiatives directed at combating land degradation and promoting SLM (see paragraph 241). 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 this document.

The institutional, planning and legal framework continues in favor of the environment

155. The institutional and legal framework in Cuba is currently favorable for the promotion of SLM (see paragraphs 6-10 and 168-175), despite some shortcomings (Barrier 6). 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 CPP to maintain and improve these favorable conditions (see particularly Outcome 1.1, Outcome 1.3 and Outcome 1.5); the risk that this assumption is not met is therefore considered to be low; the only conditions under which it might conceivably not be met would be significant changes in the national political context as a whole.

Stability of staff in key institutions

156. Linked to the above is the assumption that staff in key institutions which 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. The risk that the assumption of staff stability is not met is considered to be low, given the conditions of institutional stability that are typical in the country and also the strategies that the project will apply in order to ensure that messages and mechanisms are rapidly institutionalized.

Social and economic conditions in rural areas remain favorable for SLM

157. The land management decisions of the rural poor 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. Even when in principle convinced its benefits, there is in practice the possibility that changed conditions affecting farmers may oblige them to take land management decisions which 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 (see paragraph 3) have tended to have the same effect, reducing the pool of labor resources available to invest in labor-intensive SLM. These constraints can to a large extent be buffered through the strategies to be applied under the CPP, such as the expansion of the availability of incentives for SLM (see Outcome 1.2) and the development and promotion of SLM technologies which are adapted to local social, demographic and economic conditions (see Outcome 1.3 and Outcome 2.3) and are robust to changes in these conditions. There is however a continued, albeit low, risk that any abrupt and major change in social and economic conditions at national level (for example due to geopolitical factors) might exceed the adaptive capacity of such systems and lead to increased land degradation.

Continued commitment on the part of local stakeholders

158. 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. The CPP will place heavy emphasis on awareness raising at all levels (Outcome 1.4) 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 (Outcome 1.3), for example through the adoption of a livelihoods focus and the use of participatory methods for technology development.

LOCAL, NATIONAL AND GLOBAL BENEFITS

159. The programme will directly result in reduced land degradation over an area of 1,876 ha of agricultural land, 300 ha of pasture land and 6,990 ha of forest land in the 12 demonstration sites where it will work, and indirectly it will reduce land degradation over 968,200 ha of agricultural land, 3,300 ha of pasture land and 123,773 ha of forest land in the remainder of the five intervention areas, where these activities will be replicated. In addition, the CPP will promote the development of conditions for a further eventual increase in the scale of replication elsewhere in Cuba, through the development of planning frameworks. The areas covered by such frameworks are estimated at 1,161,840 ha of agricultural land, 10,000 ha of pasture land and 200,000 ha of forest land.

160. It is expected that erosion rates over these areas, which are currently estimated at between 10 and 40 tones/ha/year, will be reduced by between 10 and 70% (equivalent to between 2.4 and 8 tones/ha/year). In Villa Clara and Cauto intervention areas, the area of forest managed in accordance with SLM principles (with diverse structure and species composition) will be increased, by 3,000 ha and 12,000 ha respectively (a 120% increase above current levels).

161. These changes will have very significant **local benefits**, in terms of increased food production, increased access to water supplies and reduced vulnerability to environmental shocks. It is estimated that production of staple crops will increase in the intervention areas by between 30 and 75% by the end of the 10 year period of the CPP, resulting in *increased incomes* and *food security*. Increases in the extent and improvements in the quality of vegetation cover will also result in *reductions in the vulnerability* of the population to environmental shocks such as hurricanes and droughts. These changes will be accompanied by increased *employment* opportunities (particularly for women), improvements in *human and social capital* (for example strengthened individual capacities and awareness), improved *living conditions* and *reductions in rural-urban migration*.

162. The local benefits of the CPP will be spread across a wide range of stakeholder groups, but will be of particular importance for the poor. Despite the social safety nets provided by the centrally-planned system in Cuba, the poor tend to be particularly vulnerable to environmental shocks such as hurricanes and droughts, and will therefore benefit most from reductions in such vulnerability expected from the programme. At the same time, the promotion of low-input land management practices will be particularly attractive to the poorer sectors of the population who typically have limited ability to invest in inputs. The CPP will also have particular benefits for women, given their high levels of participation in agricultural activities.

163. At **national level**, the implications of the above will be increased and more stable availability of food crops for both the rural and urban populations; increased quantities of agricultural products available for export; and reductions in the financial and social costs associated with natural disasters. Increases in food production are of particularly vital importance in the case of Cuba, given its limited access to imports, while increases in the production of commercial crops will increase the country's ability to generate foreign exchange and purchase vital inputs in the overseas markets that are available to it.

164. At the **global level**, the CPP will result in improved ecosystem function over the total of 1,104,439 ha of agricultural, pasture and forest land described in paragraph 159. In concrete terms, this will imply that soil loss is not exceeded by rates of soil development (as a result of measures to be taken to protect the soil against rainfall impact and cross-surface runoff, and to promote the buildup of humus); the physical, biological and chemical properties of the soil will be maintained and improved (for example as a result of reduced compaction through improved range management, and more appropriate application of chemical inputs and irrigation); and that the functioning of nutrient and hydrological cycles will be improved (for example as a result of the incorporation of increased numbers of nitrogen-fixing trees in productive systems). As a consequence, the productive capacities of soil and water resources will be maintained in the long term, resulting in turn in increased stability of

demographic processes and reductions in indirect pressures on ecosystems and species of global importance elsewhere in the country.

165. The geographical extent of the impacts of the CPP, in terms of the reduction of land degradation, will mean that these go beyond individual ecosystems, and affect whole landscapes. Such landscape level changes are to be expected in the latter part of the CPP period, as processes initially validated at the 'micro' level are scaled up. Effects in adjoining ecosystems will result in enhancement of the biological connectivity between them, benefiting species which migrate locally or regionally and increasing their effective habitat size.

166. In addition to benefits in relation to **land degradation** the CPP will generate significant global benefits in other focal areas. Reduction in erosion rates will benefit **international waters** by reducing by an estimated 50% the estimated 2 million tones of sediment which currently drain into the 'Greater Antillean Marine' Global 200 priority ecoregion which surrounds the country, which currently has severe impacts on the health of its corals and other marine fauna. In the area of **biodiversity**, the CPP will lead to reduced pressures on a number of globally important ecosystems, namely Cuban Pine forests, Cuban Dry Forest and Cuban Moist Forest. Reforestation with native species in certain sites will have particular benefits for the status of endemic species, of which Cuba contains high concentrations; studies to date have demonstrated that, in some very degraded ecosystems (such as mining spoil sites without vegetation cover), endemic species may come to make up 40% of the total after 20 years of reforestation (with native species such as *Pinus cubensis*) (Herrero et al 2003), and in moderately degraded ecosystems this may reach 70% after 30 years of reforestation activities (Herrero et al 2004). The CPP will contribute directly to a number of the priorities stated in the National Strategy for Biological Diversity, for example the conservation and sustainable use at the level of ecosystems and landscapes, particularly in fragile areas such as the arid and semi-arid zones; the restoration and/or rehabilitation of degraded ecosystems and the evaluation of local effects and interactions related to global climate change and local climate; the development of action plans for the protection of food security through the use of sustainable practices; the implementation of instruments for territorial planning; social incentives, environmental education, awareness raising and citizen participation; the introduction of integrated agroforestry/livestock systems; and the coordination and integration of disaster planning. The reduction in the rates of degradation of natural ecosystems, through deforestation and fire, will help to limit the loss of carbon stocks of importance for **climate change**. In addition, reductions in the breakdown of the natural functions of ecosystems will safeguard their ability to adapt to processes of climate change. There will also be important synergies between the CPP and the initiatives of Cuba in relation to Global Climate Change. Under the national coordination of the National Climate Change Group, Cuba is participating in the UNDP-GEF project "Capacity building for Adaptation to Climate Change in Central América, México and Cuba, stage II", which seeks to counter the impacts of drought in the east of the country in which CPP demonstration sites area located. Through Project 1, the CPP will strengthen capacities for the implementation of an early warning system for extreme climatic events, through Project 1; through Project 2, it will create capacities for improved management hydrological resources in adaptation to predicted changes in their availability; and in Project 3, it will promote livestock and forestry management practices which are resilient to changes in climatic conditions.

2. COUNTRY OWNERSHIP

a. COUNTRY ELIGIBILITY

167. Cuba is eligible for UNDP assistance. It signed the UNCCD on 15/10/94 and (date of ratification 13/3/97), the Convention on Biological Diversity on 12/6/92 (date of ratification 9/3/94) and the Framework Convention on Climate Change on 13/6/92 (date of ratification 5/4/94).

b. COUNTRY DRIVENNESS

168. The Government of Cuba places particular priority to sustainable land management, motivated by its recognition of the severity of the processes of land degradation occurring in the country, and the practical and economic advantages of practices with SLM potential such as organic agriculture and reforestation, in terms of reduced dependency on imports. Despite the decline of the agricultural sector following the collapse the Soviet bloc, it remains of crucial importance for the country's food security and is a major focus of Government investment, as is the forestry sector (there is also openness on the Government to promote overseas private sector involvement in this sector). These conditions therefore make it possible for carefully targeted investments such as

those proposed through the CPP to make a major impact on SLM, through leveraging significant quantities of resources of the Government and other investors.

169. The commitment by the Government of Cuba to environmental protection, and specifically to countering land degradation, is unequivocally stated in key policy and legal instruments. Most fundamentally, following the Río conference in 1992, the **Constitution of the Republic** was modified to strengthen its reference to the importance of environmental protection and the related responsibilities of the population. The **Environmental Law (Decree No. 81 of 1997)**, **Decree No. 179 of 1993** on the protection, use and conservation of soils, **Decree 138 of 1993 on Terrestrial Waters**, the **Mining Law of 1994** and the **Forestry Law (Law 85(L)) of 1998** are other instruments of fundamental significance which provide the legal basis for the expression of this commitment.

170. In recognition of the gravity of land degradation in the country, and as an expression of the level of priority that the GoC places in addressing the issue, a **National Programme to Combat Desertification and Drought (NPCDD)**; this process began in 1996 with the formulation of a National Group which began working on the issue with the support of the CCD Secretariat, FAO, IFAD and the Global Mechanism. In 2000, the document was concluded and approved by the Government. The NPCDD presents the results of different assessments, the national strategy to combat desertification and drought and the **National Action Plan (NAP)**.

171. The NPCDD identifies lines of action as follows: (i) Economical and social development of affected areas; (ii) Perfecting and application of judicial, economic and administrative instruments for the application, monitoring and control of NPCDD progress; (iii) Integration and coordination of policies and strategies; (iv) Environmental education and public participation; (v) Scientific research and technological innovation; (vi) Institutional strengthening and (vii) International cooperation.

172. The NPCDD also identifies a series of priority regions and initiatives, each covering several challenges and lines of action, composing the principal strategies that the NPCDD is built on, integrating existing national, territorial and sectoral programmes and plans. The NPCDD is a comprehensive document that provides guidance for the implementation of the Country Pilot Partnership, which, in turn, supports the fulfillments of its long term goals and the capture of the global benefits of its implementation.

173. The commitment of Cuba to sustainable land management is shown by the Government-driven initiatives to combat land degradation which have been carried out over the last two decades and most recently under the National Programme for Soil Conservation and Improvement (see paragraph 70). These include measures to control erosion such as contour planting, live barriers, stone barriers, live ground cover and terraces; measures to correct problems of salinity and poor drainage such as control of irrigation water quality, application of gypsum, improvement of drainage systems and leveling; sub-soiling and minimum tillage; and calcareous amendments to combat soil acidity.

174. The Government has invested heavily in the establishment of forest plantations in recent years, achieving a total area by the end of 2003 of 332,400 ha. The Cuban Forest Service is currently being strengthened through a project funded by CIDA, which receives significant counterpart inputs from the Government.

175. The Government is also highly committed to territorial land use planning. Between the years 1980 and 1984, the Department of Physical Planning carried out investigations of the potential of land resources aimed at defining appropriate levels of utilization, as part of a long-range development strategy up to the year 2000. Under this initiative, maps were produced of relief, soils, hydrological networks, floods, forests and land use and tenure. The Government's commitment to the application of watershed-based planning of natural resource use is shown by the establishment in 1997 of the National Council for Hydrological Catchments, with the objective of supporting the integrated environmental management of the country's main hydrological catchments.

3. PROGRAM AND POLICY CONFORMITY

a. FIT TO GEF OPERATIONAL PROGRAM AND STRATEGIC PRIORITY

176. The CPP will contribute to GEF Operational Programme 15 on sustainable land management, its purpose being that 'Cuba has the capacities and conditions for managing land in a sustainable manner that contributes to maintaining ecosystem productivity and functions', which is in keeping with the OP15 objective of 'mitigating 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 peoples livelihoods and economic well being'. In keeping with OP15 guidance under GEF 4, the CPP and each of its constituent projects will include both 'structural' level activities (aimed at developing a favorable context of policies, regulations, plans and incentives) and field level activities aimed at validating mechanisms and technologies and achieving concrete positive impacts within the time span of the CPP. The specific activities and themes included within the project all qualify for support under OP15, including capacity building, sustainable agriculture, sustainable rangeland/pasture management and sustainable forest and woodland management. The adoption of a programmatic -level approach, through a 10-year CPP, is also in keeping with emerging GEF 4 guidance, offering as it does advantages such as reduced transaction costs, opportunities for leveraging additional investments, reduced risk of duplication of efforts, opportunities for constructive synergies between projects and donors, and more effective and efficient targeting of investments (see paragraph 243).

Lessons learnt

177. The CPP will take advantage of lessons learnt at national and international, in relation to a number of issues. These are recognized in GEF guidance on OP15 under GEF 4.

Prevention and control are more cost-effective than rehabilitation measures

178. The CPP will include a range of solutions to land degradation, ranging from conservation and prevention to rehabilitation and sustainable use. However, proportionately more emphasis will be placed on halting the processes which cause land degradation, rather attempting to revert the damage which has already been caused. This will be reflected in the choice of specific sites where the projects will work, which will principally include areas where land degradation is at present only threatened or at an incipient stage. In those sites where land degradation is already far advanced, the best course of action may in some case be to set these aside, eliminating as far as possible the pressures which are currently perpetuating degradation processes (such as extensive grazing) and where feasible promoting natural processes of regeneration (through, for example, the establishment of seed trees as nuclei for colonization, or the reduction of the intensity of fires through educational activities). Only under very special circumstances might more intensive investment, such as engineering works, be considered for land recovery. Likewise, land management practices will focus more on protecting the soil from rainfall impact, through the establishment of vegetation or mulch cover, than on halting the resulting soil runoff through soil conservation barriers. This focus on prevention rather than cure will also imply that much emphasis will be placed on actions at the policy and legislative level in order to remove the underlying causes of the processes leading to land degradation (see paragraph 179).

Effective strategies for the prevention and control of land degradation will require an appropriate mix of local management and macro policy approaches

179. In keeping with OP15 guidance, the investments under the CPP will be divided between policy level and field level. This is reflected in the two intermediate objectives of the project. On the one hand, without policy level actions the field level actions are likely to be in vain as the underlying causes of the degradation processes will remain, and they will continue to be significant barriers to their removal. On the other, without field level initiatives significant barriers to SLM will remain at field level, for example in relation to awareness and information generation; the policy level actions will have little credibility; there will be little possibility of determining their effectiveness in practice; and the local populations which are most directly affected by land degradation are unlikely to see concrete benefits in the medium term.

Enabling environment and capacity building for SLM are fundamental to achieving positive results.

180. Of key importance to the sustainability of the results of the programme will be its strong emphasis on the strengthening of capacities in institutions related to SLM at different levels. In addition to training producers and extension agents, for example, the programme will leave strengthened capacities among educational and vocational training institutions to continue carrying out such well directed training in the long term. Rather than simply providing funds to cover the costs of SLM, the programme will ensure that the policies, regulations and institutional capacities exist to ensure that mechanisms for the generation and channeling of funds to SLM

function in the long term. And rather than providing one-off information and guidance on land degradation and SLM, or simply material support to monitoring systems, the programme will build institutional capacity for the management of information in such a way that it guides SLM-related decisions.

Integrated approaches that are based on stakeholder participation as well as building on established national planning frameworks are likely to assure sustainability of SLM activities.

181. Even when provisions are in place for planning, regulation and incentives intended to modify producers' land management practices, at the end of the day such modifications will only be significant and sustainable if they themselves are convinced that SLM is good for them. Based on this assumption, the programme will include provisions for stakeholder participation at a number of levels (see **ANNEX H**). Of particular importance will be the approach of accompanying the more 'structural' level initiatives under Intermediate Objective 1 with highly participatory ground level validation in selected demonstration sites under Intermediate Objective 2; and the focus on the participatory development and validation of technologies in order to ensure that these truly correspond to producers' conditions and needs (see Outcome 1.3, paragraph 95).

b. SUSTAINABILITY (INCLUDING FINANCIAL SUSTAINABILITY)

182. The core justification for the CPP will be increases in **environmental sustainability** in Cuba. As a result of the programme, soil, forest and water resources throughout the country will be managed in ways which 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 (see in particular Outcome 1.5 and Outcome 2.1);
- 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 (see Outcome 2.3). These practices will be piloted in successive projects within the CPP, under differing conditions in demonstration sites spread across the whole country; at the same time, the CPP will result in the development of a policy and legislative framework incentives and institutional capacities in support of their implementation (Outcomes 1.1, 1.2 and 1.3).

183. The **social sustainability** of the results of the CPP will be ensured by the following strategies:

- Promoting the development of awareness of the integrated nature of land degradation and sustainable land management issues, including social aspects (see Outcome 1.4). 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 (see Outcome 2.3).

184. The **financial sustainability** of the results of the CPP will be ensured by:

- The application of existing financial instruments to SLM (see Outcome 1.2). In many cases (for example FONADEF) legal provision already exists for the funds managed by these instruments to be used for SLM; in other cases, lobbying and awareness raising will be carried out in order for funds to be redirected to SLM.

- The development and application of additional financing mechanisms which fairly reflect the externalities associated with LD and SLM, and which at the same time are tailored as closely as possible to existing conditions and capacities. Examples are schemes for the compensation of environmental services based on careful analysis of the flows of costs and benefits related to land management activities, and willingness to pay and transaction costs under alternative administrative models.
- 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 hoped 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.

185. The **institutional sustainability** of the results of the CPP will be ensured by:

- 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.
- The fact that the Project Implementation Unit of the CPP as a whole will be constituted by an existing institution (the Technical Unit for Desertification and Drought) which already has legal status; the Directors of each project within the CPP will also be drawn from the same existing Technical Unit for Desertification and Drought.

186. The CPP will therefore not involve the creation of new institutional entities or the appointment of new staff but will be based on, and thereby strengthen, existing institutions and personnel.

c. REPLICABILITY

187. Programme activities at field level will be concentrated in 12 demonstration sites located within 5 intervention areas (Guantánamo, Pinar del Río, Villa Clara, Cauto and Havana-Matanzas). These are described in detail in **ANNEX L**. The main, and most direct, level at which replication of project results and lessons learnt will occur will be between the 12 demonstration sites (at 'micro level' early on in the CPP and landscape level later on) and the remainder of the area of the intervention areas within which they lie. In this way, the **direct impacts** within the demonstration sites (the application of SLM over an area of 1,876 ha of agricultural land, 300 ha of pasture land and 6,990 ha of forest land) will lead to the subsequent **replication** of the application of SLM over 968,200 ha of agricultural land, 3,300 ha of pasture land and 123,773 ha of forest land in the remainder of the five intervention areas. Meanwhile, direct impacts in terms of the numbers of producers managing water, agricultural land, grazing land and forest resources sustainable (2,303, 1,034, 210 and 1,059 producers respectively) will lead through replication to 140,000, 80,000, 1,000 and 59,000 producers respectively doing so in the 5 intervention areas as a whole.

188. The improved incorporation of SLM considerations into plans, policies and regulations will in turn lead to the **eventual further replication** of the application of SLM to 1,161,840 ha of agricultural land, 10,000 ha of pasture land and 200,000 ha of forest land at national level, and the sustainable management of water resources, agricultural land, grazing lands and forests by 200,000, 160,000, 15,000 and 25,000 producers respectively (although it is beyond the scope of the CPP itself to guarantee these impacts directly).

Table 3. Summary of replication effects (replication factors shown in brackets)

Indicator	Level				
	12 demonstration sites	5 intervention areas		National level ¹	
Area of land being managed sustainable (ha)					
Agricultural land	1,876	968,200	(x 516.1)	1,161,840	(x 1.2)
Grazing land	300	3,300	(x 11.0)	10,000	(x 2.8)
Forest land	6,990	123,773	(x 17.7)	200,000	(x 1.5)
Number of producers managing resources sustainable					
Water	2,303	140,000	(x 60.8)	200,000	(x 1.4)
Agricultural land	1,034	80,000	(x 77.4)	160,000	(x 2.0)

Grazing land	210	1,000	(x 4.8)	15,000	(x 12.4)
Forest land	1,059	59,000	(x 55.7)	25,000	(x 0.4)

¹Beyond the direct scope of the CPP (see paragraph 188)

189. The principal focus of Project 4 (with a total budget of \$19.35 million, of which \$1.35 will be GEF funds) will be replication; activities and strategies aimed at ensuring effective replication are described under Outcome 2.4. A key element of Programme design which will favor replication will be the diversity of the intervention areas chosen; as shown in **ANNEX K**, these are distributed across the country and include a wide diversity of conditions which approximately represent the diversity present in the country as a whole, as well as in many other parts of the Caribbean and Latin America. As described under Outcome 2.4, the following three principal strategies will be adopted to ensure replication:

- i) Monitoring, systematization and documentation of lessons learnt from the practices and mechanisms demonstrated, through both the formal M&E system of the CPP (Project 5) and participatory exercises involving local farmers and others from the target areas for replication.
- ii) Effective dissemination of lessons learnt through a range of media tailored to the needs and characteristics of the different target groups, ranging from the producers who are expected to implement SLM practices, to the policy formulators, decision makers and planners who it is hoped will contribute to creating the enabling environment required for SLM to succeed.
- iii) Monitoring and evaluation of the adoption of practices, permitting replication strategies to be modified as necessary to achieve maximum effectiveness.

190. The CPP will have replication value outside of its specific Cuban system boundary on two counts: together with other ongoing and planned GEF investments in the region (see paragraph 256), it will generate technological and methodological lessons which may be used in combating land degradation elsewhere in the Caribbean as well as in Mexico and mainland Central and South America; at the same time, it will serve to validate the Country Pilot Partnership model and, this proves successful, may contribute to replication of the CPP approach by GEF worldwide.

d. STAKEHOLDER INVOLVEMENT

191. The roles of the principal institutional stakeholders are summarized in paragraphs 11-13. Additional information is given in **ANNEX H** on institutional and local stakeholders, including their capacities and roles, and their current and potential relation to the CPP.

Local stakeholders

192. There are a number of principal stakeholders among the beneficiary population of the programme at local level, with different forms of relation with and dependence on natural resources, as follows:

- **Individual farmers** are present in all of the intervention areas. They are highly vulnerable to desertification, drought, access and economic limitations and ecosystem fragility in the pre-montane and montane conditions of the Villa Clara and Cauto intervention areas, as well as to extreme climatic conditions (hurricanes, cyclones and drought in Pinar del Río and drought in Guantánamo) and natural resource degradation (aridity and salinity in Guantánamo and Cauto, forest degradation in Cauto and Villa Clara and water resource degradation in Havana Matanzas). Typically they are highly dependent on their own resources and have a direct relation with natural resources through the exploitation of soil, water and forests, participate in the conservation of biological diversity (fauna and flora) and also in actions related to water and air pollution.
- **Cooperative members**⁸ are also present in all of the intervention areas. They tend to depend on their own resources but are covered by State benefits such as credits, insurance, social security and (in the case of

⁸Including the following categories: i) **Agricultural Production Cooperatives (CPA)** which have social forms of production in which the factors of production are collectively owned; ii) **Credit and Service Cooperatives (CSC)** in which the means of

State farm workers) salaries. Their vulnerability is similar to that of individual farmers in relation to their conditions of territoriality and sensibility to the conditions of their surroundings; however they are more protected due to the social nature of their property and the actions of the State. They also have a direct relation with natural resources through the exploitation of soil, water and forests; participate in the conservation of biological diversity (fauna and flora) and in the industrial or semi-industrial processing of agricultural products which are directly related to water and air pollution.

- **Leader farmers** are exposed to ecosystem vulnerability but however are capable of proposing, applying and multiplying their own or received initiatives. They have a well-developed capacity to bring other stakeholders together and have technical credibility, despite having limited economic resources for the multiplication of their actions and being faced by conditions of difficult access (montane and pre-montane), extreme climatic conditions and natural resource degradation.
- **Community leaders** tend to be highly exposed to ecosystem conditions in terms of access, climate and natural resource degradation. They have a well-developed capacity to bring other stakeholders together and have political credibility, despite having insufficient training to carry out certain technical roles. Their relationship with natural resources is indirect, as it affects the development of human and material resources for the appropriate exploitation of soils, water and forests and they are often faced with stakeholders with a limited capacity to understand impacts on natural resources.
- **Extensionists** are vulnerable to ecosystem conditions in relation to access, climate and natural resource degradation. They have technical credibility and capacity to demonstrate technologies despite having limited economic resources and the fact that at times the people they deal with have inadequate capacity to assimilate new technologies. Their relations with natural resources are indirect, but they have a high degree of influence on farmers in relation to sustainable resource use.

Stakeholder participation in CPP design

193. During the formulation of the NPCDD (1997-2000), 15 workshops were held, one in each province and one in the special municipality of Isla de la Juventud). In these, communities from affected rural areas participated, including civil society (organized through NGOs such as the National Association of Small-scale Farmers, the Federation of Cuban Women and PRONATURALEZA), and mass organizations such as the committees for the defense of the revolution, the union of Cuban pioneers and provincial agriculture and forestry organizations. The Cuban scientific community also provided scientific and technological innovation inputs through six workshops. These workshops were then followed by a process of validation of the information and the final formulation of the Strategy and Plan with objectives and six key Projects that provide the guidance framework for the GEF CPP.

194. Preparation of the CPP itself has involved a number of workshops with representatives from different levels and regions of the country, including:

- A National Workshop for information collection and harmonization for the CPP (17 to 21 November 2003)
- A participatory workshop for completion of the PDF B request (July 2004)
- The first part of inception workshop for the PDF B (13-17 December 2004)
- A National Workshop to present the CPP (20-22 January 2005)
- A consultative workshop on CPP strategic interventions, incremental costs and resource mobilization (part 2 of Inception workshop) (7-11 February 2005)
- A workshop on institutional and policy deficiencies (14-16 March 2005)
- A threats and log frame workshop, definition of intervention sites and national capacity strengthening requirements (Havana, 4 - 7 de April 2005)
- A multi-agency meeting for discussing partnerships for the CPP (March 2005).
- Partnership building with NGOs, particularly in the agricultural areas (March 2005)

production are cooperative, with the land and other factors of production remaining the property of individual members, and in which external labor may be employed; and iii) **Basic Units of Cooperative Production (BUCPs)** in which the land remains State property but farmers have usufruct rights, and the factors of production and their products are the property of individual members.

- Constitution of the National Coordination Organ of the Executive Committee and the working group of the CPP
- Constitution of the scientific and technical counterpart of the CPP, with representatives of national institutions from the teaching and scientific fields (May, 2005).
- Interagency meeting of the UN System in Cuba to present the sequencing of CPP projects and build partnerships and alliances
- Presentation of the CPP to national and international scientific community in the V International Convention for The Environment and Development in Havana (July 7th 2005)
- International workshop for the presentation of the CPP (July 18th and 19th, 2005)

195. The official presentation of the CPP to national authorities, local representatives and international agencies in the workshop of 18th and 19th July 2005 allowed the discussion, validation and approval by these entities of the basic elements of the CPP, including the logical framework, the scheme of projects and their sequencing and the roles of different stakeholders. The event resulted in the emission of a formal joint declaration of commitment to the CPP by the participants.

Provisions for stakeholder participation during the CPP implementation phase

Government counterparts

196. The Ministry of Science, Technology and the Environment (CITMA) will, through its Environmental Education, Management and Information Centre (CIGEA) be responsible for national coordination of the CPP in all of its phases and projects (see paragraph 0). CITMA and other key governmental bodies (MINAGRI, INRH and MINVEC) will be members of the National Steering Committee of the CPP (see Table 6), and will thereby also have the opportunity to approve strategic interventions of the CPP, control the use of resources and approve reports and annual operational and financial plans. More technical entities of the Government (CIGEA, the Directorate of International Collaboration, the Directorate of International Organizations of the Ministry of Foreign Investment, the Institute of Soils of MINAGRI, the National Institute of Sugar Cane Research of MINAZ, the Center of Hygiene and Water Quality of INRH and the Physical Planning Institute of the Ministry of Physical Planning) will be able to provide technical inputs through their participation in the Executive Group, whose role is also to supervise the general progress of CPP and the projects within it; review periodic financial plans and activities and reports and present them to the NSC for approval; control and monitor financial and administrative implementation of the CPP and its projects and be responsible for ensuring that they take into account the interest and concerns of local levels.

197. Key Government counterparts will also be involved through the Inception Workshop to be held shortly after project startup (see paragraph 204), where they will have the opportunity to participate in the validation of the CPP logical framework and the preparation of the programmes Annual Work plan and Budget. The Government's Executing Agency for the programme (CITMA) will participate in Annual Programme Reviews/Tripartite Reviews (see paragraph 215), and in consequence in decisions regarding the continued financing of the CPP and the startup of individual projects, based on indicators of progress.

198. At the local level, the principal actors in each area of action (region or locality), including provincial delegations of CITMA, MINAGRI, INRH, IPF and MINAZ, as well as scientific and academic institutions, will be involved as members of Local Coordination Teams (see paragraph 275).

Local stakeholders

199. Local stakeholders will be formally represented in project decision-making and planning structures through a number of organizations. The National Association of Small Farmers (ANAP) and the Cuban Women's Federation (FMC) will both have representatives as members of the Project Steering Committee, while ANAP, FMC, the Cuban Association of Animal Production (ACPA) and the Cuban Association of Agricultural and Forestry Technicians (ACTAF) will be members of the Executive Group (see paragraph 271). In addition, community representatives and head of cooperatives will be members of the Local Coordination Teams (LCT) described in paragraph 275. More detailed provisions will be made for the participation of local stakeholders in the design and implementation of each of the constituent projects of the CPP, based on site-specific stakeholder analyses.

e. MONITORING AND EVALUATION

200. Monitoring and evaluation of the CPP will be adapted from procedures established by UNDP and GEF for Full Size Projects and will be provided by the CPP team and the UNDP Country Office (UNDP-CO) with support from UNDP/GEF. The Logical Framework Matrix in **ANNEX A** provides *performance* and *impact* indicators for CPP implementation along with their corresponding *means of verification*. These will form the basis on which the CPP Monitoring and Evaluation system will be built.

201. Monitoring and evaluation (M&E) of the CPP as a whole will be carried out as a component (Outcome 4) of Project 5 (Coordination, monitoring and evaluation of the CPP). This project will have a 10 year duration (commencing at the time of CPP startup) and a total GEF budget of \$800,000 with \$2,500,000 co-financing from the Government of Cuba. Of this, \$460,000 GEF funds will be dedicated to M&E (see Table 4).

202. The two critical outputs of Outcome 1.4 (under Project 5) related to M&E will be:

1. **Establishment of an M&E mechanism for the CPP**, including the development and implementation of an automatized system, the training of the personnel of the Project Implementation Unit in its use and the development and establishment of corresponding databases.
2. **Definition of parameters, indicators and benchmarks for measuring the impact of the CPP**. The indicators initially defined for the CPP (see logical framework in **ANNEX A** and monitoring and evaluation matrix in **ANNEX F**), and the benchmarks for the **commencement** of successive projects (see Table 2), will be validated and complemented by more specific project level indicators for each project within the CPP, and the values for each indicator will be reported following successive measurements throughout the CPP period (see **ANNEX F**).

203. The following sections outline the principal components of the Monitoring and Evaluation Plan and indicative cost estimates related to M&E activities. The *Monitoring and Evaluation Plan* of the CPP will be finalized and presented in the *CPP Inception Report* following a collective fine-tuning of indicators, means of verification, and the full definition of CPP staff M&E responsibilities.

MONITORING AND REPORTING

Project Inception Phase

204. A CPP Inception Workshop (IW) will be conducted with the full CPP team, relevant government counterparts, co-financing partners, the UNDP-CO and representation from the UNDP-GEF Regional Coordinating Unit, as well as UNDP-GEF (HQs) as appropriate.

205. A fundamental objective of the *Inception Workshop* will be to assist the CPP coordination team to understand and take ownership of the CPP's goals and objectives, as well as finalize preparation of the CPP's first *Annual Work Plan (AWP)* on the basis of the CPP log frame matrix. This will include reviewing the log frame (indicators, means of verification, assumptions), imparting additional detail as needed, and on the basis of this exercise finalize the *Annual Work Plan* with precise and measurable performance indicators, in a manner fully consistent with expected programme outcomes and established intermediate and final indicator targets, as depicted in the log frame.

206. Additionally, the purpose and objective of the Inception Workshop will be to: (i) introduce CPP staff with the UNDP-GEF *expanded team* which will support the project during its implementation, namely the CO and responsible Regional Coordinating Unit (RCU) staff; (ii) detail the roles, support services and complementary responsibilities of UNDP-CO and RCU staff vis à vis the CPP team; (iii) provide a detailed overview of UNDP-GEF reporting and monitoring and evaluation (M&E) requirements, with particular emphasis on the Annual Programme Implementation Reviews/Annual Programme Report (PIR/APRs), Tripartite Review Meetings, as well as intermediate and final evaluations. Equally, the IW will provide an opportunity to inform the CPP team on UNDP budgetary planning, budget reviews, and mandatory budget re-phasing.

207. The IW will also provide an opportunity for all parties to understand their roles, functions, and responsibilities within the CPP's decision-making structures, including reporting and communication lines, and programme-based conflict resolution mechanisms. The Terms of Reference for CPP staff and decision-making structures will be discussed again, as needed in order to clarify for all, each party's responsibilities and expected deliverables during the CPP's implementation phase.

Monitoring responsibilities and events

208. A detailed schedule of programme review meetings will be developed by programme management, in consultation with programme implementation partners and stakeholder representatives and incorporated in the *CPP Inception Report*. Such a schedule will include: (i) tentative time frames for Tripartite Reviews, Steering Committee Meetings, (or relevant advisory and/or coordination mechanisms) and (ii) programme-related Monitoring and Evaluation activities.

209. Day to day monitoring of implementation progress will be the responsibility of the CPP Coordinator, based on the CPP's Annual Work Plan and its indicators. The CPP Team will inform the UNDP-CO of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.

210. The CPP *Coordinator* will fine-tune the progress and performance/impact indicators of the programme in consultation with the full CPP team at the Inception Workshop with support from UNDP-CO and assisted by the UNDP-GEF Regional Coordinating Unit. Specific targets for implementation progress indicators in year one, together with their means of verification, will be developed at this Workshop. These will be used to assess whether implementation is proceeding at the intended pace and in the right direction and will form part of the Annual Work Plan. The local implementing agencies will also take part in the Inception Workshop in which a common vision of overall programme goals will be established. Targets and indicators for subsequent years are to be defined annually as part of the internal evaluation and planning processes undertaken by the CPP team.

211. Measurement of impact indicators related to global benefits will occur according to the schedules defined in the Inception Workshop and tentatively outlined in the indicative *Impact Measurement Template (ANNEX F)*. The measurement, of these will be undertaken through subcontracts or retainers with relevant institutions or individual specialized expertise (e.g. vegetation cover via analysis of satellite imagery, or populations of key species through inventories) or through specific studies that are to form part of the projects activities.

212. Projects 1-4 within the CPP will also have their own respective M&E and reporting procedures, with additional complementary indicators to those at CPP level described in the logical framework and impact measurement template (ANNEX F). These will be described in more detail in the Project Documents of each respective project; as in the case of the CPP as a whole, project-level planning and reporting will conform to standard procedures and formats of GEF, UNDP (as implementing agency of Projects 1, 3, 4 and 5) and UNEP (as implementing agency of Project 2). These procedures will be designed in such a way as to harmonize them with those of the CPP as a whole, and to permit the sharing of indicators between individual projects and between project and CPP level, thereby maximizing efficiency and avoiding duplication. Plans and reports will be circulated among all of the GEF agencies involved in the CPP, regardless of their roles in individual projects.

213. Periodic monitoring of implementation progress will be undertaken by the UNDP-CO through quarterly meetings with the programme proponent, or more frequently as deemed necessary. This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion to ensure smooth implementation of project activities.

214. UNDP Country Office, and the UNDP-GEF RCU as appropriate, will conduct yearly visits to those projects (1-4) within the CPP that have field sites, or more often based on an agreed upon schedule to be detailed in the Inception Report/Annual Work Plan of each project, to assess first hand progress. Any other member of the Steering Committee (SC) can also accompany, as decided by the SC. A Field Visit Report will be prepared by the CO and circulated no less than one month after the visit to the project team, all SC members, and UNDP-GEF.

215. Annual Monitoring will occur through the ***Tripartite Programme/Project Review (TPR) meetings***. This is the highest policy-level meeting of the parties directly involved in the implementation of a project. The CPP will be subject to Tripartite Review (TPR) at least once every year. In order to maximize efficiency and linkages

between projects and the CPP, the TPR for the CPP as a whole will be combined with that of all projects that are in implementation at the time. The first such meeting will be held within the first twelve months of the start of full implementation. The programme proponent will prepare an Annual Programme Report (CPP/APR) and submit it to UNDP-CO and the UNDP-GEF regional office at least two weeks prior to the TPR for review and comments. Separate Annual Project Reports will be prepared for each project within the CPP.

216. The programme and project level APRs will be used as the basic documents for discussions in the TPR meeting. The programme and project proponents will present the APRs to the TPR, highlighting policy issues and recommendations for the decision of the TPR participants. The proponent will also inform the participants of any agreement reached by stakeholders during the APR preparation on how to resolve operational issues. Separate reviews of each component of the programme of project may also be conducted if necessary.

217. At project level, the TPR has the authority to suspend disbursement of specific projects if project performance benchmarks are not met. At CPP level, the TPR has the authority to veto the commencement of successive projects if CPP performance benchmarks (see Table 1) are not met. Benchmarks will be validated at the Inception Workshop, based on delivery rates, and qualitative assessments of achievements of outputs.

Terminal Tripartite Review (TTR)

218. The terminal tripartite review for the CPP will be held in the last month of the CPP period; for projects 1-3 (which will finish before the end of the CPP) separate TTRs will be carried out, while the TTRs of projects 4 and 5 (which will finish at the same time as the CPP as a whole) will be combined with that of the CPP as a whole.. The programme proponent is responsible for preparing the Terminal Report of the CPP (and separate terminal reports of each project) and submitting it to UNDP-CO and LAC-GEF's Regional Coordinating Unit (RCU). It shall be prepared in draft at least two months in advance of the TTR in order to allow review, and will serve as the basis for discussions in the TTR. The terminal tripartite review considers the implementation of the programme as a whole, paying particular attention to whether the programme has achieved its stated objectives and contributed to the broader environmental objective. It decides whether any actions are still necessary, particularly in relation to sustainability of programme results, and acts as a vehicle through which lessons learnt can be captured to feed into other projects or programmes under implementation or formulation.

CPP Monitoring and Reporting

219. The CPP Coordinator in conjunction with the UNDP-GEF extended team will be responsible for the preparation and submission of the following reports that form part of the monitoring process.

(a) Inception Report (IR)

220. Inception Reports for the CPP and individual projects will be prepared immediately by the programme and project teams following the Inception Workshops. They will include a detailed First Year/Annual Work Plan divided in quarterly time-frames detailing the activities and progress indicators that will guide implementation during the first year of the programme/projects. This Annual Work Plan would include the dates of specific field visits, support missions from the UNDP-CO or the Regional Coordinating Unit (RCU) or consultants, as well as time-frames for meetings of the decision making structures of the programme/projects. The Report will also include the detailed budget of the programme and of each project, for the first full year of implementation, prepared on the basis of the Annual Work Plan, and including any monitoring and evaluation requirements to effectively measure project performance during the targeted 12 months time-frame.

221. The Inception Reports (IR) will include a more detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners, in complement to those stated in the Project Document, as needed. In addition, a section will be included on progress to date on programme establishment and start-up activities and an update of any changed external conditions that may effect programme implementation.

222. When finalized, the IR will be circulated to programme partners who will be given a period of one calendar month in which to respond with comments or queries. Prior to this circulation of the IR, the UNDP Country Office and UNDP-GEF's Regional Coordinating Unit will review the document.

(b) Annual CPP and Project Reports (APR)

223. The APR is a UNDP requirement and part of UNDP's Country Office central oversight, monitoring and project management. It is a self-assessment report by programme/project management to the CO and provides input to the country office reporting process and the ROAR, as well as forming a key input to the Tripartite Programme/Project Review. An APR will be prepared on an annual basis by the project team prior to the TPR, to reflect progress achieved in meeting the Annual Work Plans and assess performance of the programme/projects in contributing to intended outcomes through outputs and partnership work.

224. The format of the APR is flexible but should include the following:

- An analysis of performance over the reporting period, including outputs produced and, where possible, information on the status of the outcome
- The constraints experienced in the progress towards results and the reasons for these
- The three (at most) major constraints to achievement of results
- AWP, CAE and other expenditure reports (ERP generated)
- Lessons learned
- Clear recommendations for future orientation in addressing key problems in lack of progress

(c) Project/Programme Implementation Review (PIR)

225. The PIR is an annual monitoring process mandated by the GEF. It has become an essential management and monitoring tool for project managers and offers the main vehicle for extracting lessons from ongoing projects. Once the Programme and each project within it have been under implementation for a year, a PIR must be completed for each by the programme or project team. The PIR can be prepared any time during the year (July-June) and ideally prior to the TPR. The PIR should then be discussed in the TPR so that the result would be a PIR that has been agreed upon by the project, the executing agency, UNDP CO and the concerned RCU staff member.

226. The individual PIRs are collected, reviewed and analyzed by the RCU prior to sending them to the focal area clusters at the UNDP/GEF headquarters. The focal area clusters supported by the UNDP/GEF M&E Unit z the PIRs by focal area, theme and region for common issues/results and lessons. The Technical Advisors and Principal Technical Advisors play a key role in this consolidating analysis.

227. The focal area PIRs are then discussed in the GEF Interagency Focal Area Task Forces in or around November each year and consolidated reports by focal area are collated by the GEF Independent M&E Unit based on the Task Force findings.

228. The GEF M&E Unit provides the scope and content of the PIR. In light of the similarities of both APR and PIR, UNDP/GEF has prepared a harmonized format for reference, to avoid duplication of efforts.

(d) Quarterly Progress Reports

229. Short reports (100 words) outlining main updates in programme and project progress will be provided quarterly to the local UNDP Country Office and the UNDP-GEF regional office by the project team.

(e) Periodic Thematic Reports

230. As and when called for by the Implementing Partner, UNDP or UNDP-GEF, the project team will prepare Specific Thematic Reports, focusing on specific issues or areas of activity. The request for a Thematic Report will be provided to the CPP team in written form by UNDP and will clearly state the issue or activities that need to be reported on. These reports can be used as a form of lessons learnt exercise, specific oversight in key areas, or as troubleshooting exercises to evaluate and overcome obstacles and difficulties encountered.

(f) Programme and Project Terminal Reports

231. During the last three months of the CPP and of each of its constituent projects, the programme and project team will prepare a Terminal Report. This comprehensive report will summarize all activities, achievements and outputs of the programme/project, lessons learnt, objectives met or not achieved structures and systems implemented, etc. and will be the definitive statement of the programme or project's activities during its lifetime. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and Replicability of the programme or project's activities.

(g) Technical Reports(project specific - optional)

232. Technical Reports are detailed documents covering specific areas of analysis or scientific specializations within the overall project. As part of the Inception Report, the programme/project team will prepare a draft Reports List, detailing the technical reports that are expected to be prepared on key areas of activity during the course of the Project, and tentative due dates. Where necessary this Reports List will be revised and updated, and included in subsequent APRs. Technical Reports may also be prepared by external consultants and should be comprehensive, specialized analyses of clearly defined areas of research within the framework of the programme/project and its sites. These technical reports will represent, as appropriate, the programme/project's substantive contribution to specific areas, and will be used in efforts to disseminate relevant information and best practices at local, national and international levels.

(h) Programme and Project Publications (project specific - optional)

233. Programme and project Publications will form a key method of crystallizing and disseminating the results and achievements of the programme or project. These publications may be scientific or informational texts on the activities and achievements of the programme or project, in the form of journal articles, multimedia publications, etc. These publications can be based on Technical Reports, depending upon the relevance, scientific worth, etc. of these Reports, or may be summaries or compilations of a series of Technical Reports and other research. The CPP or project team will determine if any of the Technical Reports merit formal publication, and will also (in consultation with UNDP, the government and other relevant stakeholder groups) plan and produce these Publications in a consistent and recognizable format. Programme or project resources will need to be defined and allocated for these activities as appropriate and in a manner commensurate with the project's budget.

INDEPENDENT EVALUATION

234. The CPP will be subjected to at least four independent external evaluations as follows:-

(i) Intermediate Evaluations

235. Three Independent Intermediate Evaluations will be undertaken as follows:

1. *Half way through year 2.* This may if required be combined with the mid-term review of Project 1.
2. *Towards the end of year 5.* This may if required be combined with the final evaluation of Project 1 and the mid-term review of Project 2.
3. *Half way through year 8.* This may be required by brought forward to the end of year 7 and combined with the final evaluation of Project 2, or delayed to the end of the year and combined with the final evaluation of Project 3 and the mid-term review of Project 4.

236. The Intermediate Evaluations will determine progress being made towards the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of programme and project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about programme and project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the remainder of the programme term. The organization, terms of reference and timing of the evaluations will be decided after consultation between the parties to the project document. The Terms of Reference for these evaluations will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF and the established standards reflected in UNDP-GEF's Programming Manual.

(ii) Final Evaluation

237. An independent Final Evaluation will take place three months prior to the terminal tripartite review meeting, and will focus on the same issues as the intermediate evaluation. The final evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation should also provide recommendations for follow-up activities.

The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.

Audit Clause

238. The Government will provide the Resident Representative with certified periodic financial statements for each project, and with annual audits of the financial statements relating to the status of UNDP (including GEF) funds according to the established procedures set out in the Programming and Finance manuals. The Audits will be conducted by the legally recognized auditor of the Government, or by a commercial auditor engaged by the Government.

LEARNING AND KNOWLEDGE SHARING

239. Results from the programme will be disseminated within and beyond the project intervention zone through a number of existing information sharing networks and forums. In addition:

- ◆ The programme will participate, as relevant and appropriate, in UNDP/GEF sponsored networks, organized for Senior Personnel working on programmes and projects that share common characteristics. UNDP/GEF shall establish a number of networks, such as Integrated Ecosystem Management, eco-tourism, co-management, etc, that will largely function on the basis of an electronic platform.
- ◆ The programme will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation through lessons learned.

240. The programme will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Identifying and analyzing lessons learned is an ongoing process, and the need to communicate such lessons as one of the programmes central contributions is a requirement to be delivered not less frequently than once every 12 months. UNDP/GEF shall provide a format and assist the CPP team in categorizing, documenting and reporting on lessons learned. To this end a percentage of CPP resources will need to be allocated for these activities.

Table 4. Indicative Monitoring and Evaluation Work Plan and Corresponding Budget

Type of M&E activity	Responsible Parties	Budget US\$ <i>Excluding project team Staff time</i>	Time frame
Inception Workshop	<ul style="list-style-type: none"> ▪ CPP Coordinator ▪ UNDP CO ▪ UNDP GEF 	10,000	Within first two months of CPP start up
Inception Report	<ul style="list-style-type: none"> ▪ Project Team ▪ UNDP CO 	None	Immediately following IW
Measurement of Means of Verification for Project Purpose Indicators	<ul style="list-style-type: none"> ▪ Project Coordinator will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members 	To be determined in Inception Phase and Workshop. Total indicative cost 50,000	Start, mid and end of project
Measurement of Means of Verification for Project Progress and Performance (measured on an annual basis)	<ul style="list-style-type: none"> ▪ Oversight by Project Coordinator - CO and RCU ▪ Measurements project team staff, or when so warranted specialized expertise/institutions 	To be determined as part of the Annual Work Plan's preparation. Indicative cost 50,000	Annually prior to APR/PIR and to the definition of annual work plans
APR and PIR	<ul style="list-style-type: none"> ▪ Project Team ▪ UNDP-CO ▪ UNDP-GEF (RCU/HQ) 	None	Annually
TPR and TPR report	<ul style="list-style-type: none"> ▪ Government Counterparts ▪ UNDP CO ▪ Project team ▪ UNDP-GEF Regional Coordinating Unit 	None	Every year, upon receipt of APR
Steering Committee Meetings	<ul style="list-style-type: none"> ▪ Project Coordinator ▪ UNDP CO 	None	Following CPP IW and subsequently at least once a year
Periodic status reports	<ul style="list-style-type: none"> ▪ Project team 	10,000	To be determined by CPP team and UNDP CO
Technical reports	<ul style="list-style-type: none"> ▪ Project team ▪ Hired consultants as needed 	50,000	To be determined by CPP Team and UNDP-CO
Intermediate Evaluations	<ul style="list-style-type: none"> ▪ Project team ▪ UNDP- CO ▪ UNDP-GEF Regional Coordinating Unit ▪ External Consultants (i.e. evaluation team) 	180,000	In years 3, 5 and 8.
Final External Evaluation	<ul style="list-style-type: none"> ▪ Project team, ▪ UNDP-CO ▪ UNDP-GEF Regional Coordinating Unit ▪ External Consultants (i.e. evaluation team) 	60,000	At the end of programme implementation
Terminal Report	<ul style="list-style-type: none"> ▪ Project team ▪ UNDP-CO ▪ External Consultant 	None	At least one month before the end of the programme
Lessons learned	<ul style="list-style-type: none"> ▪ Project team ▪ UNDP-GEF Regional Coordinating Unit ▪ Specialized partners/institutions 	50,000	Yearly
TOTAL INDICATIVE COST - Excluding project team staff time and UNDP staff and travel expenses		US\$ 460,000	

4. FINANCIAL MODALITY AND COST EFFECTIVENESS

Financing

241. The total cost of the CPP is currently estimated at **\$89,437,499**. Of this, **\$609,500** is *GEF preparatory funding* (**\$347,500** already approved for the CPP as a whole and Projects 1 and 5, and **\$262,000**⁹ for projects 2, 3 and 4), **\$9,390,500** is *GEF funding for CPP implementation* (see **ANNEX D**) and **\$79,437,499** is *co-financing by the GoC* (see Table 5 and **ANNEX G**). The total GEF contribution of \$10,000,000 makes up 11.2% of the total cost of the programme, including preparation (a co-financing ratio of 7.9:1).

242. In addition to the confirmed co-financing from the Government of Cuba and the NGOs ANAP and ACPA, public expressions of commitment to providing additional co-financing have been made by a number of other sources, which it is expected will be converted into formal commitments through negotiations early on in the CPP implementation phase or before. These potential sources include other UN agencies represented in Cuba, namely FAO, the World Food Programme, UNICEF, UNESCO, the World Health Organization and the Pan-American Health Organization (which will participate in a Joint Programming framework in relation to the theme of desertification and drought together with UNDP as lead agency). Co-financing from UNDP and FAO would also be confirmed during the early phases of negotiation of the projects. In addition, a number of interchanges have been held with a group of international NGOs represented in Cuba with links to Cuban NGOs, which have also expressed interest in concrete associations between their projects in Cuba and the CPP. These include OXFAM, CARE Canada, KAREN, German Agro Action and World Wildlife Fund Canada.

Table 5. Co-financing sources

Name of co-financer (source)	Classification	Amount (US\$)	Status
MINAGRI, , INRH, CITMA, MINAZ, MES, Forest Guard Corps, Local Government	Government institutions	76 806 474	Confirmed
ANAP, ACPA	NGO	2 631 025	Partially confirmed
TOTAL		79,437,499	

Cost effectiveness

243. Through the CPP, an overall GEF investment of \$10 million will lead to significant improvements in land management over an area of 1,095,273 ha (968,200 ha of agricultural land, 3,300 ha of grazing land and 123,773 ha of forest land) at the end of 10 years. It will also promote the development of conditions for a further eventual increase in the scale of replication elsewhere in Cuba, through the development of planning frameworks covering a total of 1,371,840 ha (1,161,840 ha of agricultural land, 10,000 ha of pasture land and 200,000 ha of forest land). The total area impacted directly or indirectly by the project will therefore be 2,467,113 ha. Average project investment per hectare over this area will therefore be \$4.05.

244. The cost-effectiveness of GEF investment will be maximized by its insertion in a 10 year programmatic Country Pilot Partnership. This model will have a number of advantages in terms of cost-effectiveness:

- Transaction costs will be reduced as, following initial approval of the CPP as a whole, its individual constituent projects will be subject to streamlined approval procedures;
- The risk of duplication between projects and agencies will be reduced, leading to more efficient resource use, as individual projects within the CPP and the associated investments of the respective agencies involved will be planned jointly;
- Opportunities for constructive synergies between projects led by different agencies will be maximized, through the establishment of programme-level coordination structures (see paragraph 250);
- The investments of each of the agencies involved will be more efficiently targeted, in reflection of their respective specialties, through programme-level strategic planning of the CPP at its outset;.

⁹ The budgetary requirements for the preparation of these projects will be confirmed during the implementation phase of the CPP. Any adjustments (up or down) will not affect the total cost of the CPP, but will be covered by adjustments to the budgets of the respective projects' implementation phases.

- Each project will be initiated as and when the conditions needed for its success exist, as a result of the definition of ‘benchmarks’ triggering the transition from one project to the next within the CPP (see paragraph 148).

245. The cost-effectiveness of the GEF investment will progressively increase over time during the CPP period. An initial focus on capacity building and technology validation at small scale will be followed later in the period by the scaling up of land management practices to landscape level (see paragraph 120), with a corresponding reduction in costs per unit area.

246. Cost-effectiveness will also be promoted by emphasis on low input, low cost technologies. Given the geopolitical and economic situation of recent years, Cuba has ample experience in devising innovative, low-cost solutions to its problems (for example, through the massive production of organic fertilizer based on urban, industrial and agricultural wastes as a substitute for imported inorganic fertilizer) and in maintaining and adapting equipment in order to obtain the maximum of use with the minimum of investment. These abilities will help to ensure that the maximum of impact is achieved with relatively limited GEF investment.

247. In order to guarantee that resources are used cost-effectively, all procurement and recruitment processes will be handled through internationally accepted principles and following UNDP standard regulations and procedures, and the CPP and each of its constituent projects will be subject to oversight through quarterly meetings with the UNDP Country Office (see paragraph 213), annual Tripartite Reviews (paragraph 215), and intermediate and final external evaluations (paragraphs 235 and 236). In addition, each of the constituent projects within the CPP will be subject to external financial audit on an annual basis, as will be specified in their respective Project Documents.

Incremental Cost Analysis

248. This section elaborates the incremental justification for the entire 10 year programme. Individual projects to be submitted under the CPP will each present a detailed ICA.

249. The project will build upon significant **baseline activities** on the part of the Government of Cuba aimed at combating land degradation. In relation to **Outcome 1.1**, a substantial body of legislation already exists which provides for environmental protection (see paragraph 6), the most fundamental of which is the Environmental Law (Decree No. 81 of 1997); in addition, Cuba has a well developed centralized structure for planning land use and agricultural production. However policy, legislative and planning instruments however tend to lack a fully integrated long term approach to SLM and as a result can at times unintentionally promote land degradation. In relation to **Outcome 1.2**, funding mechanisms exist, such as the National Environmental Fund and FONADEF, which provide financing opportunities for activities which contribute to SLM, including soil conservation and reforestation, however the funds available through these mechanisms are limited in relation to the scale of the land degradation problem and also they are not used in the most effective way in support of SLM. In relation to **Outcome 1.3**, Cuba has well-established institutional structures in the areas of agriculture, forestry, hydrology and other aspects of land use, with very capable staff members who are currently carrying out activities in diverse areas including planning, research and technical support. However these institutions and individuals in many cases lack specific technical and physical capacities and physical resources related to the complex and constantly evolving field of SLM. In relation to **Outcome 1.4**, **Outcome 2.2**, **Outcome 2.3** and **Outcome 2.4**, the Government of Cuba invests heavily in agricultural extension and education, with the result that educational and literacy levels are far above those of other countries in the region. However specific awareness and experience in relation to SLM is in many cases lacking, for example regarding the complex and multi-faceted nature of land degradation, its social aspects and recent developments in SLM technologies and approaches elsewhere in the region. In relation to **Outcome 1.5** and **Outcome 2.1**, networks of monitoring stations already exist in the country which monitor parameters such as climate, soil conditions and hydrological resources, however these are in many cases virtually obsolete and the information generated is not managed in ways that best contribute to decision-making regarding land degradation and SLM. In summary, despite a significant level of baseline activities, the effectiveness of these activities will remain limited due to the lack of horizontal and vertical integration between stakeholders, local actions, plans, policies and regulations.

250. Under the **baseline scenario**, land degradation processes will continue at current levels; significant levels of Government investments in promoting and facilitating sustainable land management are likely not to result in

corresponding long-term impacts in reverting processes of land degradation. Under conditions of continued limitations on the country's opportunities for international trade, and in the absence of a planning framework which is adequately based on information on the status and characteristics of natural resources and thereby enables the reconciliation of short- and long-term goals, producers will continue to carry out agricultural, livestock and forestry production in ways and at rates which are incompatible with sustainable land management. Another reason for their continued application of practices which lead to land degradation will be that these practices will be economically attractive to them in the short term, compared to the currently available alternatives, as they offer savings in terms of labor inputs and financial investment. This will become increasingly important as processes of rural depopulation proceed, leading to increased scarcity of resources. Access to alternative SLM practices which may be able to compete with more conventional damaging practices will be constrained by limited capacities at institutional levels for research, technology transfer and monitoring.

251. The **global environmental objective** of the CPP will be that Cuba has the capacities and conditions for managing land in a sustainable manner that contributes to maintaining ecosystem productivity and functions. The central focus of **GEF incremental support** will be on the establishment of a model, currently lacking in Cuba, for addressing land degradation in an integrated manner which recognizes the multi-sector nature of the problem and maximizes the effectiveness and efficiency of interventions through taking advantage of opportunities for synergy between stakeholders at all levels. Specifically, incremental support will aim at ensuring that planning frameworks, policies and regulatory instruments adequately take into account the complexities of land degradation issues, and are based on reliable information on the characteristics and status of natural resources; that decision-making and planning transcends sector divisions, in recognition of the nature of land degradation, thereby improving the effectiveness and efficiency of interventions and avoiding contradictions between the actions of different line ministries and agencies; that increased funding is available for SLM and that it is used effectively and efficiently; that institutional and individual capacities exist in the long term in order to ensure that baseline and incremental investments in SLM are sustained beyond the life of the CPP; and that effective transmission of messages related to SLM is ensured in the long term.

252. The key difference under the **GEF alternative** will be that the forms of behavior of stakeholders at all levels will be changed, resulting in a situation where actions at different levels (for example the application of SLM practices in the field, the formulation of plans and policies and the provision of extension and educational support) will be increasingly integrated and harmonized. Provisions in Government plans for agricultural, livestock and forestry production and natural resource use in general, including short-term goals, will be compatible with considerations of sustainable land management, for example by identifying sites which can support production with least risk of degradation, and crops and technologies which are compatible with local site characteristics. Sustainable land management will cease to be perceived as a cost by most producers, as a result of increased awareness of its benefits in the medium and long term, and the application of financial instruments which will compensate externalities. Investments aimed at reverting processes of land degradation, on the part of the Government and individuals, will have increased cost-effectiveness due to their increased awareness and access to information on alternatives. The social costs of land degradation will be minimized as a result of improved incorporation of social considerations into the design of programmes, projects and activities aimed at promoting sustainable land management.

253. As a consequence of the above, under the GEF alternative soil erosion rates will be reduced over large parts of the country, as will other processes of physical, biological and chemical degradation of the soil, enabling the soil to maintain its productive potential and its capacity to recover from the effects of productive use. Improved soil health will imply improvements in the functioning of natural cycles (for example of water, CO₂ and nitrogen), while ecosystem function in general will be enhanced, for example through increases in the diversity of tree and other plant species included in productive systems, facilitating processes of regeneration and providing habitat for fauna. Reductions in soil erosion will in turn lead to reductions in the inflow of damaging sediment load into globally important marine ecosystems surrounding the country, while increased amounts of vegetative matter within production systems will correspond to increases in carbon storage.

5. INSTITUTIONAL COORDINATION AND SUPPORT

A) CORE COMMITMENTS AND LINKAGES OF GEF AGENCIES

254. The Proposed GEF CPP has close links with the 2003-2007 **UNDP Country Programme** for Cuba and will contribute to the achievement of a range of outcomes. These include the *Strengthening of Productive Sectors* component, particularly its section on improving food security by improving water management and irrigation systems, risk and vulnerability management including adaptation to climate change, and improving food security. Similarly it will contribute to the goal of *Improving the Quality of Life* component, particularly as regards the emphasis that this places on improving and preserving the quality of the environment including addressing land degradation. Links with the Cuba UNDP Cooperation Plan would also incur with its line of action for *Strengthening the Management of Human Development* and within this the section on developing local capacities and strengthening and invigorating local economies making local development environmentally sustainable

B) CONSULTATION, COORDINATION AND COLLABORATION BETWEEN IAS, AND IAS AND EXAS, WHERE APPROPRIATE.

CPP Preparation

255. During the preparatory phase of the CPP, regular communication has been maintained between UNDP, UNEP and FAO, through email and meetings. In anticipation of the approval of the CPP, a Coordination Committee will be established which will function for the whole of the 10-year implementation phase. This committee, which will contribute to overall programme orientation irrespective of the direct individual participation of each agency in specific projects within the CPP, will meet on at least a six-monthly basis. In addition, it is anticipated that a limited-access intranet site will be set up for use by the agencies, with information on the CPP and its constituent projects and the results of studies, reports and training and dissemination materials. Annual or partial progress reports of individual projects will be circulated by the agencies responsible among all of the other agencies.

Relations with IA and EXAs and other Partners

256. The CPP will represent GEF's second investment in OP15 in the Caribbean basin, following the approval in April 2005 of the project entitled "**Demonstrating Sustainable Land Management in the Upper Sabana Yegua Watershed System**" in the Dominican Republic. That project includes an important component related to financial mechanisms in support of SLM, lessons learnt in which may feed into the CPP and particularly into Project 3 (the 5 year project in the Dominican Republic will be drawing to a close when Project 3 is due to commence in year 5 of the CPP). In common with the project in the Dominican Republic, the CPP will have significant replication potential throughout the rest of the insular Caribbean, providing for example a model from which lessons learnt could be applied in the severely degraded conditions of the Republic of Haiti. There will also be opportunities for important synergies between the CPP and a number of GEF OP15 projects which are currently in preparation in the region, namely in Mexico, Venezuela and Nicaragua.

257. GEF investments to date in Cuba have focused principally on biodiversity, climate change and international waters. Investments in the area of biodiversity have included protected areas and integrated coastal zone management (for example in the **Sabana Camaguey** ecosystem and at the level of the national protected areas system). These investments provide an essential complement to the proposed CPP investment in sustainable land management. A new project currently in preparation proposes instead to promote biodiversity conservation in productive sectors in Sabana Camaguey, and as such represents a significant opportunity for interchanges of lessons learnt on land management in agriculture (one of the productive systems involved in that project, besides tourism and fisheries). Another regional project under implementation (Capacity Building for Adaptation to Climate Change, Stage II) focuses on adaptation to climate change and has carried out studies of drought conditions which have potential to feed into the pilot areas of this project.

258. The Local Human Development Program is the UNDP (PDHL) strategy in Cuba designed for strengthening local capacities of empowerment for the improvement of the least developed territories in Cuba. Within this framework, more than 600 project and local actions are under development or have been developed in all the priority areas identified by the Cuban localities. One of the subjects of more impact in local development and

therefore, have been a priority for the communities, municipalities and Cuban provinces are those areas where desertification and drought issues have been undertaken.

259. Local projects have been developed on this subject within a short, medium and long term, resulting from the established local priorities and requests

260. For the short term as an immediate action response, mobile warehouses and containers for water storage have been purchased, as well as the excavation of new wells and water pumps installation

261. For medium terms actions, trainings have been arranged on the use and handling of water and its saving, support in the efficient and adequate production of food, renovation of aqueduct systems so as to minimize the loss of water, technology transfer and installation of waste water treatment systems in communities and cities for the recuperation of water

262. For long term, besides the abovementioned trainings, contribution to the national strategy for reforestation of the priority watersheds of the Cauto River and the Guantanamo-Guaso Rivers has been provided through "Integrated Forestry Farms". Such project received the award of the Equator Initiative at the World Summit of Johannesburg, as one of the 26 best sustainable projects. Likewise, the PDHL have sponsored and supported the creation of the International Center against Drought and Desertification in Guantanamo, along with the GEF Small Grants Program, as a result of the experience of many years of working on this subject within the semiarid perimeter of the Guantanamo Province, developing and promoting appropriate and innovative initiatives on land management, agriculture and water.

263. At the beginning of 2005 the **GEF Small Grants Programme** (SGP) was initiated in Cuba, under implementation by UNDP. The area of action of the SGP coincides with the pilot sites of the CPP, resulting in a favorable environment for synergy between the two programmes. The nature of the collaboration between the two programmes will be defined during early on during the implementation phase of the CPP, and the details of collaboration in relation to specific projects within the CPP will be defined more specifically during the preparation of each project, once the SGP has fully developed its intervention strategy. The potential of the SGP to act as a channel for the replication of lessons learnt in the CPP will be of particular relevance to Project 4.

264. In the Cauto watershed, which is one of the CPP intervention areas, CPP activities will build upon the achievements of the 2 year (now finished) FAO-IFAD-Global Mechanism project '**Prevention of land degradation, enhancement of carbon sequestration and biodiversity conservation through land use change and sustainable land management in Latin America and the Caribbean**' which included the Cauto watershed as one of its case study areas.

265. The **FAO**, given its direct presence in Cuba spanning more than three decades and its sustained efforts to create technical capacities for SLM, is a stakeholder of fundamental importance for the CPP. In addition, it is foreseen that it will act as Technical Cooperation Agency in four of the CPP Projects (1, 2, 3 and 4). The FAO currently has 6 initiatives which are directly linked to CPP objectives, namely i) support to the strengthening of the integrated programme for Cuban mountains; ii) development of strategies for the prevention, control and combat of forest fires; iii) support to the implementation of the national forestry programme; iv) measures for the improvement and conservation of soil and water to mitigate the risk of food supply vulnerability in the Guantánamo-Guaso catchment; v) support to the production of staple grains and vegetables as part of the expansion of the Special Programme for Food Security (PESA) and vi) increase in agricultural production in areas of the Guantánamo and Cauto catchments affected by salinity, and in zones with water excess in Pinar del Río.

266. **UNEP** will play an important role as a GEF Implementing Agency within the CPP. Despite not having permanent representation in the country, it executes projects related to the environment such as i) biodiversity enabling activities; ii) the promotion of synergies between environmental conventions; iii) contribution to the incorporation of Cuba in the GEO-Cities and GEO-Youth processes and iv) POPs enabling activity.

267. The participation of GEF Implementing and Executing Agencies in the CPP will be carried out within the framework of joint programming which will also involve other members of the UN system, as explained in paragraph 242. The initiatives which these agencies currently have under preparation, both within and outside the CPP, represent a favorable environment for the implementation of the joint programming initiative.

268. The **Secretariat of the United Nations Convention to Combat Desertification and Drought (UNCCD)** has participated in the development of the National Programme to Combat Desertification and Drought (UNCCD). The Government of Cuba and the UNCCD Secretariat are currently identifying actions which will contribute to the overall goals of the CPP.

Relations between IAs and EXAs during implementation

269. The lead GEF Implementing Agency in relation to the CPP will be UNDP, reflecting its role in developing and coordinating the CPP formulation process. The other GEF Implementing Agency involved in the CPP will be UNEP. In addition, FAO (not a GEF Implementing Agency) will participate either as a GEF Executing Agency (Project 2) and/or Technical Cooperation Agency. The participation of these three different agencies will vary between projects within the CPP. UNDP will be implementing agency in Projects 1, 3, 4 and 5, while UNEP will be in Project 2.

C) PROGRAMME IMPLEMENTATION ARRANGEMENT

Programme Level

270. The Ministry of Science, Technology and the Environment (CITMA) is the Focal Point for UNCCD in Cuba. The Environmental Education, Management and Information Centre (CIGEA) of this Ministry are the Coordinator of the National Application Body of the UNCCD (OCN) and will represent CITMA as the **National Coordinator** of the GEF-CPP in all of its phases and projects. During the PDF B arrangements were defined for institutional responsibilities, coordination, participation structures, and reporting and conflict resolution for the CPP. These include the **National Steering Committee** (created March 2005) and the **Technical Advisory Committee** (created April 2005). The Presidency of the National Steering Committee (NSC) is shared by CITMA, MINVEC and UNDP (see Table 6). It will meet regularly two times a year and whenever else may be required or called upon by two of more of its members or by the **Executive Group** that supports its operations. The presidents will determine the dates and times of the meetings and their agenda. Amongst its roles the NSC would approve strategic interventions of the CPP and its constituent projects, control the use of resources and approve reports and annual operational and financial plans. One of the functions of UNDP in the Steering Committee will be to represent the interests of other agencies involved in the Joint Programming initiative described in paragraph 242.

Table 6. Composition of National Steering Committee

	Institution	Role in NSC
National Directorate Committee	Vice Minister CITMA	Co-president
	Vice Minister, Ministry of Foreign Investment MINVEC	Co-president
	Resident Representative UNDP in Havana.	Co-president
	Resident Representative FAO in Havana.	Member
	UNEP representative	Member
	Director of Projects- National Association of small scale agriculturalists (ANAP)	Member
	Vice Minister, Ministry of Sugar MINAZ	Member
	Director of the Soils Institute Ministry of Agriculture MINAGRI	Member
	Director of Science and Technology National Water Resources Institute (INRH)	Member
	Ministry of Economy and Planning (MEP)	

271. The **Executive Group** is charged with supporting and advising the NSC in relation to the decisions to be adopted in the meetings. It is made up of technical representatives of MINVEC, CITMA, MINAGRI, MINAZ, INRH, IPF, UNDP and FAO, as well of representatives of the National Association of Small Farmers (ANAP) and Cuban Women's Federation (FMC) (see Table 7). Its role is also to supervise the general progress of CPP and the projects within it; review periodic financial plans and activities and reports and present them to the NSC for approval; control and monitor financial and administrative implementation of the CPP and its projects and be responsible for ensuring that they take into account the interest and concerns of local levels.

Table 7. Composition of the Executive Group

	Institutions	Role
Executive Group	Centre Environmental Education, Management and Information Centre (CPP Directory)	Coordinator
	Directorate of International Collaboration (DCI – CITMA)	Member
	Directorate of International Organizations of the Ministry of Foreign Investment	Member
	DOEI – MINVEC	
	Institute of Soils – MINAGRI	Member
	National Inst of Sugar Cane Research (INICA – MINAZ)	Member
	Center of Hygiene and Water Quality CENHICA - INRH	Member
	Physical Planning Institute (IPF)	Member
	ANAP	Member
	FMC	Member
	UNDP Programme Officer	Member
	FAO programme officer	Member
	Coordinator of CPP projects	Member

272. The **Technical Unit for Desertification and Drought (TUDD)** (which has already been formed and will be legally formalized shortly), will act as **Programme Implementation Unit (PIU)** and will oversee the technical and administrative functions of the CPP and projects and the complementary actions of the NCPPD. It will include a **CPP Director** and technical, financial and administrative support staff, all of whom will be seconded from existing national institutions. The **CPP Director** (who will also chair the Executive Group) will be responsible for:

- Ensuring the implementation of the CPP and its projects is in line with the planned approaches, priorities and schedules.
- Assuring best practices and lessons learnt enhance the implementation of the National Programme for Desertification and Drought and are incorporated into the national reports on UNCCD implementation
- Representing the signatory in requests for disbursement of funds of the CPP

273. A **Technical Advisory Committee** (based on the membership of the National Group for Combating Desertification and Drought that has been in place since 1996 and has wide experience in technical and scientific advisory roles for the implementation of UNCCD in Cuba) will be the scientific counterpart of the CPP. It has 24 experts that also make up international rosters for UNCCD and are experts in themes closely related to the CPP. This Committee will advise the TUDD, in its role of Programme Implementation Unit, in terms of technical and scientific aspects of the actions to be implemented; provide technical oversight to the general progress of the programme and projects; review the technical quality and validity of the reports and recommend approval to NCD and ensure that the scientific and technological results are in line with the interests and concerns of stakeholders at local level of implementation.

Projects within the CPP

274. Each of the five projects within the CPP will have a **Project Director**, who will be a member of the TUDD (the Programme Implementation Unit) and will answer to the **CPP Director**. Each **Project Director** will be supported by technical staff from outside of the TUDD, seconded from relevant institutions (staff requirements and their technical specialties will be defined during the preparation phases of each project).

275. In each of the five intervention areas, **Intervention Area Coordination Teams** will be established, directed by an **Intervention Area Coordinator** and made up of the principal actors in each area. These will include institutional representatives such as provincial delegations of CITMA, MINAGRI, INRH, IPF and MINAZ, as well as scientific and academic institutions, and entities representing the interests of local stakeholders, namely the National Association of Small Farmers (ANAP), the Cuban Women's Federation (FMC), the Cuban Association of Animal Production (ACPA) and the Cuban Association of Agricultural and Forestry Technicians

(ACTAF). 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, extensionists, researchers and local Government representatives. Additional mechanisms for ensuring the participation of specific local stakeholder groups are presented in **ANNEX H** and will be defined in more detail for each of the intervention areas during the preparation phases of the projects which will work in each.

276. **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 interchange and flow of information, including the dissemination of activities carried out and of lessons learnt, will be made effective through a virtual network which will link the Local Coordination Teams, the Technical Unit and key stakeholders.

Partner institutions, organizations and agencies

277. A large number of entities have been involved in the CPP formulation process and will play a range of roles in its implementation. These roles will include, for example, GEF Implementing and Executing Agencies, technical cooperation agencies, co-financing sources and the implementers of complementary projects. In order to ensure that these roles are carried out effectively and efficiently and that the different institutional stakeholders complement rather than duplicate each other, their actions in relation to the CPP will be framed within a coordination mechanism. In the case of the UN partner agencies represented in Cuba (UNDP, FAO, WFP, UNESCO, UNICEF and WHO/PAHO) this will consist of a **Joint Programming** initiative, the bases of which were agreed in principle in the July 2005 international workshop in Havana (see paragraph 195). The mechanisms for the coordination of the international NGOs, which expressed their initial commitment to the CPP during its preparation, will be defined during the CPP implementation phase. The complementary role of the Joint Programming initiative in relation to the CPP is shown in the CPP organigram (ANNEX I). This inter-institutional and inter-agency coordination in relation to the CPP will build upon mechanisms developed during its preparation phase, for example the National Steering Committee, which was created in March 2005 and the Technical Advisory Committee, which was created in April 2005 (see paragraph 270). Additional mechanisms discussed during the July 2005 workshop included six-monthly or yearly meetings and the establishment of an intranet site for the CPP where technical reports and evaluations would be made available. Details of these and other mechanisms for coordination will be defined in more detail through Project 5.

Resources

278. The Programme Implementation Unit (specifically, the Technical Unit for Desertification and Drought) will formally be based in the Information, Management and Environmental Education Centre (CIGEA) of CITMA, which will be the national executing agency of the CPP and its constituent projects. The Government of Cuba (through CITMA) will provide the funds necessary for the establishment and maintenance of the offices and the salaries of all technical, administrative and support staff foreseen over the 10 year period of the CPP. GEF funds will be used to equip the work places of the specialists, to meet their main logistic needs and to cover the costs of control and follow-up of CPP activities.

Reporting

279. Annual reports and plans of activities and spending in each of the projects will be prepared in agreement between the TUDD and Intervention Area Coordination Teams. Annual plans will be approved by the NSC. Further detail of planning and reporting procedures is provided in the Monitoring and Evaluation section (paragraph 200-236).

Table 8. Reporting requirements

Instrument	Frequency	
	CPP	Projects
Technical and financial audits	Twice yearly	Annual
Intermediate and final reports	Progress reports annually, at the end of each project and at the end of the CPP.	Annual technical and financial reports. Final reports at the end of each project.
Meetings to harmonize plans	Annual	Annual
Technical inspection visits to intervention areas	Twice yearly	Twice yearly
Surveys		According to specific themes
Studies of environmental awareness		Start and end of each project.
Workshops, scientific - technical days, seminars.	Twice yearly	Annual

280. A system will be established for the management of information and databases of relevance to the CPP. The system will be updated and main results will be disseminated through the virtual network DESERCUBA.

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ANNEX A. PROGRAMME LOGICAL FRAMEWORK

<i>CPP Strategy</i>	<i>Objectively Verifiable Indicators</i>	<i>Baseline (CPP start)</i>	<i>Target Values (end of CPP)</i>	<i>Sources of Verification</i>	<i>Assumptions</i>
GOAL: Reduced land degradation will allow Cuba to achieve its goals for sustainable development and increased food security					
PURPOSE Cuba has the capacities and conditions for managing land in a sustainable manner that contributes to maintaining ecosystem productivity and functions	1. By the end of the CPP, increased numbers of farmers /livestock herders/forest resource users throughout Cuba (not including the CPP intervention sites) are applying practices that reduce/eliminate land degradation: <ul style="list-style-type: none"> - Sustainable management of water resources - Sustainable soil management on agricultural lands - Sustainable soil management on livestock grazing lands - Sustainable forest resource management 	6,400 people 2,000 people 1,000 people 4,400 people	200,000 people 160,000 people 15,000 people 25,000 people	Reports of extension agents and provincial agricultural offices	The GoC continues to show interest and willingness to apply SLM principles in their land use and productions
	2. By the end of the CPP, increased number of hectares throughout Cuba are covered by land use plans which adequately incorporate SLM considerations <ul style="list-style-type: none"> - Agricultural lands - Grazing lands - Forest lands 	0 ha 0 ha 0 ha	1,161,840 ha 10,000 ha 200,000 ha	Land use plans	
	3. By the end of year 1, a nationwide system for monitoring and evaluation of key CPP indicators is operational	No system exists	M&E system in place and functioning	M and E report	
INTERMEDIATE OBJECTIVE 1 National capacity for integrated SLM is established, ensuring inter-sectoral coordination and effective implementation of land management plans and activities	1. By the end of year 3, key institutions nationwide are participating in the coordinated and integrated use and regulation of lands based on sustainable land management principles	0%	70% by end of year 3 100% by end of Program	Report of the coordination organism of the CPP	The institutional and legal framework continues in favor of the environment
	2. By the end of year 3, agreements and systems for coordination between national, provincial and municipal authorities for the use and regulation of lands based on sustainable land management principles developed and in place nationwide	No systems exist specific to SLM	100% of national territory covered by agreements and systems	System Reports	

<i>CPP Strategy</i>	<i>Objectively Verifiable Indicators</i>	<i>Baseline (CPP start)</i>	<i>Target Values (end of CPP)</i>	<i>Sources of Verification</i>	<i>Assumptions</i>
OUTCOME 1.1 Planning structures and processes for land use and regulation take into account SLM principles, and facilitate the implementation of practices compatible with the conservation of ecosystem integrity	1. Between years 3 and 7, principles and operational guidelines for SLM are adopted by key Ministries and approved by cabinet through technical and legal norms. <ul style="list-style-type: none"> - Institute of Soils - MINAZ - MINAG - INRH - IPF 	No guidelines No guidelines No guidelines No guidelines No guidelines	Guidelines in place by: Year 3 Year 5 Year 5 Year 7 Year 7	Official Bulletin with norms, regulatory amendments, sectoral strategies and plans	Existing planning structures remain the same and continue to show willingness to incorporate SLM The existing legal and regulatory framework continues to provide an enabling environment on which to build
	2. By the end of year 2, regulations and planning instruments have been developed and implemented nationwide , which incorporate considerations of SLM, in the fields of <ul style="list-style-type: none"> - Soils - Forestry - Water management 	Decree 179 on land use and Decree 135 on terrestrial waters	By Year 2: National Environment Strategy Technical regulations of Decree 179	Official Bulletin with regulatory amendments	
OUTCOME 1.2 Increased resources are available for effective investments in SLM	1. By the end of year 8, local production entities throughout Cuba (cooperative farms, State Firms and Production Units) have made increased budget allocation to sustainable land management activities	\$10,000/year	25% increase	Financial reports from each entity	Economic conditions continue at present levels of higher GoC continues to show willingness to develop new financing mechanisms
	2. By the end of year 8, increased budget is allocated nationwide to sustainable land management activities <ul style="list-style-type: none"> - MINAGRI - MINAZ - National Forestry Service - INRH 	\$50,000/year \$40,000/year \$70,000/year \$10,000/year	25% increase 25% increase 25% increase 25% increase	Ministerial financial accounts and reports National Economic plan	
	3. By the end of year 8, farmers throughout Cuba have had direct benefit/support from at least one financing scheme	2,500 farmers	200,000 farmers	Registers of funding mechanisms	
	4. By the end of year 8, increased funding is channeled from existing financing mechanisms to SLM nationwide : <ul style="list-style-type: none"> - FONADEF - FMA 	\$70,000 \$90,000	15% increase 10% increase	Registers of funding mechanisms	

<i>CPP Strategy</i>	<i>Objectively Verifiable Indicators</i>	<i>Baseline (CPP start)</i>	<i>Target Values (end of CPP)</i>	<i>Sources of Verification</i>	<i>Assumptions</i>
	5. By end of year 8, additional funding is channeled to SLM nationwide through new financial mechanisms	\$400,000	10% increase		
OUTCOME 1.3 Individuals and institutions have the capacities (human and material) to undertake sustainable land management	1. By the end of year 3, increased numbers of personnel are assigned to SLM within key line ministries nationwide : - MINAGRI - MINAZ - INRH	100 70 50	20% increase 20% increase 20% increase	Institutional staffing statistics	Current level of interest to increase knowledge of SLM persists or increases resources users
	2. By the end of year 3, local production entities throughout Cuba having received support from line ministry extension staff to implement sustainable land management practices	100 local entities	400 local entities	Data of extension agencies	
	3. By the end of CPP, staff in key line ministries nationwide have understanding of sustainable land management strategies and practices - MINAG - MINAZ - INRH - CITMA - IPF	10% 10% 10% 15% 10%	50% by year 5 and 100% by end of CPP in each institution		
OUTCOME 1.4 Rural populations, resource managers and other stakeholders are aware of the environmental, social and economic benefits of sustainable land management and options for its application	1. By the end of year 3, information on policy, legal and regulatory changes related to sustainable land management has been published in accessible language in relation to - Soils - Forests - Water	In process Published In process	Published Published Published	Publications	
	2. By the end of year 6, local populations throughout Cuba are aware of regulatory and planning processes based on sustainable land management	10 %	40% by year 3 80% by year 6	Surveys	
	3. By the end of year 6, resource managers at key ministries/agencies throughout Cuba are aware of and supporting regulatory and planning processes based on sustainable land management	10 %	40% by year 3 80% by year 6	Surveys	

<i>CPP Strategy</i>	<i>Objectively Verifiable Indicators</i>	<i>Baseline (CPP start)</i>	<i>Target Values (end of CPP)</i>	<i>Sources of Verification</i>	<i>Assumptions</i>
OUTCOME 1.5 Information on land resource conditions and trends throughout Cuba is being applied by planners in decision making	1. By the end of year 4, an Information Network is operational among key institutions nationwide for the management of scientific and management information related to sustainable land management	Info. Sharing mechanisms do not exist	One operational network involving 100% of key institutions	Network manuals and Project inspections	
	2. By the end of year 5, a system for long-term monitoring and evaluation of sustainable land management throughout Cuba is operational	No systems in place	M&E system established in 9 provinces	Inspection visits	
	3. By the end of year 5, land use plans and programmes throughout Cuba cite data from network	No land use plans or programs	100% of the key institution and entities with land use plans or programs	Reviews of plans and programs	
INTERMEDIATE OBJECTIVE 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	1. By the end of the CPP, producers (farmers/livestock herders/forest resource users) in the 5 CPP intervention areas are adopting practices to counter land degradation: <ul style="list-style-type: none"> - Sustainable management of water resources - Sustainable soil management on agricultural lands - Sustainable soil management on livestock grazing lands - Sustainable management of forest resources 	300 650 150 200	140,000 80,000 1,000 59,000	Field visits	
	2. By the end of CPP, increased numbers of hectares in the 5 CPP intervention areas benefit from sustainable land management: <ul style="list-style-type: none"> - Agricultural lands - Grazing lands - Forest lands 	0 ha 0 ha 0 ha	5 000 ha (15% of total of intervention areas) 2 000 ha (5% of total) 2 000 ha (1% of total)	Field visits	

<i>CPP Strategy</i>	<i>Objectively Verifiable Indicators</i>	<i>Baseline (CPP start)</i>	<i>Target Values (end of CPP)</i>	<i>Sources of Verification</i>	<i>Assumptions</i>
	3. By the end of CPP, reduced amounts of soil are eroded in the 5 CPP intervention areas : <ul style="list-style-type: none"> - Guantánamo - Pinar del Rio - Cauto River basin - Villa Clara - Havana Matanzas 	12 tons/ha/yr 12 tons/ha/yr 40 tons/ha/yr 40 tons/ha/yr 10 tons/ha/yr	10 % reduction 20 % reduction 10 % reduction 20 % reduction 70 % reduction	Combination of sediment load monitoring in water courses, measurement of changes in soil levels and measurement of radioactive isotopes	
	4. By the end of CPP, forest ecosystems are restored as measured by change in area of forest with diverse structure in the following intervention areas : <ul style="list-style-type: none"> - Villa Clara - Cauto River basin 	2 500 ha 10 000 ha	3,000 ha increase 12,000 ha increase	Satellite imagery	
	5. By the end of CPP, water use efficiency is improved as measured by the volume of irrigation water used per ton of agricultural crops produced in the following intervention areas : <ul style="list-style-type: none"> - Guantanamo - Cauto River basin - Havana Matanzas 	790 m ³ /ton 583 m ³ /ton 175 m ³ /ton	690 m ³ /ton 510 m ³ /ton 155 m ³ /ton	Surveys of irrigation volumes and crop production	
	6. By the end of the CPP, increased yield of staple crops in each of the 5 intervention areas : <ul style="list-style-type: none"> - Guantánamo (plantain and root crops) - Pinar del Rio (root crops, tobacco and grains) - Cauto River basin (plantain and root crops) - Villa Clara (milk) - Havana Matanzas (potatoes and vegetables) 	4 tons/ha 2 tons/ha 6 tons/ha 2,000 liters/ha/year 21 tons/ha	7 tons/ha 4 tons/ha 8 tons/ha 2,900 liters/ha/year 26 tons/ha	Reports of MINAGRI provincial offices	

<i>CPP Strategy</i>	<i>Objectively Verifiable Indicators</i>	<i>Baseline (CPP start)</i>	<i>Target Values (end of CPP)</i>	<i>Sources of Verification</i>	<i>Assumptions</i>
	<p>7. By the end of the CPP, improved livelihoods and food security for inhabitants of the 5 CPP intervention areas, as measured by the diversity of food crops grown and consumed, the numbers of income sources per family and total income levels per family.</p> <ul style="list-style-type: none"> - Guantánamo - Pinar del Rio - Cauto River basin - Villa Clara - Havana Matanzas 	Values to be determined at project start-up	Targets to be defined once baseline values are established	Household surveys supported by local social promoters.	
<p>OUTCOME 2.1 Land use decisions in the project intervention areas are based on updated information</p>	1. By the end of year 7, systems for monitoring and evaluation of sustainable land management are operational in all of the 5 CPP intervention areas	No M&E system in place	M&E system operational in 5 intervention areas	M&E report	<p>Existence of anticipated scenarios. Permanent motivation of tenants to be integrated in the CPP</p>
	2. By the end of year 7, communication networks for sharing information on existing conditions, threats/barriers, and management systems for land resources functioning between all key participating entities in the 5 intervention areas	No effective network	Network functioning in 5 intervention areas	Survey of network participants	
	3. By the end of year 7, tools for information on the condition of land resources have been developed and applied in each of the 5 CPP intervention areas .	No information system in place	Local data bases on conditions of soil and water resources established in 5 intervention areas	Survey of network participants	
	4. By the end of year 2, information tools and systems are in place for dissemination of lessons learned and best practices from CPP demonstration sites and intervention areas	No systems or tools for replication	Information system and tools in place in 5 intervention areas	Reports on guidance on best practices	
<p>OUTCOME 2.2 Local stakeholders (resource users, extension workers, decision-makers) in</p>	1. By the end of the CPP, increased in number of farmers in the 5 CPP intervention areas receiving technical assistance on practices for SLM	10% of farmers	50% by year 5 75% by end of CPP	Farmer surveys	

<i>CPP Strategy</i>	<i>Objectively Verifiable Indicators</i>	<i>Baseline (CPP start)</i>	<i>Target Values (end of CPP)</i>	<i>Sources of Verification</i>	<i>Assumptions</i>
project intervention areas have the knowledge and skills to undertake SLM	2. By the end of year 4, SLM content in extension services in the 5 CPP intervention areas is increased and is appropriate for bio/geographic scenario	0	50% of agriculturists receive SLM extension services	Farmer surveys	
	3. By the end of CPP, reduced number of reports of violations of environmental regulations related to land degradation in the 5 CPP intervention areas	15,000/year	50% decrease by year 5 80% decrease by year 10	Land use enforcement reports	
OUTCOME 2.3 SLM solutions (technologies, practices, incentive systems, planning structures and regulations) have been demonstrated and validated at specific pilot <u>sites</u> in 5 intervention areas	1. By the end of year 5, increased numbers of land use plans (e.g. Zone Development Plans) incorporating sustainable land management principles being implemented in the 5 CPP intervention areas : <ul style="list-style-type: none"> - Provincial level land use plans - Municipal level land use plans - NGO plans - Community-based organization plans 	0 plans 0 plans 0 plans 0 plans	5 plans 20 plans 20 plans 25 plans	Land use plans	
	2. By the end of the CPP, soil, water and/or forest resources are sustainable managed over increased numbers of hectares of the 12 CPP demonstration sites (direct effects) <ul style="list-style-type: none"> - Agricultural lands - Grazing lands - Forest lands 	0 ha 0 ha 0 ha	1,876 ha 300 ha 6,990 ha	Reports of extension agents and provincial agricultural offices	
	3. By the end of the CPP, increased numbers of land management entities participating in different sustainable land management in the 5 CPP intervention areas : <ul style="list-style-type: none"> - Individual Farmers - Cooperatives - State Company 	0 0 0	30 by end of year 5 and 60 by end of CPP 7 by end of year 5 and 15 by end of CPP 3 by end of year 5 and 5 by end of CPP	Project reports and visits	

<i>CPP Strategy</i>	<i>Objectively Verifiable Indicators</i>	<i>Baseline (CPP start)</i>	<i>Target Values (end of CPP)</i>	<i>Sources of Verification</i>	<i>Assumptions</i>
OUTCOME 2.4. Best practices in SLM have been replicated at diverse demonstration sites throughout the 5 intervention areas and effective processes are in place for replication elsewhere throughout Cuba	1. By the end of CPP, number of land use plans (e.g. Zone Development Plans) incorporating sustainable land management principles being implemented in CPP intervention areas : - Provincial level land use plans - Municipal level land use plans - NGO plans - Community-based organization plans	0 plans 0 plans 0 plans 0 plans	2 plans 10 plans 10 plans 12 plans	Land use plans	
	2. By the end of CPP, number of land management entities participating in sustainable land management in CPP intervention areas : - Individual Farmers - Cooperatives - State Company	0 0 0	100 50 8	Questionnaires of land management entities	

ANNEX B. Project Sequencing

1	2	3	4	5	6	7	8	9	10
Project 1: Capacity building for planning, decision making & regulatory systems & awareness building / SLM in severely degraded ecosystems (UNDP-FAO: GEF US\$3,500,000)									
National Level: Inter-Sectoral planning; M&E systems; drought surveillance; land use enforcement systems; education and awareness building									
Key Partners: Institute of Soils, National and Provincial coordinating authorities; agricultural extension workers (ANAP, MINAGRI, MINAZ), IPF, INSMET, INRH,									
Guantanamo (small scale): Halt land degradation and rehabilitate salinized and eroded areas in dry lands and xeric scrub regions.									
Pinar del Río (small scale): Monitoring of extreme climatic events (droughts, hurricanes).									
					Project 2: Capacity building for information coordination and monitoring systems/SLM in Areas with Water Resource Management Problems (UNEP-FAO: GEF US\$ 2,375,000)				
					National Level: Information management systems, awareness and education activities				
					Key Partners: Water management agencies INRH, (MINAGRI irrigation and drainage services), MINAZ, MES (CIH)				
					Havana - Matanzas (medium scale): Sustainable use of ground water				
					Pinar del Río (medium scale): Strengthen resistance to drought and other extreme climatic events in agricultural lands.				
					Guantanamo (medium scale): Replication of demonstration activities, conservation of rainwater and testing of high efficient irrigation systems				
					Cauto River Basin (small scale): Sustainable management of water resources – Drought prevention and management of water reserves for SLM				
					Project 3: Sustainable financing mechanisms/SLM in dry land forest and cattle ranching areas (UNDP-FAO: GEF US\$ 1,425,000)				
					National Level: Sustainable financing mechanisms and incentives				
					Key Partners: Mins Finance (MFP & Planning (MEP), MINAGRI (Forest & Livestock Dept.); local foresters; Forest guards etc				
					Villa Clara (medium scale): Improved SLM techniques in a premountainous ecosystem (dry forest & livestock).				
					Cauto River Basin (medium scale): Sustainable management of dry forest resources. Integrated forest farms, water regulations forest.				
					Project 4: Validation of SLM Models at Landscape Scale (UNDP-UNEP-FAO: GEF US\$1,290,500)				
					National Level: Further strengthening and fine-tuning of landscape level planning processes and capacities				
					Key Partners: MINAGRI, MINAZ, INRH, Provincial, local and/or watershed level management agencies and coordinating authorities.				
					Cauto River Basin (landscape scale): Replication (up scaling) of demonstration activities in micro watersheds				
					Guantanamo Guaso Basin (landscape scale): Soil mngmt., irrigation in agricultural land				
Project 5: Coordination, Monitoring and Evaluation for CPP, which will establish the structural, technical and material capacities for the direction, development and monitoring of the CPP (UNDP - GEF US\$0.8 million): Key Partner: CITMA									

ANNEX C. Linkages between CPP Projects and Outcomes

Outcomes	Projects				
	Project 1: Capacity Building for Planning, Decision Making & Regulatory Systems & Awareness Building / SLM in Severely Degraded Ecosystems	Project 2: Capacity Building for Information Coordination and Monitoring Systems / SLM in Areas with Water Resource Management Problems	Project 3: Sustainable Financing Mechanisms / SLM of Dry land forest and livestock ecosystems	Project 4: Validation of SLM Models at Landscape Scale	Project 5: Coordination, Monitoring and Evaluation for CPP
INTERMEDIATE OBJECTIVE 1					
National capacity for integrated SLM is established, ensuring inter-sectoral coordination and effective implementation of land management plans and activities					
Outcome 1.1: Planning structures and processes for land use and regulation are strengthened take into account with SLM principles, and facilitate the implementation of practices compatible with the conservation of ecosystem integrity	Development of planning structures			Ongoing support to planning structures	
Outcome 1.2: Increased resources are available for effective investments in SLM	Awareness building		Development of financial instruments, mechanisms and incentives		
Outcome 1.3: Individuals and institutions have the capacities (human and material) to undertake for sustainable land management	Strengthening of institutional capacities for planning and regulation	Building of capacities for M&E			
Outcome 1.4: Rural populations, resource managers and other stakeholders are aware of the environmental, social and economic benefits of sustainable land management and options for its application	Awareness building				
Outcome 1.5: Information on land resource conditions and trends throughout Cuba is being applied by planners in decision making		Development of capacities for information management			Establishment and implementation of M&E programme

INTERMEDIATE OBJECTIVE 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

Outcome 2.1: Land use decisions in the project intervention areas are based on updated information	Development and testing of M&E system	Test M&E system, establish monitoring system incorporating national and local levels			
Outcome 2.2: Local stakeholders (resource users, extension workers, decision-makers) in project intervention areas have the knowledge and skills to undertake SLM			Testing of mechanisms for replication		
Outcome 2.3: SLM solutions (technologies, practices, incentive systems, planning structures and regulations) have been demonstrated and validated at specific pilot <u>sites</u> in 5 intervention areas	Development and testing of local planning systems, decision making tools, and regulations		Testing of financing mechanisms		
Outcome 2.4: Best practices in SLM have been replicated at diverse <u>sites</u> throughout the 5 intervention <u>areas</u> and effective processes are in place for replication elsewhere throughout Cuba				Replication of local level demonstrations and up-scaling demonstrations to the landscape level	

ANNEX D. Estimated Costs (excluding preparation)

Outcome	GEF US\$	% GEF	GoC US\$M	NGOs	Total US\$M
Intermediate Objective 1: National capacity for integrated SLM is established, ensuring inter-sectoral coordination and effective implementation of land management plans and activities					
Outcome 1.1 Planning structures and processes for land use and regulation are strengthened take into account with SLM principles, and facilitate the implementation of practices compatible with the conservation of ecosystem integrity	1,080,156	7.0	14,421,809		15,501,965
Outcome 1.2 Increased resources are available for effective investments in SLM	475,226	35.1	528,875	348,225	1,352,326
Outcome 1.3 Individuals and institutions have the capacities (human and material) to undertake for sustainable land management	1,813,749	20.1	7,028,750	180,000	9,022,499
Outcome 1.4. Rural populations, resource managers and other stakeholders are aware of the environmental, social and economic benefits of sustainable land management and options for its application	812,634	3.8	20,000,000	389,090	21,201,724
Outcome 1.5- Information on land resource conditions and trends throughout Cuba is being applied by planners in decision making	1,339,506	64.4	387,454	350,000	2,076,960
Intermediate Objective 2: Field level demonstration of SLM practices have halted, prevented and remedied LD in critical landscapes within Cuba and produced effective models for replication					
Outcome 2.1. Land use decisions in the project intervention areas are based on updated information	609,998	4.3	13,661,181		14,271,179
Outcome 2.2. Local stakeholders (resource users, extension workers, decision-makers) in project intervention areas have the knowledge and skills to undertake SLM	1,218,810	38.9	1,448,385	466,008	3,133,203
Outcome 2.3. SLM solutions (technologies, practices, incentive systems, planning structures and regulations) have been demonstrated and validated at specific pilot <u>sites</u> in 5 intervention areas	1,218,810	6.5	17,195,728	198,423	18,612,961
Outcome 2.4. Best practices in SLM have been replicated at diverse <u>sites</u> throughout the 5 intervention areas and effective processes are in place for replication elsewhere throughout Cuba	821,613	22.5	2,134,292	699,279	3,655,184
Total for this Project	9,390,500	10.6	76,806,474	2,631,025	88,827,999
PDF-B for Projects 2,3 and 4	262,000				262,000
	9,652,500				89,089,999
PDF-B CPP Project + Projects 1 and 5	347,500				347,500
Grand Total	10,000,000		76,806,474	2,631,025	89,437,499

ANNEX E. Work Plan

PURPOSE: Cuba has the capacities and conditions for managing land in a sustainable manner that contributes to maintaining ecosystem productivity and functions											
X-cutting themes	Intervention Areas	Timeframe (years)									
		1	2	3	4	5	6	7	8	9	10
Intermediate Objective 1: National capacity for integrated SLM is established, ensuring inter-sectoral coordination and effective implementation of land management plans and activities											
Capacity Building for SLM	Outcome 1.1: Planning structures and processes for land use and regulation are strengthened take into account with SLM principles, and facilitate the implementation of practices compatible with the conservation of ecosystem integrity										
	Support to the development of regulations (Project 1)	x	x								
	Definition of agreements and systems for inter-institutional coordination (Project 1)	x	x	x							
	Development of planning structures (Project 1)	x	x	x	x	x					
	Development of principles and institutional guidelines (Projects 1 and 4)	x	x	x	x	x		x			
	Ongoing support to planning structures (Project 4)							x	x	x	x
	Outcome 1.2: Increased resources are available for effective investments in SLM										
	Awareness building at institutional level (Project 1)	x	x	x	x	x					
	Development of financial instruments, mechanisms and incentives (Project 3)					x	x	x	x		
	Outcome 1.3: Individuals and institutions have the capacities (human and material) to undertake for sustainable land management										
	Strengthening of institutional capacities for planning and regulation (Project 1)	x	x	x	x	x					
	Building of capacities for M&E (Project 2)			x	x	x	x	x			
	Outcome 1.4: Rural populations, resource managers and other stakeholders are aware of the environmental, social and economic benefits of sustainable land management and options for its application										
	Support to the publication of information on regulations and laws (Project 1)	x	x	x							
	Awareness building (project 1)	x	x	x	x	x					
	Outcome 1.5: Information on land resource conditions and trends throughout Cuba is being applied by planners in decision making										
Development of capacities for information management (Project 2)			x	x	x	x	x				
Establishment and implementation of M&E programme (project 5)											
Intermediate Objective 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											
Demonstration of SLM practices for replication	Outcome 2.1: Land use decisions in the project intervention areas are based on updated information										
	Development and testing of M&E system (Project 1)	x	x	x	x	x					
	Testing and establishment of M&E system incorporating national and local levels (Project 2)			x	x	x	x	x			
	Outcome 2.2: Local stakeholders (resource users, extension workers, decision-makers) in project intervention areas have the knowledge and skills to undertake SLM										
	Testing of mechanisms for replication (Project 3)					x	x	x	x		
	Outcome 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										
	Development and testing of local planning systems, decision making tools, and regulations (Project 1)	x	x	x	x	x					
	Testing of financing mechanisms (Project 3)					x	x	x	x		
	Outcome 2.4: Best practices in SLM have been replicated at diverse sites throughout the 5 intervention areas and effective processes are in place for replication elsewhere throughout Cuba										
	Replication of local level demonstrations and up-scaling demonstrations to the landscape level (Project 4)							x	x	x	x

ANNEX F. Key End of Programme Indicators

Objectives	Key Performance Indicator Target END OF PROGRAMME	Baseline	Critical Benchmarks & Target Date	Sampling Frequency
PURPOSE Cuba has the capacities and conditions for managing land in a sustainable manner that contributes to maintaining ecosystem productivity and functions	Numbers of farmers/livestock herders/forest resource users throughout Cuba applying SLM practices <ul style="list-style-type: none"> - 200,000 people managing water resources sustainably - 160,000 people managing agricultural land sustainably - 15,000 people managing grazing lands sustainably - 25,000 people managing forests sustainably 	<ul style="list-style-type: none"> - 6,400 people - 2,000 people - 1,000 people - 4,400 people 	By end of year 5: <ul style="list-style-type: none"> - 30,000 managing water resources sustainably - 150,000 managing agricultural land sustainably - 50,000 managing grazing lands sustainably - 50,000 managing forests sustainably 	Baseline, mid-term and end
	Area of land throughout Cuba subject to land use plans incorporating SLM <ul style="list-style-type: none"> - 1,161,840 ha agricultural land - 10,000 ha grazing land - 200,000 ha forests 	0 ha	By end of year 5: <ul style="list-style-type: none"> - 250,000 ha agricultural land - 100,000 ha grazing land - 100,000 ha forests 	Baseline, mid-term and end
INTERMEDIATE OBJECTIVE 1 National capacity for integrated SLM is established, ensuring inter-sectoral coordination and effective implementation of land management plans and activities	100% of key institutions nationwide participating in the coordinated and integrated use and regulation of lands based on sustainable land management principles	0%	70% by end of year 3	Baseline, end of year 3 and end of CPP
OUTCOME 1.3 Individuals and institutions have the capacities (human and material) to undertake sustainable land management	100% of key staff in line ministries (MINAG, MINAZ, INRH, CITMA and IPF) with understanding of sustainable land management strategies and practices	<ul style="list-style-type: none"> - 10% in MINAG - 10% in MINAZ - 10% in INRH - 15% in CITMA - 10% in IPF 	50% in all by end of year 5	Baseline, mid-term and end

Objectives	Key Performance Indicator Target END OF PROGRAMME	Baseline	Critical Benchmarks & Target Date	Sampling Frequency
INTERMEDIATE OBJECTIVE 2 Field level demonstrations of sustainable land management practices have halted, prevented and remedied land degradation in critical landscapes within Cuba	Numbers of producers (farmers/livestock herders/forest resource users) in intervention areas adopting practices to counter land degradation <ul style="list-style-type: none"> - 140,000 managing water resources sustainably - 80,000 managing agricultural lands sustainably - 1,000 managing grazing lands sustainably - 59,000 managing forests sustainably 	<ul style="list-style-type: none"> - 300 managing water resources sustainably - 650 managing agricultural lands sustainably - 150 managing grazing lands sustainably - 200 managing forests sustainably 	By end of year 5: <ul style="list-style-type: none"> - 70,000 managing water resources sustainably - 40,000 managing agricultural lands sustainably - 5,000 managing grazing lands sustainably - 30,000 managing forests sustainably 	Baseline, mid-term and end
	Area of land in intervention areas being managed sustainably <ul style="list-style-type: none"> - 968,200 ha agricultural lands - 3,300. ha grazing lands - 123,773 ha forests 	0 ha	By end of year 5: <ul style="list-style-type: none"> - 50,000 ha agricultural lands - 1,500 ha grazing lands - 60,000 ha forests 	Baseline, mid-term and end
	Quantities of soil eroded in intervention areas <ul style="list-style-type: none"> - 10 % reduction in Guantánamo - 20 % reduction in Pinar del Rio - 10 % reduction in Cauto River basin - 20 % reduction in Villa Clara - 70 % reduction in Havana Matanzas 	<ul style="list-style-type: none"> - 12 tons/ha/yr in Guantánamo - 12 /ha/yr in Pinar del Rio - 40 tons/ha/yr in Cauto River basin - 40 tons/ha/yr in Villa Clara - 10 tons/ha/yr in Havana Matanzas 	By end of year 5: <ul style="list-style-type: none"> - 5 % reduction in Guantánamo - 10 % reduction in Pinar del Rio - 4 % reduction in Cauto River basin - 0 % reduction in Villa Clara - 25 % reduction in Havana Matanzas 	Baseline, mid-term and end
	Area of forest ecosystems restored in Villa Clara and Cauto intervention areas, as measured by change in area of forest with diverse structure <ul style="list-style-type: none"> - 3,000 ha increase in Villa Clara - 12,000 ha increase in Cauto 	<ul style="list-style-type: none"> - 2 500 ha in Villa Clara - 10 000 ha in Cauto 	By end of year 5: <ul style="list-style-type: none"> - 1,500 ha increase in Villa Clara - 6,000 ha increase in Cauto 	Baseline, mid-term and end

Objectives	Key Performance Indicator Target END OF PROGRAMME	Baseline	Critical Benchmarks & Target Date	Sampling Frequency
	Improvement in the efficiency of water use in Guantanamo, Cauto and Matanzas intervention areas, as measured by the volume of irrigation water used per ton of agricultural crops produced in the following intervention areas: - 690m ³ /ton in Guantanamo - 510m ³ /ton in Cauto River basin - 155m ³ /ton in Matanzas	- 790m ³ /ton in Guantanamo - 583m ³ /ton in Cauto River basin - 175m ³ /ton in Matanzas	By end of year 5: - 750m ³ /ton in Guantanamo - 554m ³ /ton in Cauto River basin - 166m ³ /ton in Matanzas	Baseline, mid-term and end
	Improved livelihoods and food security for inhabitants of intervention areas, as measured by the diversity of food crops grown and consumed, the numbers of income sources per family and total income levels per family. (target values remain to be defined)	<i>Baseline values remain to be defined</i>	<i>Mid-term values remain to be defined</i>	Baseline, mid-term and end
	Increased yield of staple crops in each intervention area - 7 tons/ha/yr of plantain and root crops in Guantánamo - 4 tons/ha/yr of root crops, tobacco and grains Pinar del Rio - 8 tons/ha/yr of plantain and root crops in Cauto River basin - 2,900 liters/ha/yr of milk in Villa Clara - 26 tons/ha/yr of potatoes and vegetables in Havana Matanzas	- 4 tons/ha/yr of plantain and root crops in Guantánamo - 2 tons/ha/yr of root crops, tobacco and grains Pinar del Rio - 6 tons/ha/yr of plantain and root crops in Cauto River basin - 2,000 liters/ha/yr of milk in Villa Clara - 21 tons/ha/yr of potatoes and vegetables in Havana Matanzas	By end of year 5: - 5 tons/ha/yr of plantain and root crops in Guantánamo - 3 tons/ha/yr of root crops, tobacco and grains Pinar del Rio - 7 tons/ha/yr of plantain and root crops in Cauto River basin - 2,400 liters/ha/yr of milk in Villa Clara - 23 tons/ha/yr of potatoes and vegetables in Havana Matanzas	Baseline, mid-term and end

Objectives	Key Performance Indicator Target END OF PROGRAMME	Baseline	Critical Benchmarks & Target Date	Sampling Frequency
Outcome 2.2: Local stakeholders (resource users, extension workers, decision-makers) in project intervention areas have the knowledge and skills to undertake SLM	75% of farmers in intervention areas receive technical assistance on practices for SLM	10%	50% by year 5	Baseline, mid-term and end
	80% decrease in the number of reports of violations of environmental regulations related to land degradation in demonstration sites	15,000 violations per year	50% decrease by year 5	Baseline, mid-term and end
Outcome 2.3: SLM solutions (technologies, practices, incentive systems, planning structures and regulations) have been demonstrated and validated at specific pilot <u>sites</u> in 5 intervention areas	Area of soil, water and/or forest resources that are sustainably managed in the 12 CPP demonstration sites (direct effects) - 1,876 ha of agricultural lands - 300 ha of grazing lands - 6,990 ha of forest lands	- 0 ha	By end of year 5: - 900 ha of agricultural lands - 150 ha of grazing lands - 3,500 ha of forest lands	
	Increased numbers of land management entities participating in different sustainable land management at CPP <u>demonstration sites</u> - 60 Individual Farmers - 15 Cooperatives - 5 State Enterprises - 12 Basic Cooperative Units	- 0 Individual Farmers - 0 Cooperatives - 0 State Enterprises - 0 Basic Cooperative Units	By end of year 5: - 30 Individual Farmers - 7 Cooperatives - 3 State Enterprises - 6 Basic Cooperative Units	Baseline, mid-term and end
Outcome 2.4: Best practices in SLM have been replicated at diverse <u>sites</u> throughout the 5 intervention areas and effective processes are in place for replication elsewhere throughout Cuba	Number of land use plans incorporating sustainable land management principles being implemented at CPP <u>replication sites</u> : - 2 Provincial level land use plans - 10 Municipal level land use plans - 10 NGO plans - 12 Community-based organization plans	- 0 Provincial level land use plans - 0 Municipal level land use plans - 0 NGO plans - 0 Community-based organization plans		Baseline and end

Objectives	Key Performance Indicator Target END OF PROGRAMME	Baseline	Critical Benchmarks & Target Date	Sampling Frequency
	3. By the end of CPP, number of land management entities participating in sustainable land management in CPP intervention areas : - 100 Individual Farmers - 50 Cooperatives - 8 State Company	- 0 Individual Farmers - 0 Cooperatives - 0 State Company		Baseline and end

ANNEX G. Details of Co-Financing

Activity	Institution	Classification (cash or in kind)	Duration	Amount (\$)
Outcome 1.1 Planning structures and processes for land use and regulation are strengthened take into account with SLM principles, and facilitate the implementation of practices compatible with the conservation of ecosystem integrity				
Application of regulatory instruments for natural resources protection	Forest Guard Corps, INRH, MINAGRI, CITMA	In kind	2004 - 2006	56,194
Implementation of actions contained in the National Strategy and Programme for Protection against Forest Fires	Forest Guard Corps	In kind	2006- 2010	1,796,571
Introduction of integrated farms in soils not suitable for coffee	MINAG	In kind	2000- 16	168,750
Evaluate the status of biodiversity in the Habanilla Jibacoa catchment and its surrounding area	CITMA	In kind	2005-08	80,000
Information for optimum management of water in relation to soil type in irrigation systems	INRH, MINAGRI	In kind	2005- 2008	112,249
Vigilance and protection of natural resources (forests, fauna, soils and water) in the 8 provinces with intervention areas.	Forest Guard Corp MINAG, INRH, CITMA	In kind	2005- 2010	12,208,045
Total				14,421,809
Outcome 1.2 Increased resources are available for effective investments in SLM				
Achieve qualitative and quantitative improvements in forest cover allowing continued improvement in local environmental conditions in Integrated Forest Farms	MINAG, Forest Guard Corp	In kind	2004- 2009	423,875
Sustainable economic development among producers and cooperative members in the east of Cuba	ANAP	In kind	2004-07	348,225
Sustainability indicators with agro-ecological criteria in an agro forestry farm	MINAGRI, CITMA	In kind	2006- 11	56,250
Agro forestry/pasture systems in Integrated Forest Farms	MINAGRI, MES	In kind	2006- 11	48,750
Total				877,100
Outcome 1.3 Individuals and institutions have the capacities (human and material) to undertake for sustainable land management				
Sustainable Land Management Project	MINAGRI, INRH, CITMA	In kind	2006- 2010	500,000
Sustainable Water Resource Management Project	INRH, MINAGRI, CITMA	In kind	2006- 2010	800,000
Sustainable Forest and Livestock Management Project	MINAGRI, CITMA	In kind	2006- 2010	400,000

Landscape Project	MES	In kind	2006-2010	300,000
Training activities in Universities and Research Centers in the 8 provinces involved	MES, P del Río, Villa Clara & Bayamo Universities	In kind	2006-2014	5,000,000
Promotion of sustainable agricultural and food security through horizontal processes of learning, innovation and farmer protagonism.	ANAP, ACPA	In kind	2005-07	180,000
Guaranteeing water supply and irrigation in productive systems in the Valley of Jimacoa.	CITMA Villa Clara	In kind	2006-16	12,500
Training in technologies for sustainable development	MES	In kind	2006-16	16,250
Total				7,208,750
Outcome 1.4. Rural populations, resource managers and other stakeholders are aware of the environmental, social and economic benefits of sustainable land management and options for its application				
Training of rural facilitation and promotion agents in farmer to farmer methods	ANAP, ACPA	In kind	2007	389,090
Soil Improvement and Conservation Programme	I Suelos, MINAGRI	Cash	2006-2016	20,000,000
Total				20,389,090
Outcome 1.5- Information on land resource conditions and trends throughout Cuba is being applied by planners in decision making				
Characterization of drought processes in the Sagüa La Grande and Sagüa La Chica watersheds	Local Gov. Villa Clara	In kind	2005-2007	120,144
Updating on the status of natural resources in the Hanabanilla – Jibacoa catchment	CITMA Villa Clara	In kind	2006-07	30,000
Land use planning and sustainable land management. GIS for decision making and M&E in the Hanabanilla – Jibacoa catchment and its surrounding area	CITMA Villa Clara	In kind	2006-09	90,000
Promotion of agro-ecology in Cuban agriculture through farmer to farmer processes in the provinces of the intervention areas	ANAP; ACPA	In kind	2003-2006	350,000
Determination of the suitability for the production of coffee and fruit trees of the Jibacoa EMA	MINAGRI	In kind	2000-06	90,000
Monitoring and inventory of bird and mammal species in three watersheds of national interest, by the Corps of Forest Guards	Forest Guard Corp, CITMA	In kind	2004 - 2006	57,310
Total				737,454

Outcome 2.1. Land use decisions in the project intervention areas are based on updated information				
Determination of available subterranean water resources and monitoring of water quality in south Pinar del Río	INRH, MES	In kind	2006-10	1,500,000
Development of a system based on meteorological information for livestock protection	CITMA Villa Clara	In kind	2006-13	10,784
Diagnostic and evaluation of natural resources in Manicaragua municipality	CITMA, Forest Guard Corp	In kind	2005-06	30,000
Prevention, characterization and prediction of forest fires with the use of agro-meteorological indices. System for the vigilance, detection and warning of fires.	Forest Guard Corp, CITMA	In kind	2003-16	32,360
Hydro-geological balance and increase in water quality monitoring	INRH	In kind	2007-11	6,200,000
Water balance in Villa Clara province	INRH Villa Clara	In kind	2009-11	800,000
Institutional strengthening of the system for early warning of adverse natural phenomena	CITMA	In kind	2004-10	10,125
Hydro-geological balance and increase in water quality monitoring in the Cauto catchment	INRH	In kind	2007-12	2,000,000
Hydro-geological balance and increase in water quality monitoring in the Cauto catchment in south Guantánamo.	INRH	In kind	2007-15	2,817,188
Increase in waste water disposal, drainage and treatment and economic management of residues. Reforestation of water regulation belts in target municipality	CITMA, INRH, MINAGRI	In kind	2005-10	260,724
Total				13,661,181
Outcome 2.2. Local stakeholders (resource users, extension workers, decision-makers) in project intervention areas have the knowledge and skills to undertake SLM				
Soil use potentials in conditions of water stress and high levels of degradation. Re-planning according to land use and tendencies.	MINAGRI, INRH	In kind	2005-08	28,375
Diversification of crops and protection of food supply	MINAGRI	In kind	2000-16	70,000
Promotion of large livestock in suitable areas	MINAGRI, MES	In kind	2006-16.	156,250.00
Technical assistance and agrarian extension in coffee faros in the central region	ANAP, ACPA	In kind	2005-09	466,008
Integrated management of forestry pests	MINAGRI	In kind	2006 - 09	30,000
Improvement of water supply and livestock feed in areas affected by drought in the west of Cuba	MINAGRI, INRH	In kind	2005-06	100,000
Use of alternative technologies for	MINAGRI	In kind	2005-08	310,560

cultivation and soil management.				
Maintenance of hydraulic works, distribution networks and alternatives for mitigating the effects of drought and the sustainable use of water resources, dissemination and development of educational programmes in target municipality.	INRH, MES	In kind	2005-10	753,200
Total				1,914,393
Outcome 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				
Restoration and reforestation of the margins of the Guaso River (Guantánamo Guaso catchment) with community participation	CITMA, MINAGRI	In kind	2004-08	16,000
Support to the development of animal production in grazing areas affected by extreme drought and high vulnerability to desertification, with the application of integrated technological systems and the use of renewable energy.	ACPA	In kind	2006	198,423
Integrated management of forestry pests	MINAGRI	In kind	2006-09	30,000
Selection of tree species for reforestation. Treatment and management of threatened species.	MINAGRI,	In kind	2006-12	107,500
Agro-productive recovery of the Río Arriba Cooperative and the “Buen Retiro” Farm through the application of agro-ecological and low input technologies.	CITMA, MINAGRI	In kind	2003-07	391,978
Integrated technological alternatives for the production of coffee	MINAGRI	In kind	2003-07	192,750
Sustainable management of natural resources, in accordance with the harmonic and equitable development of communities in the El Naranjo sub-catchment (Cauto)	CITMA, MINAGRI, INRH	In kind	2004-10	1,417,500
Sustainable Management of a Fruit Farm with elements of permaculture in the semi-arid region of Guantánamo Province	MINAGRI, MINAZ, Guantánamo	In kind	2004-08	25,000
Reforestation of 33.5 ha with fruit and timber trees semi-desert of Baitiquirí, with community participation.	MINAGRI, Local Gov. Guantánamo	In kind	2006-08	15,000
Programme of forestry activities in the intervention area	MINAGRI	In kind	2006-16	15,000,000
Total				17,394,151
Outcome 2.4. Best practices in SLM have been replicated at diverse sites throughout the 5 intervention areas and effective processes are in place for replication elsewhere throughout Cuba				
Achievement of food production in dry conditions with the introduction of resistant species and varieties	Local Gov. Guantánamo	In kind	2005-10	114,500

Environmental re-activation of forest ecosystems, restoration of zones affected by mining activity with the implementation of re-cultivation programmes	MINAGRI	In kind	2004- 10	1,582,500
Integrated technological alternatives for soil improvement and conservation.	MINAGRI	In kind	2006-09	324,792
Ecological processing of coffee.	MINAGRI	In kind	2006	25,000
Reference farms for the use of renewable energy sources	Local Gov.	In kind	2006- 11	87,500
Improvement of living conditions in six rural communities in Corralillo municipality based on rural development.	ACPA, ANAP	In kind	2004-07	699,279
Total				2,833,571
Grand Total co-Financing				79,437,499

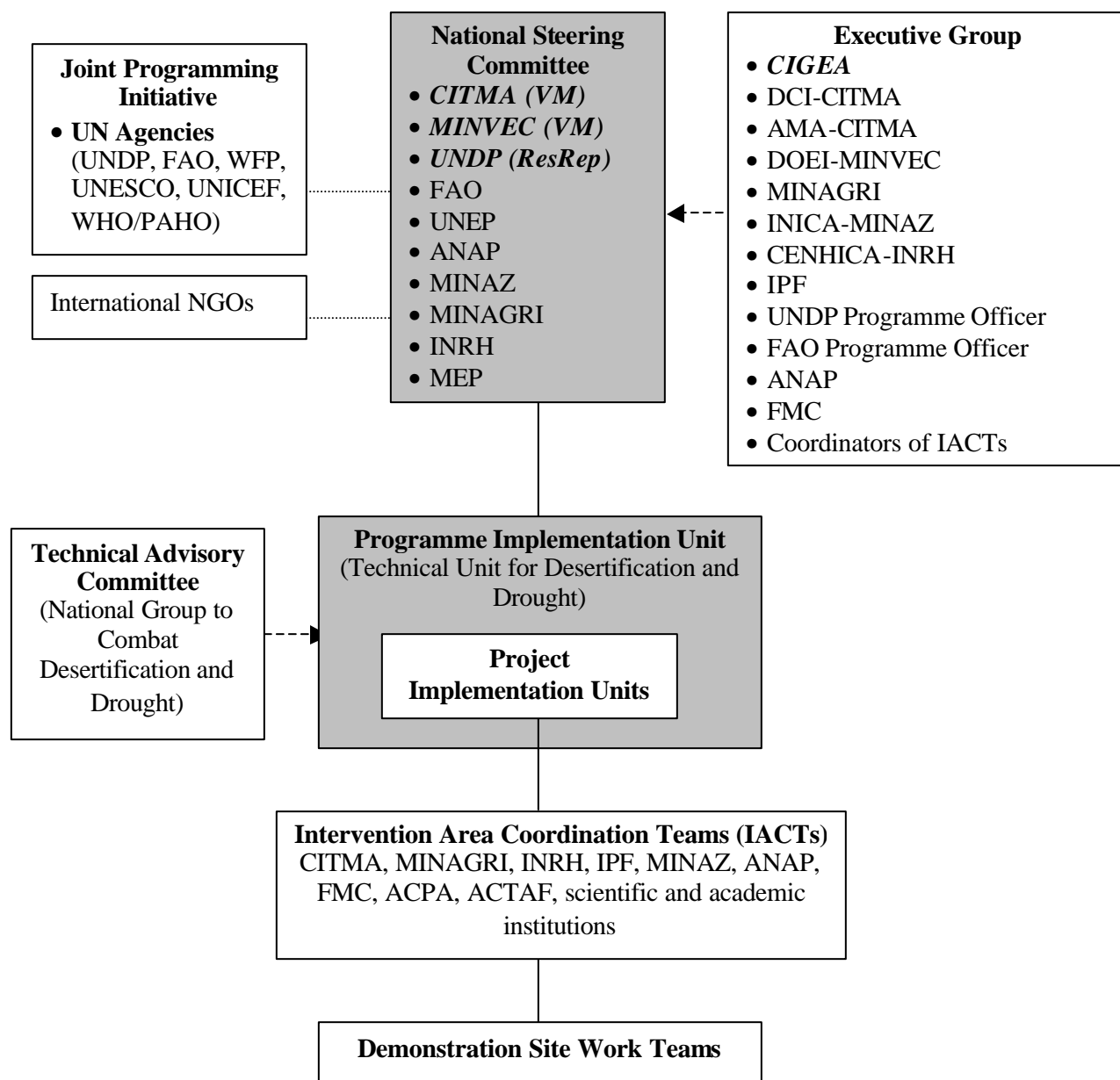
ANNEX H. Stakeholder analysis

STAKEHOLDER	CAPABILITIES/CURRENT ROLE	INTERESTS IN CPP
Government of Cuba		
Ministry of Science, Technology and Environment (CITMA)	<ul style="list-style-type: none"> - GEF focal point. - Coordination of NPCCD - Coordination of CPP preparation. - Environment Agency (AMA) responsible for Environment Fund 	<ul style="list-style-type: none"> - Project coordination, through CIGEA - Vice-minister will be co-president of the NSC - CIGEA will coordinate the Executive Group - Directorate of International Collaboration will be member of the Executive Group - Provincial offices will be members of Local Coordination Teams
Ministry of Foreign Investment MINVEC	<ul style="list-style-type: none"> - Representative of the Cuban Government in relation to international collaborations 	<ul style="list-style-type: none"> - Vice-minister will be co-president of the NSC - Directorate of International Organizations will be member of the Executive Group
Ministry of Sugar (MINAZ)	<ul style="list-style-type: none"> - Lead institution for sugar production, responsible for planning land use on its estates. 	<ul style="list-style-type: none"> - Vice Minister will be member of NSC - National Institute National of Sugar Cane Research (INICA) - Provincial offices will be members of Local Coordination Teams
Ministry of Agriculture (MINAGRI)	<ul style="list-style-type: none"> - Lead institution responsible for administering, conserving and improving agricultural and forestry soils and ensuring compliance. - Responsible through the Soils Institute for certification of agricultural land uses - Carries out agricultural extension (singled out as inadequately incorporating SLM considerations) 	<ul style="list-style-type: none"> - Director of the Soils Institute will be member of the NSC - Institute of Soils will be member of the Executive Group - Provincial offices will be members of Local Coordination Teams - Extension agents will receive training supported by the CPP.
National Water Resources Institute (INRH)	<ul style="list-style-type: none"> - Regulates the use of waters, both superficial and subterranean, and projects, executes and exploits new reserves and reservoirs in response to changes in land use. - Carries out agricultural extension (singled out as inadequately incorporating SLM considerations) 	<ul style="list-style-type: none"> - Director of Science and Technology will be member of the NSC - Center of Hygiene and Water Quality (CENHICA) will be member of the Executive Group - Provincial offices will be members of Local Coordination Teams - Extension agents will receive training supported by the CPP.
Ministry of Physical Planning	<ul style="list-style-type: none"> - Overall responsibility through the Physical Planning Institute (IPF) for defining allowable land uses, evaluating the proposals of different stakeholders and emitting permits accordingly 	<ul style="list-style-type: none"> - Physical Planning Institute (IPF) will be member of the Executive Group - Provincial offices of IPF will be members of Local Coordination Teams
Ministry of Higher Education	<ul style="list-style-type: none"> - Trains technicians and extension agents through diverse academic and vocational training institutions. Currently SLM considerations are inadequately incorporated into programmes. 	<ul style="list-style-type: none"> - Channel for the incorporation of SLM messages and principles into educational and training programmes
Ministry of the Interior	<ul style="list-style-type: none"> - Corps of Forest Guards is responsible for forest protection. 	<ul style="list-style-type: none"> - Provincial offices will be members of Local Coordination Teams - Extension agents will receive training

STAKEHOLDER	CAPABILITIES/CURRENT ROLE	INTERESTS IN CPP
		supported by the CPP
Municipal Governments	- Coordinate municipal level land use planning which at present takes SLM considerations inadequately into account.	-
- International agencies		
UNDP	- GEF Implementing Agency proposing and preparing CPP	- Lead Implementing Agency for CPP. - GEF Implementing Agency for Projects 3, 4 and 5 of the CPP - Resident Representative will be co-president of the NSC - Programme Officer will be member of the Executive Group
UNEP	- GEF Implementing Agency participating in CPP	- GEF Implementing Agency for Project 2. - Cooperating agency for Project 4 of the CPP.
FAO	- GEF Executing Agency participating in CPP	- Resident Representative will be member of the NSC - Programme officer will be member of the Executive Group - Cooperating agency for Projects 1, 2, 3 and 4 of the CPP.
- National civil society organizations		
National Association of small scale agriculturalists (ANAP)	- Represents small farmers at national level. Provides training, agricultural extension and other services to its members. Includes individual farmers and cooperative members. Has almost 240,000 members, who produce 52% of vegetables and 67% of the maize grown in the country.	- Director of Projects will be member of the NSC
Federation of Cuban Women	- Represents women nationally.	- Provincial and municipal offices will be members of Local Coordination Teams in order to ensure that women's interests are adequately represented in the CPP and that the implications for them of the CPP are adequately taken into account in decision making.
- Local producers		
Individual farmers	- Non-affiliated farmers number around 20,000, own their land individually and account for around 1% of agrarian land.	- Local stakeholders will carry out SLM in the demonstrative sites and intervention areas - Direct beneficiaries of training introduction of SLM technologies and strengthening of local capacities. -
Cooperative members and agricultural worked in State farms.	- Agricultural producers associated according to various models. Occupy more than 50% of agricultural land 292,700 in number (equal to 7.2% of the total labor force in Cuba)	
Leader farmers	- Highly experienced farmers with results in terms of production which allow them to serve as models.	

STAKEHOLDER	CAPABILITIES/CURRENT ROLE	INTERESTS IN CPP
Community leaders	<ul style="list-style-type: none"> - Representatives of target groups and community stakeholders (family doctors, teachers, ANAP representatives, block representative of the FMC, President of the Committee for the Defense of the Revolution, President of Popular Councils etc.) 	<ul style="list-style-type: none"> - Support, disseminate, and implement CPP actions at local level - Direct beneficiaries of training introduction of SLM technologies and strengthening of local capacities. -
Extensionists	<ul style="list-style-type: none"> - Technician responsible for transmitting knowledge, methodologies, procedures and technologies which allow the transformation of scientific/technical results into compatible alternatives applicable to the specific conditions of different producers. 	
Women	<ul style="list-style-type: none"> - Direct productive and technical roles and in formation and education of children in SLM 	<ul style="list-style-type: none"> - Application of the actions proposed in the CPP, particularly in home gardens, urban agriculture and other productive entities - Direct beneficiary of training

ANNEX I. CPP Organigram



ANNEX J. Problem Analysis

Environmental Impact Land Degradation	Root Causes	Management Issues/ Key Barriers	Baseline Activities	Solutions: GEF Interventions Barrier Removal Activities
Threat 1. Shifting agriculture on steep slopes with poor soil and vegetation management				
Sheet and gully erosion, deforestation and landslides	Inadequate awareness among producers of implications of effects of agriculture on steep slopes and on possible alternatives	Limited incorporation of effective SLM considerations related to steep land agriculture into extension and environmental education programmes	There is an on-going extension programme in Cuba but this does not include SLM. FAO is supporting the updating of extension in some areas but this has limited scope	Outreach and awareness programmes at national (CPP Outcome 1.4) and local levels CPP Outcome 2.2. Strengthening extension capacities (CPP Outcome 2.2.) and demonstration pilots in Guantanamo (Project 1)
	Short financial time horizon of small producers	Limited development of incentive systems which specifically favor SLM	There are a number of existing mechanisms that provide funding for resources users (such as FONADEF, FMA) but these do are not linked with SLM	Develop new SLM funding mechanisms and incorporate SLM principles and guidance into existing mechanisms CPP (Outcome 1.2 and project 2)
	Actions of producers are not adequately controlled or directed	Ineffective territorial land use planning and weak enforcement	Land use plans exist but have limited scope. There are provincial level enforcement services but these are poorly trained and equipped	Develop local level capacities for integrating SLM in land use plans increase enforcement capacities(Outcome 2.2) Provide attractive land use alternatives (Outcome 2.3)
Threat 2. Use of inappropriate machinery for mechanized agriculture				
Compaction and erosion of low lying agricultural land with high productive potential	Inadequate access to appropriate machinery	Economic limitations at national level	Major efforts to develop and maintain available machinery	Strengthen extension capacities on adequate use of machinery: (Outcome 2.2) test and demonstrate alternative technologies less dependant on machinery (Outcome 2.3): update key machinery (Outcome 1.2. develop new funding mechanisms (Outcome 1.2).
	Lack of awareness among producers of impacts of practices	Limited monitoring and information management related to soil conditions	Some existing information networks and designs of networks could provide the basis for dissemination of SLM	National and local level information management strengthened and M and E systems Developer (Outcome 1.1.5 and 2.1)
	Limited awareness among producers of alternatives, such as low-impact machinery and cultivation methods	Limited incorporation of SLM considerations related to land cultivation into extension and environmental education programmes	An Institute for research and extension for mechanized agriculture with National Directorate and regional branches	Demonstration of alternatives through the use of multi – plougher (Cuban device), and traditional instruments which avoid the inversion of the soil profile layers

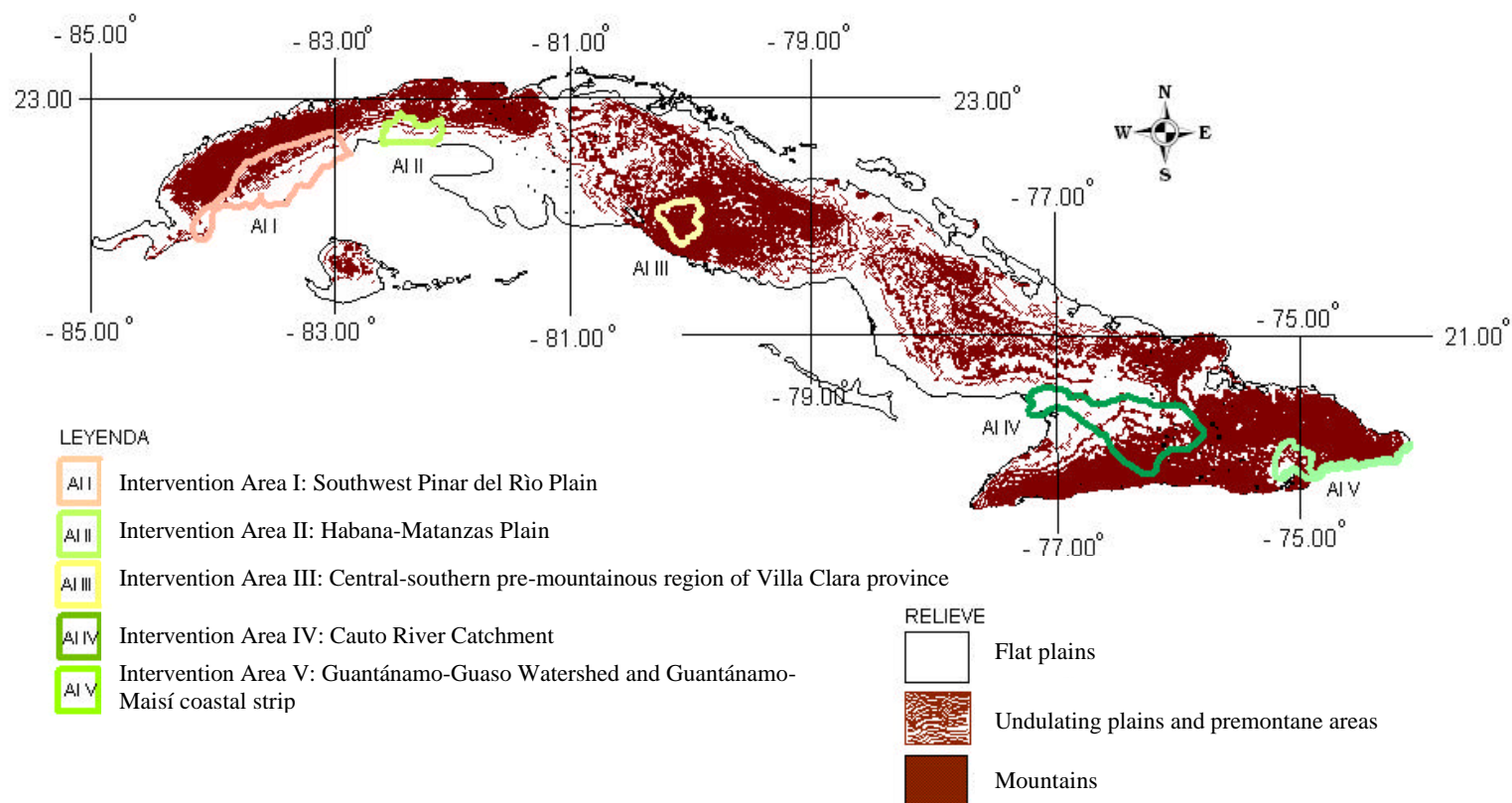
Environmental Impact Land Degradation	Root Causes	Management Issues/ Key Barriers	Baseline Activities	Solutions: GEF Interventions Barrier Removal Activities
Threat 3. Inadequate and inappropriate nutrient management related to crop needs and soil characteristics				
Acidification of soils by fertilizer inputs, and crop failure when fertilizers are inadequate or inappropriate (leading to increased pressure on alternative areas)	Limited availability of organic fertilizer	High cost and logistical difficulties of production and distribution	Massive production of organic fertilizer in response to the collapse of external support, but inadequate for the scope needed	Demonstrate the production and use of organic fertilizers under different bio-geographical and LD scenarios and ensure extensionists disseminate best practices (Outcome 2.3)
	Pressures to meet production targets	Incompatibility between long-term goals of SLM and short term priorities of plans related to agricultural production for economic and food security needs	There is an Institute of Planning that oversees land use planning but staff are largely not trained in SLM nor linked to other key line ministries	Training planner and strengthen coordination between sectors for this (Outcome 1.1
	Limited awareness among producers of alternatives, such as rotation, green manure and compost	Limited incorporation of SLM considerations related to nutrient management in extension and environmental education programmes	National Programme for conservation of soil has made advances but at levels inadequate to address LD over landscape levels and to secure ecosystem integrity.	Provide additional support for the baseline programme extending it to cover wider bio-geographical scenarios and putting in place replication mechanism (Outcome 2.3 –project 1: and Outcome 2.4)
	Limited access by producers to information on soil nutrient needs	Limited monitoring and information management related to soil nutrient needs	Cuba has a map to the scale of 1:25000 for national nutrient requirements in agricultural silos but this is out dated and has no means to incorporate continue LD changes and their effects on soil.	Develop information management and LD M and E (Outcome 1.5 –project 2, 2.1 and Project 5)
	Lack of awareness among producers of impacts of inappropriate fertilizer application			
Threat 4. Use of fire for land clearance and pest control in pastures				
Removal of the vegetative protection of the soil against raindrop impact and cross-surface flow, and loss of soil carbon and nitrogen	Limited access to human, physical and financial resources needed for land preparation through alternative means.	Inadequate scope of incentive programmes in relation to SLM	Institute of Pastures has provincial level branches but is not updated in SLM techniques and has an incentive system that does not include these.	Incorporate guidelines, norms and procedures for channeling existing incentives to SLM practices for appropriate for different scenarios (Outcome 1.2)
	Ineffective regulation of burning	Limited financial and physical resources on the part of Government agencies responsible for regulation	Monitoring of forest cover composition and dynamics does exist and includes monitoring of fires but response is hindered by communication problems and limited resources	Strengthen local capacities in enforcement through cooperation agreements and improved planning of land uses in FIRE vulnerable areas (Outcomes 2.2 and 1.1)
Threat 5. Inappropriate use of irrigation, including the use of practices with low water efficiency and high drop impact (such as aspersión, instead of drip irrigation and conservation of natural soil water through mulching), poor design of irrigation systems and drainage in relation to natural topography, the location of irrigated agriculture in zones with limited aquifer resources, and the use of poor quality (saline) water				

Environmental Impact Land Degradation	Root Causes	Management Issues/ Key Barriers	Baseline Activities	Solutions: GEF Interventions Barrier Removal Activities
Salinization and erosion of soils, and the depletion of scarce aquifer resources	Location of irrigated agriculture in areas with vulnerable soils, depleted aquifers and/or poor quality aquifer water	Inadequate monitoring and information management in relation to soil and hydrological implications of irrigation	There are laboratories throughout the country for soil and water analysis, but the equipments they have are largely obsolete and the cartographic base is not up to date	Development of mechanisms for the monitoring of water resources
		Inadequate incorporation of considerations of soil and aquifer suitability into land use and production plans.	The country has a monitoring system for determining the quality of the water to be used in irrigation as well of the aquifers. But field level actions need improvement to ensure regulations are upheld	Develop integration of institutions to improve enforcement (Outcome 1.1); strengthen local level capacities (Outcome 2.2)
	Limited awareness among producers of technical aspects of alternative irrigation and water management methods	Limited incorporation of SLM related to irrigation and water management into extension and environmental education programmes	The country has an infrastructure for irrigation (490 000 ha under irrigation and 1750 irrigation machines) but they are not suitable for practicing a SLM. Many of the systems are of low efficiency and cause soil degradation	Improve planning systems and national and local levels of capacities to apply SML (Outcome 1.1,1.3,2.2); demonstrate high irrigation efficiencies in severely degraded land (Outcome 2.3 – Project 1)
	Pressures on producers to maximize short term production targets	Inadequate awareness on the part of planners in relation to the implications of irrigation for SLM	The planners exist at the national level (Institute of Irrigation and Drainage, National Direction of Irrigation and Drainage), but there is a need of awareness on the implications of irrigation for LD	Support Outreach programmes (Output 1.4): Outcome 2.3 project 3
		Incompatibility between long-term goals of SLM and short term priorities of plans related to agricultural production for economic and food security needs	The economic and social long terms effects of LD are not known by planners and decisions makers and coordination between the sectors involved in SLM, are still deficient	Field level demonstrations of the technical and economic efficiency of SLM and dissemination of lessons learnt.
	Threat 6. Inappropriate crop selection, related to soil productive potential, relief, water and nutrient availability and climatic patterns			
Degradation of soil nutrient status, increased pressure on scarce water resources and increased soil erosion on steep slopes due to the inadequacy of soil cover	Limited awareness among producers of crop alternatives in relation to site characteristics, and of implications of poor crop selection	Limited incorporation of SLM considerations related to species selection into extension and environmental education programmes	Research on soil degradation, nutrient status, soil erosion, soil cover, are available but access to this is limited and not integrated	Training of producers on SLM, with emphasis on land evaluation. Promotion of campaigns to raise awareness of the subject.
	Inadequate awareness of site characteristics among producers	Inadequate availability and management of information related to site characteristics	High levels of education in Cuba mean that producers are technically prepared for understanding the information when made available	Development of systems for information management

Environmental Impact Land Degradation	Root Causes	Management Issues/ Key Barriers	Baseline Activities	Solutions: GEF Interventions Barrier Removal Activities
	Inappropriate provisions of land use and production plans in relation to crop selection	Inadequate awareness on the part of planners regarding the implications of species choice/site relationships for SLM	Planners are qualified to be trained in the theme	Training of planners on SLM. Promotion of campaigns to raise awareness of the subject.
Threat 7. Poor livestock management , including the free range grazing of animals and the use of excessive stocking levels				
Degradation of vegetation resources and the compaction of soils, reducing rates of aquifer recharge through infiltration and increasing cross-surface runoff which causes erosion	Limited awareness among producers of alternatives to extensive ranching (such as pasture improvement, stabling, cut-and-carry and fodder banks)	Limited incorporation of SLM considerations related to appropriate livestock raising practices into extension and environmental education programmes	There is a well develop infrastructure at national and local level for livestock management, but the SLM is relatively new for many	Training of producers on SLM, with emphasis on the regionalization of grazing systems, Promotion of campaigns to raise awareness of the subject.
	Ineffective regulation of livestock raising practices	Limited financial and physical resources on the part of Government agencies responsible for regulation	Regulations are defined by the law 179 that deals with the use of the soil, but this requires updated to the new circumstances. The law 81 regulates environmental activity at national level, including soil activity as well	Demonstration of financial sustainability in the intervention areas.
		Inadequate development of regulations on range management	The existing regulations needs special attention to livestock activity like forest activity	Preparation of proposals for the improvement of the regulatory system in grazing areas
Threat 8. Excessive use of monocultures , such as sugar cane and single-species timber plantations				
Excessive demands on available soil nutrient and water reserves, and increase of erosive processes due to crop structure	Limited awareness on the part of producers of alternatives to monocultures such as agro forestry, intercropping and successional agriculture	Limited incorporation of SLM considerations related to alternatives to monocultures in extension and environmental education programmes	Many enterprises and Associations of small Farmers are specialized on a specific crop: tobacco, coffee, citrus. Their economy is based on those crops and that is also a culture	Training of producers and planners on SLM, Promotion of campaigns to raise awareness of the subject.
	Pressures on producers to maximize short term production targets	Inadequate awareness on the part of planners in relation to the implications of monocultures for SLM	Planners need to be trained first so that they can contribute to transform monoculture into real crop rotation	Training of planners on SLM. Improvement of planning systems
Threat 9. Expansion of housing areas and non-agricultural uses on land suited for agriculture				
Permanent loss of agricultural land, including areas of high productive potential	Inappropriate provisions of land use plans in relation to land use potential	Inadequate inter-sector and inter-institutional coordination	The present planning system does not take advance of the institutional capacities, because of the insufficient coordination	Development of procedures for institutional integration
		Inadequate availability and management of information related to land use potential	Planners needs to have knowledge about land evaluation and land suitability	Training of planners on land evaluation and potential
Threat 10. Timber extraction.				

Environmental Impact Land Degradation	Root Causes	Management Issues/ Key Barriers	Baseline Activities	Solutions: GEF Interventions Barrier Removal Activities
Degradation of vegetation cover and the compaction and erosion of soils through the use of heavy machinery and the disruption of drainage patterns	Ineffective regulation of timber extraction	Limited financial and physical resources on the part of Government agencies responsible for regulation	The available machinery for timber extraction is obsolete and does not contribute to soil conservation	Development of conservation procedures in the intervention areas
	Poor planning, construction and maintenance of extraction routes	Inadequate incorporation of technical aspects related to LD in extension and environmental education programmes	Producers do not have enough knowledge about the process of land degradation that are taking place as a consequence timber extraction	Training of planners on SLM in forestry areas. Improvement of planning systems
		Limited financial and physical resources on the part of Government agencies responsible for regulation	Extraction routes exits but poorly maintained	Development of regional proposals derived from the intervention sites

ANNEX K. Country Map



ANNEX L. Intervention areas

1. SOUTH WESTERN LOWLANDS OF PINAR DEL RÍO

Biophysical and socioeconomic conditions

1. This is one of the areas of special significance identified in the diagnostic phase of the Provincial Programme for the Combat of Desertification and Drought of the Pinar del Río Province, the westernmost province of the country, and also is incorporated in the National Programme due to the economic, social and environmental importance of this ecosystem, as well as the degree of intervention shown by its agricultural lands and the high level of occurrence of extreme climatic events.

2. It occupies a territory of more than 5,000 km², around 33.7% of the surface of the province. To the north it adjoins the Sierra del Rosario and Pizarras del Sur Heights along the length of the Pinar Fault, to the east the province of Havana, to the west the Galafre River and to the south the Gulf of Batabanó and the Caribbean Sea. Its relief is flat to slightly rolling, of high agricultural value; the abundance of its hydrological resources is variable, its population density is high and it has one of the most complex environmental situations in the country.

The zone is located between longitudes -82.83° and -84.15°W and latitudes 21.89° and 22.73° N.

Agro-climatic conditions.

3. The zone is slightly deficient in water; the reserve of productive moisture in the soil is low enough that crops are moderately water stressed in dry periods (pastures, grasslands and scrublands). Water deficit in the soil-plant-atmosphere system leads to agricultural drought and this normally increases in duration, area and intensity throughout the drier season of the year. In general, agricultural drought commences in January and ends in May.

4. This zone is susceptible to extreme events. On the one hand the intense summer drought, which results in limited development of vegetation and therefore limited protection of the soil, is accompanied by atmospheric phenomena of variable intensity, such as cold fronts, tropical depressions, cyclones and hurricanes. This zone is considered as the most vulnerable to these events in the country. The consequences of these extreme events in the conditions described lead to intense processes of land degradation, fundamentally of hydrological erosion and to a lesser degree soil salinity buildup due to marine intrusion and wind effects on the coasts.

Relief

5. The area is between 0 and 100 m.a.s.l. and its slopes are less than 15%. The topography is moderately dissected, which allows the land to be used without relief-related restrictions.

6. The area contains 5 hydrological catchment areas of some importance, the Guamá, Hondo, Herradura, San Diego and Los Palacios. In common with the classic pattern throughout Cuba, the runoff in watercourse is principally fed by rainfall.

Principal soil characteristics

7. The zone presents a mosaic of soils dominated by Ultisols of low natural fertility, whose physical characteristics favor the development of processes of degradation. In general, they have sandy loam texture in the first 30 cm of the profile, and in lower levels silty loam and silt; they have very low cation and water retention capacities, while internal drainage is affected by the existence of compact layers. Soil characteristics improve towards the north, however there are still problems of hydrological erosion here, the consequences of which range from the partial loss of the A horizon to the total loss of both A and B horizons. In areas below 20 m.a.s.l., it is rare to find levels of organic matter content greater than 2%.

8. Over 53% of the area the effective soil depth is limited (less than 25 cm), which limits the normal growth and development of certain crops. The whole area is affected by low levels of available phosphorus. Over 34% of the area levels of organic matter content are less than 1.5%, and over the rest they do not exceed 3%.

Vegetation

9. In the southern plains of Pinar del Río province agriculture and livestock activity has replaced the forests which originally occupied the area. The dominant crops are rice, tobacco, citrus and staple grains.

Ecosystem vulnerability

10. This is one of the most severely degraded ecosystems of the Republic of Cuba. Overall, it has high levels of vulnerability to land degradation processes, which makes it particularly important for the National Programme to Combat Desertification and Drought. The association of climatic factors (alternating drought and intense rains) and human factors (including the historical effects of deforestation, poor management of natural resources, the application of inappropriate technologies and economic pressures for the production of foodstuffs) determine the susceptibility of the area to degradation and the occurrence of the most intense processes of degradation in the western region. A particularly important additional factor is the agricultural tradition of the zone, which is based on crops which provide little soil protection, with much use of monocultures and limited application of soil conservation technologies.

Socioeconomic characteristics:

11. Land tenure is dominated by 'social property' through Cooperatives of Credit and Services (CCS), Agricultural Production Cooperatives (CPA), Basic Units of Cooperative Production (UBPC) and private farms. All of these producers are small farmers, with limited financial, material and technological resources, but with access to credit, and methodological and technical support from the Government.

12. Principal stakeholders such as MINAGRI, CITMA, the National Institute for Hydrological Resources and the Ministry of Physical Planning are represented in the area, and specialists and technicians are involved with farmers from the production units and the communities of the area. The Pinar del Río University and in particular the Forestry Faculty, the Rice Experimental Station and other scientific and technical units of the territory constitute important institutions in support of SLM.

2. HABANA - MATANZAS PLAINS

Biophysical and socioeconomic conditions

13. Known as the Red Plains due to the predominant color of the soils, this zone is located between longitudes -82.05° and -82.57° W and latitudes 22.66° and 22.91° N, occupying an area of approximately 3 770km² (377 000 ha) of the provinces of Havana and Matanzas, both of which belong to the western zone of the country. It is the part of the country where the Green Revolution was particularly applied, involving high input agriculture, in terms of the application of agricultural chemicals, mechanization, over-exploitation of soils and the use of irrigation systems with high levels of water consumption and low efficiency.

Agro-climatic characteristics

14. The climate of the plains is slightly water deficient, although the rain regime allows for the existence of favorable reserves of productive moisture for crops; despite this, there are alternating droughts and in dry conditions crops are subject to water deficits. Judging by historical data, agricultural droughts typically last for 5 months of the year, beginning in January and lasting till May, but in recent years there have been unfavorable variations in this pattern.

15. Climatic conditions, fundamentally in the May-October period, are adequate for the vegetative growth of plants due to the high levels of rainfall which characterize this period.

Relief

16. The area is a plain, located between 20 and 40 m.a.s.l., with slopes that do not exceed 3%. From this perspective, conditions are favorable for the development of annual crops.

Principal soil characteristics

17. A large part of the area is occupied by Ultisols, whose natural physical properties favor the development of a wide range of crops; however, under human influence processes of compaction have occurred which have led to the abrupt reduction of permeability and biological activity. The soils are of silty texture, but silts of 1:1 nature predominate, with good properties for cultivation and for intensive use, with more than two harvests per year and a high capacity for delivering water and nutrients.

18. These soils are significantly more productive than those in the rest of the country, given their effective depth, good permeability, excellent physical conditions and relatively high nutrient availability, factors which together with the topography make the area desirable for the intensive production of foodstuffs.

19. Another causal factor of land degradation in this region is related to the inadequate management of subterranean waters used for irrigation, given that these are derived from a coastal aquifer which is highly vulnerable to contamination by sea water, especially when permitted levels of extraction are exceeded in dry periods. It has been observed that in dry year's salt concentrations in these waters increase, with signs of accumulation on the surface. This tendency over the last 15 years has led to a significant increment in alkalinity.

20. The most degraded zones are characterized by irrigation methods with low efficiency and high water consumption, inadequate soil leveling, the lack of plot drains and an inadequate management of the amounts of water applied. These factors, combined with growing demographic pressures and the high water requirements of existing cropping systems, lead to an increase in demand which the available water resources are not able to satisfy.

Vegetation

21. The natural vegetation has almost in its entirety been substituted by crops and pasture, both natural and sown. As a consequence, the permanent vegetable cover of the soils has been significantly reduced, as have the levels of input of organic matter into them.

Socioeconomic characteristics:

22. Land tenure is dominated by 'social property' through Cooperatives of Credit and Services (CCS), Agricultural Production Cooperatives (CPA), Basic Units of Cooperative Production (UBPC) and private farms. In the plains there is a high State involvement in the production of crops such as citrus, sugar cane, vegetables, root crops and bananas. Production in the plains is strongly dependent on irrigation. Neither the State nor the private sector use subterranean water reserves sustainably, these being the only ones available for ecosystem support.

23. Given its proximity to the city of Havana and the high density of population (around 3 million people) which depends on the production of foodstuffs in the area, the plains are an important source of employment with great socioeconomic importance, and at the same time this activity places heavy pressures on the natural resources of the zone.

24. It is considered of great importance the fact that there is representation in this zone of the principal institutional stakeholders of central Government and their territorial representatives at all levels, including MINAGRI, MINAZ, INRH, CITMA and MES. The presence of a strong scientific-technical component, represented by research institutions, universities and academic institutions (Havana Agricultural University, Centre for Rural Development Studies, National Institute for Agricultural Science, Institute of Animal Science, Liliana Dimitrova Institute for Horticultural Research, the Indio Hatuey Institute for Pasture and Forage, the Institute for Fundamental Research into Tropical Agriculture, the Institute of Soils and others), represents a strength with high potential for the production of alternatives for

application in the zone. These Institutions, however, have weaknesses due to the obsolescence of their equipment for monitoring and evaluation of land degradation processes, their communications systems and their capacities for the implementation of SLM technologies. An element which has progressively become weaker is the soil monitoring system of the Pedagogical/Agrochemical Service, which is particularly strong in this area, and whose principal objective is the application of chemical fertilizers based on recommendations generated by the systematic evaluation of the chemical content of the soil.

3. PREMONTANE REGION OF VILLA CLARA

Biophysical and socioeconomic conditions

25. The premontane zone of Villa Clara is characterized by its dissected topography and the presence of soils classified as Inceptisols, with high vulnerability to processes of erosion when the soil is left without cover, which could lead to rates of loss of superficial horizons of up to 40 tones/ha/year.

26. The zone is located in the centre of the country, basically in the Province of Villa Clara with some extension towards Cienfuegos and Sancti Spíritus, meaning that it includes the Escambray range which is covered by mixed forests and coffee and well developed ranching activity.

27. Due to historical processes of depredation dating from previous centuries, land use processes and forest fires, the forests have suffered drastic reduction in area. The introduction of ranching has led to erosion of sloping lands in premontane areas, due to poor herd management and the application of practices which are incompatible with the presence of forests. The decline of ranching ventures established in the second half of the last century has led to the proliferation of large expanses of abandoned land, infested with undesirable plants.

Agro climatic characteristics

28. Annual precipitation levels range between 1400 and 1500 mm, concentrated principally in the rainy season between May and October when around 80% of total rainfall occurs, which is characterized by high intensity (at times with more than 2cm in 30 minutes), which makes them highly erosive.

29. The greater part of the area is occupied by Inceptisols, whose physical characteristics favor the development of processes of degradation. In general they have a sandy texture throughout the whole profile and have serious problems of soil erosion on sloping lands. In the areas with lower relief, physical, chemical and biological degradation is also observed, in interrelation with processes of acidity buildup. This situation has significantly reduced soil fertility and has caused problems for the hydrological network, the road network and the human population.

Socioeconomic characteristics

30. Land tenure is cooperative (organized farmers); members have limited levels of resources which do not allow them to take advantage of the potential of the soil. Added to this is the urgent need for farmers to invest in countering soil erosion, in an ecosystem which combines coffee and forestry production with livestock production. Around 5,000 people from local communities, as well as 650 cooperative members, farm owners and associated could potentially benefit from financial mechanisms associated with coffee production, timber and non-timber forest resources and from integrated ranching development in the pre-montane zone.

31. Among the principal institutional associates in the area are MINAGRI, CITMA, the Ministry of Higher Education and Plan Turquino. The Central University of Las Villas, the Escambray Experimental Pasture Station, the Centre for Environmental Studies and the territorial delegations of MINAGRI, CITMA, INRH and MINAZ constitute a strong institutional framework for the transmission of information, training and extension, as well as extracting lessons learnt for later replication in teaching activities and in other areas of interest with similar characteristics. The conditions presented here are representative of almost 1 million hectares of land in other parts of the country.

32. The following human resources of relevance to the programme are present in the area:

33. Within the area of the project, there is availability of human resources, capacity and talents as follows:

- CITMA: 2 environmental specialists.
- Laboratory and experimental area of the Territorial Sugar Cane Research Station (ETICA/VC): 5 Masters level professionals, 10 graduate researchers and 12 technicians.
- MINAGRI soils laboratory and experimental area: 2 Masters level professionals, 5 graduate researchers y 2 analysts.
- Red-Cal Laboratory of the Provincial Delegation of Hydrological Resources: 2 Masters level professionals, 5 graduate researchers and 4 laboratory analysis technicians
- Agricultural and Livestock Research Centre (UCLV): 12 researchers (at doctorate and masters levels, 3 scientific reserves, 23 technicians and support specialists, 40 agricultural support workers,
- Provincial Meteorological Centre of Villa Clara: 1 doctorate level specialist, 1 masters level specialist, 2 researchers, 1 specialist and 4 technicians.

4. RÍO CAUTO CATCHMENT

Biophysical and socioeconomic conditions

34. The Cuato Catchment, which is the largest catchment in Cuba occupies around 8% of the national territory and is home to around 10% of the national population. This gives it a particular importance, to which can be added its valuable natural resources, significant and diverse agricultural and industrial activities, major development of hydrological schemes, important mining and fishery resources as well as cultural and historical values.

35. In this highly complex territory, there is intensive economic and social activity, with the participation of four provincial administrations with their respective objectives and strategies on the same ecosystem.

Physical boundaries

36. The area is located between longitudes -75.81° and -76.92°W and latitudes 19.92° and 20.27°N. Includes parts of the provinces of Las Tunas (6%), Granma (31.8%), Santiago de Cuba (33.6%) and Holguín (28.6%).

General characteristics

37. Cauto Cristo shows an agricultural drought between July and September, during which it is necessary to apply irrigation in order to maintain adequate agricultural yields. The climate is humid tropical, with rainfall levels varying between 364 y 2 989 mm and a hyper annual average of 1,190 mm. In the flat area, the temperature varies between 25.6 and 26.2 °C. Evaporation rates are elevated, with annual values ranging from 2,104 to 2,631 mm and humidity ranging from 80 to 83%. In the mountainous area, the temperature ranges from 25.7 to 26.4°C, evaporation is also elevated with annual values from 2,357 to 2,773 mm and relative humidity which varies from 76 to 80 %.

38. From the agro-bioclimatic viewpoint, climatic conditions should be adequate to satisfy the water demands of the vegetation; however, in agro climatic terms the productive soil moisture reserves are low and tend to maintain agricultural crops in conditions of light to moderate water stress during dry periods throughout much of the year. The deficit of moisture in the soil-plant-atmosphere system causes agricultural drought and normally increases in duration, area and intensity during the drier part of the year. These characteristics are related to a combination of high temperatures and high solar radiation, and particularly to the high levels of evapo-transpiration which is prevalent throughout the whole year. It is one of the typical semi-arid zones of the country, with the presence of dry lands with limited water resources and high degradation potential.

39. Much of the area is occupied by soil sub-types belonging to the Dark Plastic Types (Vertisols), which pose serious problems of drainage, with high content of silt of 2:1 type (montmorillonite), which is very plastic silt with high fertility but low productivity.

40. Subterranean water may be found from 1.3 up to 21 m depth, with levels that increase towards the north. The direction of subterranean water flow is from southeast to northwest.

41. The hydrological gradient ranges from 0.001 to 0.004, and the average coefficient of infiltration is from 10-15 m per day. In this zone salinity is greater than 1 g/l.

42. The area is deforested as a historical consequence of poor management of forest resources, indiscriminate felling, forest fires and land use changes for the production of sugar cane and pasture.

Socioeconomic characteristics.

43. The population of the area is 1,167,400 inhabitants, representing 10.6% of the national population distributed in 916 concentrated settlements, of which 37 are urban nuclei and 879 are rural. The rural areas have a population of 427,700 inhabitants, which represents 36.6% of the total, with 18.8% distributed in settlements of greater than 200 inhabitants, 4.4% in settlements smaller than 200 inhabitants and 14.2% in dispersed houses.

Soil use

	<i>Thousands of ha</i>	<i>%</i>
Total area	896.9	100.0
Agricultural area	634.9	70.8
Cultivable	372.3	41.5
Non-cultivable	262.0	29.3
Non agricultural area	262.0	29.2
Forest area	42.0	4.7
Others	220.0	24.5

44. Almost 71% of the area is used for agricultural development, the main products being sugar cane, livestock, rice, coffee, vegetables and fruits.

45. Among degrading processes, there deforestation, soil degradation, biodiversity loss, and pollution predominate.

46. Deforestation, as in almost the entire country, results from the historical behavior of the different development stages: export of huge quantities of timber resources towards colonialist countries, shifting land use to meet economic goals (sugar production, cattle raising, tobacco, etc.), occurrence of cyclones and hurricanes and forest fires, as well as scarce reforestation plans. This is the fundamental foundation of the other degrading processes. As for soils, salinization as well as laminar and furrow erosion stretch for huge land tracts that used to be productive, basically due to poor water resource management in bare soils. Likewise, the dynamics of biodiversity loss rose to impressive figures, which are countless because of lack of adequate procedures and infrastructure to deal with these matters. It was only during the sixties in the previous century that the rescue of forests and the hydro-regulating strip of the main river began to be undertaken.

47. Salinization is a process having repercussions especially in the zone. A harmful combination of aquifer overexploitation, sea intrusion, irrigation with low-quality water, and poor attention to drainage systems, has accounted for the emergence of secondary salinization. The currently poor monitoring system, whose equipment is obsolete and has insufficient resources for communication, chemical analysis

and integral land assessment, has not permitted to conduct follow-up needed to make local-level decisions required for each case.

48. Erosion is a most important aspect due to its contribution to coastal pollution, obstruction of watercourses and hydro technical works and, most of all, its influence on the Guacanayabo Gulf, the main interaction point with the Caribbean Sea. Productive soil losses may come to be up to 30 – 40 t / ha / year, thus producing terrible gullies when erosion is furrow-like; solving this problem needs true engineering works requiring high funding costs when reaching huge dimensions.

49. An important experience in natural resource management is that of developing integral forest farms in deforested areas, in hydro-regulating strips and in areas needing firewood supply for power purposes. This could be a great scenario to test sustainable funding mechanisms in a setting integrating agricultural, forest and cattle raising practices, rescue of traditional technologies and local knowledge (in capturing, harvesting and preserving rainwater; applying kitchen gardens, green medicine, among other local expressions) at a small and medium scale.

50. Cattle in the watershed zone has undergone strong deterioration due to current constraints to supply needed items that may permit to sustain intensive cattle raising systems. Drawing upon the infrastructure available in this area, demonstration actions on cattle raising alternatives through more sustainable procedures could stand for a progressive element to abate pastureland deterioration and therefore increase biodiversity richness in several species important to cattle and forest production, stop uncontrolled practices on fire use, and have an exploitation system much more harmonic with nature in the watershed.

51. With its extensive and increasingly frequent drought periods, the Cuban eastern zone should intensify its efforts regarding adaptation systems intended for climate change that is evidently taking place. The four provinces in the Cauto Watershed, which are located in the semiarid zone, could develop an adaptation system including water reuse, economic use of liquid wastes, rainwater collection, water desalinating systems, implementation of crop varieties highly resistant to hydric stress, as well as use of cultivation techniques promoting maximum water use such as coverage crops and, in general, sustainable agriculture application.

52. A most important element is that of institutional complexity within the Watershed, which covers territories under four provincial administrations. Natural resource management in such conditions is a challenge concerning interinstitutional coordination, information coordination, and integrality in decision implementation and making. In 1998, a Coordination Council for the said Watershed was constituted, its main goal being that of coordinating actions without substituting for the obligations of the State's Central Administrative Agencies that interact in this territory. Among other characteristics, the main sub watersheds are as follows: Contramaestre (it includes territories in Santiago de Cuba and Granma), Bayamo (Granma), Holguín (Holguín), and Salado (Las Tunas and Granma) Watersheds. This sub watershed, or even micro-watershed, level could be a suitable ecosystem for integrated work in this scenario at a landscape scale.

53. All State's Central Administrative Agencies are represented in the four provinces of the watershed (Institute of Physical Planning, MINAGRI, INRH, MINAZ, CITMA, the Ministry of Economy and Planning, MINVEC, the National Association of Small Farmers (ANAP), among others). Also, in the territory is an important representation of the Universities of Santiago de Cuba, Holguín, and Granma provinces; Institutes of Agricultural and Livestock Research such as the "Jorge Dimitrov" Institute in Granma, Bioeco in Santiago de Cuba; Centers for Environmental Studies; and territorial stations for sugar cane research, among other important institutions.

5. SOUTHERN GUANTÁNAMO ZONE

Biophysical and socioeconomic conditions

54. Guantánamo is both the easternmost province in the country and the one undergoing most intensive desertification and drought. The highest contrasts are in its territory, since to the North stretches the region with more rainfall (over 3,000 mm annual rainfall) and the best preserved forests countrywide, which are contained within the “Cuban water manufacturing factory”: the Toa River Watershed; while the southern region is classified as the semiarid region par excellence.

General boundaries

55. It is located between the -73.78° and -75.30° West longitude and between the 19.92° and 20.27° North latitude.

56. In this territory, which stands for 13.7% of all disturbed lands in the country, desertification has been strongly and intensively felt in the Guantánamo Valley and the Maisí – Guantánamo Southern Coastal Strip. The latter is under extreme conditions, meaning the lowest rainfall countrywide (less than 200 mm a year), poor and thin, low-fertility soils, which accounts for the existence of fragile ecosystems with limited productive possibilities.

57. This zone impresses for its landscape aridity and agriculture poorness. In many a place, the human action aggravates deforestation problems, overgrazing, and agricultural practices applied without any conservation measures. This causes environmental deterioration, low soil productivity resulting from a salinization increase, and soil erosion.

58. The province has a predominantly mountainous relief. This well drained zone is contrasted with those soils located in lower zones, in small intra-mountain valleys and in plain-relief coasts where surface drainage is insufficient and groundwater is less than 1.50 m deep. Consequently, over 30,000 hectares affected by poor drainage have underground aquiferous layers that rise, thus inundating and salinizing cultivation fields.

59. Stretching for 122,000 hectares, the Guantánamo Valley – the main agricultural zone in the province is affected by salinity, natural conditions and anthropic action being two of its causal components. Leaching of salts in the soil, presence of a water table mineralized with salt concentrations ranging from 255 g/l to 40.1 g/l less than 1.50 m deep, and adverse climate conditions conditioning the predominance of a high evaporation regime exacerbated by the tendency towards a decreased pluviometry regime over the last century, make this setting a territory undergoing high natural vulnerability. Other aggravating factors unleashing desertification processes are those of poor-quality-water-based irrigation and insufficient drainage application. This Valley comprises the southern Guantánamo, El Salvador, Manuel Támes, and Niceto Pérez municipalities, and northwestern Caimanera.

60. The accelerated erosion process affecting soils in the territory is significant, hydric erosion being the most impacting process. According to a 1:25,000-scaled soil study, potential erosion is 94.6% and over 70% of soils in the province are currently eroded. The highest disturbances brought about by soil-erosion-based degradation are to be found in loss of the arable land layer and, therefore, in decreased agricultural yield. The soils used for agricultural production that are most affected by erosion processes are found in areas intended for food and sugar cane production in a plain topography, as well as in the mountainous areas, the areas intended for coffee growing, where rainfall is abundant, thus potentiating susceptibility of these soils to erosion. These conditions, together with inadequate management, make these areas rank critical as to soil degradation and emergence of desertification conditions.

61. Drought is another phenomenon that has historically affected this zone. Over the last years, these events have been much more frequent and intensive, mainly in the 1997-2004 periods, when they have

been occurring continuously and have been interrupted only by brief rainy periods resulting from a transitory meteorological phenomenon. This situation is evidently influencing the agricultural yield in these zones, as well as the quality of pasture for cattle.

62. Drought processes over the last five years have been intensive and have occurred in all their meteorological ways: agricultural, hydrological, and social. This phenomenon has reached such a magnitude that, since 1998 to date, local and national authorities have uninterruptedly decreed the Alarm status out of intensive drought at the municipalities in the southern province, and the Alert status at the other municipalities.

63. In addition to agricultural production and, to a lesser extent, agricultural and livestock production, the main production processes developed in the southern zone include aquiculture, which produces conflicts regarding land use.

64. High scientific, institutional potential is available as well as an important stock of in-situ research outputs. In addition to territorial representations of State Agencies, ANAP and polytechnic institutions, there are the Saline Soil Station, the Institute of Mountain Research (Sabaneta), and the Center for Environmental Studies.

ANNEX M. Main LD processes and interventions required in intervention areas

Scenarios	Actions necessary	Projects				
		1	2	3	4	5
1. Southern plains of Pinar del Río						
Highly degraded ecosystem. Extreme climatic events (high rainfall/alternating periods of drought) Soils affected by hydrological and wind erosion	Measures for preventing disasters relating to extreme climatic events. Rehabilitation of soils affected by erosion, through improvement measures.	x	x			
2. Havana – Matanzas plains						
Lightly degraded ecosystem. Water management, deficiencies in irrigation systems/degradation by compaction and soil salinity buildup. Food security concerns.	Application of conservation agricultural alternatives for the sustainable management of hydrological resources and measures for preventing soil degradation due to compaction and soil salinity buildup.		x			
3. Premontane zone of Villa Clara						
Moderately degraded ecosystem. Ranching and forestry areas. Problems with the management of technologies compatible with soil characteristics in ranching and forestry exploitation systems. Problems with erosion of steep lands and soil salinity build up in lowlands.	Alternatives involving the use of multispecific cropping systems and the application of integrated ranching and forestry management practices in diverse environments.			x		
4. Cauto catchment						
Degraded ecosystem. Semi-arid. Includes zones with permanent and periodic drought. Scarce forest cover and inadequate ranching practices. Soils affected by erosion and salinity buildup.	Alternatives involving integrated agricultura and conservation systems and soil recovery. Application of crop varieties resistant to extreme conditions.		x	x	x	
5. Guantánamo south						
Highly degraded ecosystem. Arid. Extreme drought. Problems of salinity. Low productivity.	Application of measures for the adaptation of plant and animal species to arid and saline conditions.	x	x		x	

ANNEX N. Selection of demonstration sites within the intervention areas

Local stakeholders in the five intervention areas of the CPP proposed the following criteria for the definition of demonstration sites:

- Condition of the vegetation cover: proportion of the area with vegetation cover and probability of the occurrence of fires
- Soil conditions: erosion, salinity, organic matter content, compaction.
- Status of hydrological resources: water availability.
- Climatic conditions; precipitation, aridity, days with water available in the rooting zone.
- Socioeconomic conditions: the relation between population and the agricultural area.

They then ranked the candidate sites on the basis of these criteria, assigning them values according to each of the different criteria used. On the basis of this, a CD+ analysis was then applied to arrive at a discrimination index value for each site which was then used to produce an overall ranking of sites. The results of the ranking were as follows:

Intervention areas	Ranking by site					
	1	2	3	4	5	6
Llanura Sur de Pinar del Río	Las Martinas (0.775)	Consolación (0.513)	Los Palacios (0.46)	San Juan y Martínez (0.448)	San Luís (0.429)	San Cristóbal (0.425)
Villa Clara	Armonía (0.714)	Macún (0.677)	Chambas (0.583) :	Florencia (0.542)	Caibarién (0.469)	
Cuenca Cauto	Mella (0.84)	Cauto el Paso (0.729)	Bayamo (0.667)	Cauto Embarcadero (0.646)		
Guantánamo	La Javilla (0.865)	Imías (0.844)	San Antonio del Sur (0.813)	Paraguay (0.802)	Manuel Támes (0.677)	Salvador (0.624)
Llanura Habana Matanzas	Melena del Sur (0.417)	Güira de Melena (0.417)	Quivicán (0.344)			

The sites selected were then reviewed and the two leading sites originally selected in Villa Clara (Armonia and Macún) were eliminated as they overlapped geographically with another GEF project which is currently under preparation in Sabana Camaguey. These were substituted by two additional sites not originally considered.

The 12 demonstration sites eventually selected were as follows:

Intervention area	Llanura Sur de Pinar del Río	Villa Clara	Cuenca Cauto	Guantánamo	Llanura Habana Matanzas
Demonstration sites	- Las Martinas - Consolación	- Cumanayagua - Manicaragua	- Mella - Cauto el Paso - Bayamo - Cauto Embarcadero	- La Javilla - Imías	- Güira de Melena - Quivicán

ANNEX O. Trends in the distribution of agricultural land by tenure type

Form of tenure	1992		1995		1998	
	Hectares	%	Hectares	%	Hectares	%
Total	6,774,900	100.0	6,602,200	100.0	6,686,700	100.0
<i>State</i>	<i>5,097,700</i>	<i>75.2</i>	<i>1,778,100</i>	<i>27.0</i>	<i>2,234,500</i>	<i>33.4</i>
Cooperative	690,300	10.2	3,819,000	58.0	3,370,200	50.4
<i>UBPC</i>	-	-	3,161,000	48.0	2,756,000	41.2
<i>CPA</i>	690,300	10.2	658,000	10.0	614,200	9.2
Private sector	986,900	14.6	1,005,100	15.0	1,082,000	16.2
<i>CCS</i>	752,700	11.1	772,800	11.6	779,700	11.7
Other producers	234,200	3.5	232,300	3.4	236,200	3.5
Usufruct (individual beneficiaries of the 1993 reform)	-	-	-	-	66,000	1.0
Total non-State	1,677,200	24.8	4,824,100	73.0	4,452,200	66.6

ANNEX P. Land use breakdown by crops and production types, 1997

Crops	National total (%)	Percentage by producer type								
		Total (%)	State	Cooperative sector			Private sector			
				Total	UBPC ¹⁰	CPA ¹¹	Total	Credit and service cooperatives	Farmer organizations	Others
Area cultivated	100.0	100	24.4	57.0	47.0	10.0	18.6	12.8	4.4	1.3
Permanent crops	70.4	100	21.6	70.2	59.5	10.7	8.2	6.3	1.4	0.5
Sugar cane	47.8	100	24.4	57.0	47.0	10.0	18.6	12.8	4.4	1.3
Coffee	3.8	100	24.3	36.0	21.8	14.2	39.7	28.0	4.8	6.8
Citrus	2.5	100	24.4	57.0	47.0	10.0	18.6	12.8	4.4	1.3
Pasture	9.9	100	24.4	57.0	47.0	10.0	18.6	12.8	4.4	1.3
Temporary crops	29.4	100	24.4	57.0	47.0	10.0	18.6	12.8	4.4	1.3
Rice	6.1	100	52.5	35.6	29.0	6.6	11.9	7.9	2.9	1.1
Various	18.6	100	24.4	57.0	47.0	10.0	18.6	12.8	4.4	1.3
Tobacco	1.0	100	12.0	22.8	7.6	15.1	65.3	47.2	2.8	5.3

¹⁰ UBPC = Basic Units of Cooperative Production

¹¹ CPA = Agricultural Production Cooperatives

ANNEX Q. Changes in Forest Cover in Cuba over the period 1492-2003

Period	Forest cover (000 ha)		% forest cover.		Forest area loss over period (000 ha)	Length of period (years)	Rates of change	
	Start	End	Start	End			(ha/año)	%
1492-1774	9,977	9,201	90.0	83.0	-776	282	-2,750	0.0
1774-1827	9,201	7,539	83.0	68.0	-1,662	53	-31,358	- 0.4
1827-1900	7,539	5,875	68.0	53.0	-1,664	73	-22,794	- 0.4
1900-1926	5,875	2,549	53.0	23.0	-3,326	26	-127,923	- 5.0
1926-1959	2,549	1,485	23.0	13.4	-1,064	33	-32,242	- 2.2
1959-1974	1,485	1,691	13.4	15.3	+206	15	+13,740	+ 0.8
1974-1983	1,691	1,907	15.3	17.2	+216	9	+24,000	+ 1.3
1983-1998	1,907	2,334	17.2	21.1	+427	15	+28,466	+ 1.2
1998-2003	2,334	2,619	21.1	23.6	+285	5	+57,000	+ 2.2

Sources: agricultural census data from 1900 and 1946; report on the state of knowledge of forest ecosystems in Cuba (Samek, V y del Risco, E); results of land survey 1974; National Forestry Dynamics (DNF)

ANNEX R. Response to Reviews

a) Convention Secretariat comments and IA/ExA response (No Comments received)

b) STAP expert review and IA/ExA response

Review

**Country Pilot Partnerships on sustainable land management
Programming Framework
GEF Council Submission
Lead Agency's ID: PIMS 3005
Country: Cuba**

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August 28, 2005**

Initial Comments August 21, 2005

This project is ambitious in scale and scope. It deals with sustainable land management at the country level, framed under the partnership of highly recognized organizations. As such, it is highly pertinent with GEF's goals and objectives.

The statement of the problem is accurate, comprehensive, and consistent in its approach. Root causes and barriers to sustainable land management in Cuba are clearly analyzed and well supported by technical and data.

The main conclusions of this analysis are somewhat surprising, and can be summarized as follows

- a) Land degradation is currently recognized as a major problem at all levels in Cuba. Investments to solve this problem are significant. For example, current investments of direct relevance to the promotion of sustainable land management under the National Programme for Soil Improvement and Conservation amount about US\$2,000,000 per year. However, it is stated that, under the baseline scenario, land degradation processes will continue at current levels. Moreover, it is also stated that significant levels of Government investments in promoting and facilitating sustainable land management are likely not to result in corresponding long-term impacts in reverting processes of land degradation.
- b) Therefore, root causes and barriers to sustainable land management in Cuba are linked mostly to lack or inadequate incorporation of SLM considerations into planning, extension and environmental education programmes, as well as some degree of disconnection between implementing agencies.
- c) At the same time, Cuba is unique among Latin America countries regarding commitment to environmental issues, as indicated by:
 - o Environment and natural resource conservation is a national priority starting at the Constitutional level
 - o Cuba has a sophisticated system of land-use planning that includes several government agencies at different organizational and geographical levels.
 - o Cuba has well-established institutional structures in the areas of agriculture, forestry, hydrology and other aspects of land use, with very capable staff members who are currently carrying out activities in diverse areas including planning, research, and technical support
 - o However, it is mentioned that SLM considerations are typically not emphasized in the technical colleges, universities and other educational institutions where the technicians responsible for implementing extension and education programmes are trained; the curricula of these institutions generally emphasize more conventional 'green revolution' principles and

technologies which have limited applicability in the social and economic conditions of Cuba today.

- Education level of the general population is very high, including farmers: 25,832 agricultural producers are superior level graduates and 62,200 medium level graduates.

This unique country profile requires a specific and original approach to promote effective SLM in the country. Taking into consideration the above listed characteristics, the project correctly focuses its main objectives at improving planning structures and processes for land use and regulations that take into consideration SLM principles and techniques, involving mainly government agencies, but also including other major stakeholders.

Under this general framework, presented in an articulated manner, main objectives include Capacity Building for Planning, Capacity Building for Information Coordination and Monitoring Systems, Capacity Building for Sustainable Financing Mechanisms, and evaluation and Monitoring of Cuba CPP. Overall, these objectives address the key problem identified in the project diagnosis, lack of coordination and priority regarding SLM at the country's level.

Complementary, specific demonstration sites for the sustainable management of watersheds, livestock, grasslands, forests and soils will be implemented in key areas of the country where land degradation problems are critical.

Scientific and technical soundness of the project

This country project is scientifically and technically sound. The statement of the problem is accurate, comprehensive, and consistent in its approach.

Identification of global environmental benefits

The area of intervention is important in terms of its significance as a tropical island in the Caribbean region, whose biodiversity is severely threatened by land degradation. This situation is common among other Caribbean islands (as well as islands in general).

GEF goals

The project clearly fits within the context of GEF goals.

Regional Context

Cuba belongs to the Caribbean ecoregion, which has high priority in terms of sustainable land management, because of a) the biological richness of the area, b) the severe process of land degradation that is taking place in many islands, and c) the social and economical implications of land degradation to the local population.

Replicability of the project

The project has a great potential for becoming a leading case that could be replicated in other countries, particularly in the Caribbean region.

Sustainability of the project

The project has potential for sustainability as long as it achieves concrete results in promoting effective SLM integration in Cuba. Given Cuba's unique characteristics described before, it is likely that no significant barriers would prevent full adoption,

Linkages to other focal areas

The project has clear connection with other priority areas, particularly those related with biodiversity conservation

Key issues

Strong points

This proposal is well in accordance with GEF objectives. Promoting integration of economic production and resource conservation through SLM is adequate as well as promising. The need for making compatible productive land use policies with environmental concerns and standards is becoming more and more urgent and critical throughout the world. Isolated projects have proved not to be the correct answer to present day environmental problems. It is also positive that this project takes into consideration lessons learned through previous projects and initiatives funded by GEF and other multilateral and national sources.

The multi-level approach selected is also a positive aspect of the project. Both the general, overarching perspective and the concrete, on the ground experience are needed to promote integration in an effective way. The same applies for the involvement of several government and non-government agencies, institutions, and stakeholders that support and participate in the project.

Points that need clarification or improvement

Demonstration sites: one of the main project components is a set of demonstration sites for the sustainable management of watersheds, livestock, grasslands, forests and soils, which will be implemented in areas where land degradation problems are critical.

Even if obviously on site demonstration is an essential tool when promoting adoption of SLM practices, there is a risk that implementing separated demonstration sites focused on specific problems may lose focus regarding the integrative nature of SLM.

In first place, it is not clear whether isolated demonstration sites for say erosion control or livestock management would be necessary in a country of the level of technical sophistication, available expertise, and local knowledge like Cuba. Secondly, it appears that demonstration sites would be more consistent with the general goals and objectives of the project if in each site all components of SLM were included, from land planning, institutional coordination, to specific management practices. In this way, in each area all stakeholders involved could perceive, understand, and correct those bottlenecks that so far have prevented Cuba from reaching a satisfactory level of SLM. Moreover, it is likely that in many cases it will become evident that limiting factors are more related with perception, policy priorities, or even institutional aspects rather than to lack of specific expertise. Even if it is clear that in many sections of the document the idea of promoting an integrated SLM is clearly stated, the way the demonstration sites are designed leads to some confusion regarding their focus on SLM in a broad perspective.

In other words, a “unifying” approach in which each demonstration site deals with the inherent unity and complexity of SLM would appear more consistent with the overall goals and objectives of the project... Therefore, I would recommend to clarify (and redesign if appropriate) the demonstration sites section under the light of the preceding comments.

Participation of government agencies: Although the document is endorsed by all agencies involved in land use issues in the country, institutional commitment is depicted as somewhat limited, despite its critical importance. For example, one of the proposed indicators of success is the number of “key institutions” participating in integrated SLM land management at the end of the project. Another indicator would be the existence of agreements and systems between authorities and organizations at national, provincial and municipal level, in relation to SLM. If this is the case, there is then an apparent redundancy with current legislation and policies on land use planning in Cuba. Moreover, there is a risk that key factors responsible for the present lack of coordination may remain unsolved. For example, the following statement should be addressed: “The State also provides direct incentives (in the form of fertilizers and other agricultural supplies) for the production of high input monocultures such as tobacco, in recognition of the importance of such crops for the national economy.” (This document).

It must be said however that there are many references in the document suggesting that these apparent contradiction result from the present trend for reduction in the emphasis placed on centralized planning, as

well as an increased incidence of market forces in the decisions of farmers. However, these references are somewhat scattered in the text and do not provide a consistent response to the above indicated questions. I would recommend therefore re-structuring this section taking into consideration the comments made here.

Economic incentives: use of economic incentives for promoting SLM is one of the key management tools proposed in the document. Although its significance is obvious, more details should be given to allow the reader a better understanding of the rationale behind this concept, particularly under Cuba's present economic and planning system. This is a key question because in many cases conservation actions would add costs (at least in the short term) to the landowner in terms of restoration costs, decreasing use of fertilizers, etc. It would be useful and pertinent to add a brief list of the main economic tools to be introduced, particularly under the frame provided by increasing decentralization and support for private initiative.

References:

It would be desirable if more references were included in the document, particularly regarding key information. For example, the present amount of use of chemical versus organic fertilizers in Cuba, climate change trends in Cuba, etc. The list of references is unusually short for a document of this size, particularly regarding the substantial production of technical reports by Cuban researchers and extensionists.

Summary of STAP Comment	Response	Location where document was revised (sections, paragraphs)
	The proponents and UNDP thank the STAP reviewer for a comprehensive and constructive review. All comments have been addressed as follows:	
<p>Demonstration sites It is not clear if “classical” demonstration sites for management practices such as, for example, erosion control or livestock management under semi-arid conditions are necessary at all in a country of the level of technical sophistication, available expertise, and local knowledge like Cuba.</p>	<p>It is correct that there are high levels of capacity in Cuba and, specifically, knowledge of land management practices. What has been missing to date, however, has been a focus on Sustainable Land Management as such, including the integrated consideration of different aspects of natural resources. Initiatives to date have tended, rather, to focus on specific discrete solutions, such as forest plantation establishment and soil conservation. This is indicated as follows in the CPP document:</p> <p>“The curricula of the technical colleges, universities and other educational institutions where the technicians responsible for implementing extension and education programmes are trained have advanced significantly in recent years in relation to the incorporation of issues of sustainable land management; however in general they still tend to address the different components of natural resources (for example soil, water and forests) separately and do not adequately address the essential integration between these elements, which is central to SLM. This problem is directly related to the inadequate levels of awareness and understanding of the complexity and integrated nature of land degradation and SLM issues found among the personnel of a number of institutions; this problem is particularly widespread at an institutional level, affecting institutions such as the MINAGRI (including its dependency the National Soils Institute), the Ministry of Sugar, the Ministry of Physical Planning and the National Institute for Hydrological Resources.”</p> <p>“Demonstrations of natural resource management that have been carried</p>	<p>Barrier analysis, paragraph 57</p> <p>Baseline scenario,</p>

	<p>out to date have tended to focus on individual aspects of natural resources and have lacked the integrated approach which is central to SLM.”</p> <p>“Key gaps in the baseline are the limited degree of recognition of the complex, multi-sector and multi-disciplinary nature of land degradation issues into Government programmes, in the areas of extension, education and incentives; the inadequacy of information flow to planners, and between planners and practitioners, in relation to land degradation processes and SLM; the outdated nature of the regulatory framework for combating LD, in the light of changes in agrarian conditions over recent years; and the lack of demonstrations of an integrated approach to SLM.”</p>	<p>paragraph 68</p> <p>Baseline scenario, paragraph 73</p>
<p>Most likely, Cuba may have failed to implement SLM not because lack demonstration sites, but (according to the project diagnosis) because problems related with policy and institutional coordination deficiencies that cannot be solved by implementing demonstration sites.</p>	<p>The programme will focus both on demonstration sites (for the reasons explained above) and on the policy and institutional deficiencies to which the reviewer refers, placing emphasis on the promotion of vertical integration and harmonization between these two levels. The importance of issues other than the lack of demonstration sites is recognized in the barrier analysis. The barriers identified include:</p> <ol style="list-style-type: none"> 1. “The inadequate incorporation of SLM considerations into extension and environmental education programmes, 2. The limited development of financing and incentive mechanisms for SLM, 3. The inadequacy of systems for monitoring of LD and management of related information, 4. The lack of tools and knowledge required for planners to incorporate SLM considerations into plans, programmes and policies, and 5. The inadequate development of regulatory framework for combating LD.” 	<p>Barrier analysis, paragraphs 56-67</p>

	level actions and the ‘structural’ level context which affects them. The diversity of the ecosystem conditions, degree and type of threats, land-use practices and scales of intervention represented in the different projects and sites will maximize the replication potential of the models over a wide area of the national landscape.”	
To achieve this, the key barriers faced by Cubans need to be fully understood and solved, which certainly are much more complex than lack of information about current management practices.	<p>A wide range of barriers has been identified in the analysis and will be addressed through the programme, namely:</p> <ol style="list-style-type: none"> 1. The inadequate incorporation of SLM considerations into extension and environmental education programmes, 2. The limited development of financing and incentive mechanisms for SLM, 3. The inadequacy of systems for monitoring of LD and management of related information, 4. The lack of tools and knowledge required for planners to incorporate SLM considerations into plans, programmes and policies, and 5. The inadequate development of regulatory framework for combating LD. 	Barrier analysis, paragraphs 56-67
<p>Participation of government agencies:</p> <p>Although the document is endorsed by all agencies involved in land use issues in the country, institutional commitment is depicted as somewhat limited in the proposal, despite its critical importance. For example, one of the indicators of success mentioned in the project is the number of “key institutions¹²,” nationwide participating in coordinated and integrated sustainable land management at the end of the project. Another indicator will be the</p>	<p>The apparent contradictions between, on the one hand, the expressed commitment on the part of the Government to SLM and, on the other, the fact that in some cases its actions constitute ‘perverse incentives’ with unintended negative impacts in relation to SLM, can be explained by the fact that Cuban agriculture is currently in a phase of major change, for example in the areas of land tenure (with a move towards smaller, private holdings) and production methods (with a move from high input to low input systems). This is explained in the document as follows:</p> <p>“Changes in the agrarian structure in Cuba in recent years (see paragraph 25) have been paralleled by a reduction in the emphasis placed on</p>	National context/planning mechanisms, paragraph

¹² ‘Key institutions’ are defined as Government Ministries or Institutes, provincial and municipal governments, or national or regional organizations of farmers or other stakeholders.

<p>existence of agreements and systems between authorities and organizations at national, provincial and municipal level, formalizing this coordination in relation to SLM. If this is the case, then it is not clear how current legislation and policies regarding land use zoning and planning may be applied. Otherwise, there is a risk that key factors that led to the present land degradation problems in Cuba may remain unsolved. For example, contradictions like the following should be fully addressed: “The State also provides direct incentives (in the form of fertilizers and other agricultural supplies) for the production of high input monocultures such as tobacco, in recognition of the importance of such crops for the national economy .“ (This document).</p>	<p>centralized planning and increased incidence of market forces in the decisions of farmers regarding productive activities.”</p> <p>The contradictions mentioned arise from the fact that instruments for planning and regulation have in some cases failed to keep pace with these changes. This is explained as follows:</p> <p>“The fact that the State currently provides these kinds of perverse incentives is not a reflection of a lack of commitment to SLM (which is amply demonstrated by its major advances to date in the area – see for example paragraph 18) but rather the fact that Cuban agriculture is still going through a period of change in economic and agrarian terms, and that institutional coordination and capacities remain as yet to adapt fully to these changes.”</p> <p>Significant advances have in fact been made in relation to SLM, which demonstrate the Government’s commitment to SLM:</p> <p>“...national consumption of pesticides has declined from 30,000 tons annually in 1990 to 7,000 tons in 2005; of artificial fertilizers from 1,000,000 to 160,000 tons over the same period; of fuel for agriculture uses from 500,000 to 300,000 tons and of animal feed concentrate from 2,000,000 to 770,000 tons; as explained above, at the same time food security has been maintained.”</p> <p>In the specific case of tobacco to which the reviewer refers, despite the fact that perverse incentives exist for the continuation of monocropping,</p> <p>“...significant advances have been made in increasing the sustainability of tobacco production systems such as the complete elimination of the use of methyl bromide and the introduction of integrated pest management”.</p>	<p>16</p> <p>Description of root causes, paragraph 52</p> <p>National context/land use and agrarian context, paragraph 18</p> <p>Description of root causes, paragraph 52</p>
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	<p>have been paralleled with increases in flexibility regarding farmers' productive activities and targets.”</p> <p>“Although agriculture and other forms of land use in Cuba are governed by centrally devised plans (see paragraph 16), changes in agrarian conditions in recent years mean that farmers' production decisions are increasingly influenced by considerations of profitability at farm level. Under these conditions, and given that the high initial costs of SLM are often a barrier to its adoption (see Barrier 3 - limited development of incentive systems favoring SLM), it is important that capacity building and awareness raising activities within the CPP are accompanied by strategies which shift the economic balance in favor of SLM.”</p>	Description of outcomes in Paragraph 88
<p>References: It would be desirable if more references were included in the document, particularly regarding key information. For example, the present amount of use of chemical versus organic fertilizers in Cuba. Or, the statement that climate has changed in Cuba. The list of references is unusually short for a document of this size, particularly regarding the substantial production of technical reports by Cuban researchers and extensionists.</p>	<p>Many of the references used in the document were not obvious as they were presented in the form of hyperlinks without appearing in the bibliography. However the reviewer is correct in the observation that many other references could have been included. This has now been addressed, as shown in the Bibliography section and the corresponding references inserted throughout the text.</p>	Bibliography

Final comments (August 28, 2005)

I have analyzed the responses to my initial document. All my comments and suggestions have been adequately addressed. Therefore, I consider that if these responses are incorporated into the final document, I now fully support this proposal.

d) GEF Secretariat and other Agencies' comments and IA/ExA response
(Please see Executive Summary)