# GEF-6 PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: FULL- SIZED PROJECT
TYPE OF TRUST FUND: GEF TRUST FUND

## PART I: PROJECT INFORMATION

| | | | |
|---|---|---|---|
| Project Title: | **Introduction of new farming methods for the conservation and sustainable use of biodiversity, including plant and animal genetic resources, in production landscapes in selected areas of Cuba.** | | |
| Country(ies): | Cuba | GEF Project ID: | |
| GEF Agency(ies): | FAO | GEF Agency Project ID: | 639973 |
| Other Executing Partner(s): | Ministry of Agriculture (MINAG) | Submission Date: | 4 March 2016 |
| GEF Focal Area(s): | Biodiversity | Project Duration (Months) | 48 |
| Integrated Approach Pilot | IAP-Food Security ☐ | | |
| Name of parent program: | N/A | Agency Fee ($) | 282,462 |

## A. FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES.

| Objectives/Programs | Trust Fund | (in $) | |
|---|---|---|---|
| | | GEF Project Financing | Co-financing |
| BD 3 Program 7 | GEFTF | 1,000,000 | 8,698,690 |
| BD 4 Program 9 | GEFTF | 1,973,288 | 15,093,900 |
| **Total Project Cost** | | **2,973,288** | **23,792,590** |

## B. PROJECT DESCRIPTION SUMMARY

**Project Objective:** To conserve and sustainably use biodiversity in selected areas of Cuba, through the introduction of sustainable agricultural production intensification[1] and the conservation, adaptation and rescue of globally-important plant genetic resources.

| Project Components | Financing Type | Project Outcomes | Project Outputs | Trust Fund | (in $) | |
|---|---|---|---|---|---|---|
| | | | | | GEF Project Financing | Co-financing |
| **Component 1:** Conservation of plant genetic resources that are important for the future of agriculture. | TA | **Outcome 1.1:** The diversity of plant genetic resources for food and agriculture (PGRFA) has been increased in project areas.<br><br>*Target indicator:* | **Output 1.1.1**: A catalog of globally-important plant diversity (focused on timber and non-timber forest species, fruit trees, and crops with an emphasis on wild species, pollinators, and microorganisms[2]). | GEFTF | 1,000,000 | 8,020,690 |

[1] This is an approach developed by FAO, usually known as "Save and Grow" (http://www.fao.org/agriculture/crops/thematic-sitemap/theme/spi/scpi-home/framework/en/). Kindly see section 3 of this PIF for a more detailed description.
[2] See Annex III for targeted species. This will be further analysed during full project preparation. The catalog of output 1.1.1 will be integrated in the national catalog of biodiversity species.

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| | | *Enhanced genetic diversity in at least 100,000 hectares of production landscapes, including crop species and wild relatives.*<br><br>*<u>Indicator BD 7.1</u>: Diversity status of target species (measured by the BD tracking tool).* | **Output 1.1.2**: *In situ* and *ex situ* conservation actions[3], in place.<br><br>*Target: 100,000 hectares and x seed banks (number to be defined during full project preparation)*<br><br>**Output 1.1.3**: Maps and databases updated through geographical information systems (GIS) considering production potential, fragility and importance of targeted agroBD species.<br><br>**Output 1.1.4**: A knowledge management platform designed for monitoring and analysing factors of agro-biodiversity conservation and use, and alerts for major threats[4]. | | | |
| **<u>Component 2</u>:** Production landscapes integrate conservation and sustainable use of biodiversity. | TA | **<u>Outcome 2.1:</u>** Increased adoption of production systems that integrate biodiversity conservation through the creation of connectivity corridors, bringing together agricultural and natural ecosystems.<br><br>*<u>Target</u>:An increase of at least 300,000 hectares of productive landscapes managed with a view towards* | **Output 2.1.1**÷ A-landscape production strategy agreed by stakeholders, with particular attention to gender and youth, applying the *Save and Grow* approach[5].<br><br>**Output 2.1.2**: Landscape management practices adopted (based on 2.1.2), including sustainable production systems, conservation corridors and ecosystem connectivity.<br><br>*Target: 300,000 hectares* | GEFTF | 1,373,900 | 10,093,900 |

[3] This output will address timber and non-timber forest species, fruit trees, and crop species, wild relatives, pollinators and microorganisms, and will assess climate change effects. Special emphasis will be placed on rice, varieties of authoctonous pulses. Animal genetic resources will be analysed during full project preparation, especially domesticated pigs, bees and sheep.

[4] Major threats on agroBD in Cuba are related to: land use, land cover by type of vegetation, variability and climate change factors (including droughts and fires). The platform will be linked to government planning and financing tools.

[5] The *Save and Grow* is a FAO approach, detailed in section 3 below. In this project, it will address the sustainable intensification of agricultural production, agro-forestry and silvo-pastoral systems, sustainable use of forest, and it will be adapted to project geographical areas (See Map 1).

| | | | | | | |
|---|---|---|---|---|---|---|
| | | *conservation and sustainable use of biodiversity.*<br><br>*Indicator BD 9.1: Production landscapes that integrate biodiversity conservation and sustainable use into their management with certification*<br><br>*Target: At least 9 areas of productive landscapes managed sustainably and with GI labelling* | **Output 2.1.3**: Capacity development program for[6] rural communities, cooperatives and protected areas managers[7] on management, incentives and best practices/technologies, with a gender focus[8].<br><br>**Output 2.1.4:** Analysis of globally-important plant species living in Cuba and their valuation.<br><br>**Output 2.1.5:** Innovative market or public incentives, including labelling, that promote the conservation of agroecosystems in rural production.<br><br>*Target labelling scheme: geographical indication (GI)* | | | |
| **Component 3:** Enhanced Policy and Legal Framework | | **Outcome 3.1:** Policy, regulatory and legal frameworks for agricultural production in Cuba have mainstreamed agro-biodiversity conservation and use.<br><br>*Indicator BD 9.2 The degree to which sector policies and regulatory frameworks incorporate biodiversity considerations*<br><br>*Target: the new Soil and Water Laws incorporate and* | **Output 3.1.1:** Legal and regulatory framework revised by including agrobiodiversity conservation and sustainable use criteria and integrating the perspectives from production to governance.<br><br>**Output 3.1.2**: At least 2 national, 3 provincial and 1 local legal and regulatory frameworks have integrated methods and tools for genetic diversity rescue and conservation.<br><br>**Output 3.1.3:** Legal and informative manuals that | GEFTF | 457,803 | 4,488,371 |

[6] This is linked to outputs 2.1.1 and 2.1.2. The objective of these capacity development actions is to support the implementation of sustainable productive landscapes, as agreed in output 2.1.2 by the stakeholders.

[7] Government staff

[8] The role of women is central, since in Cuba 37.9% of active labour force is made of women.

| | | | | | | |
|---|---|---|---|---|---|---|
| | | *implement biodiversity concepts.* | illustrate the process of sustainable management of production landscapes, published, to facilitate the scale-up at national level. | | | |
| | | | | Subtotal | 2,831,703 | 22,602,961 |
| | | | | Project Management Cost (PMC)[9] | 141,585 | 1,189,629 |
| | | | | **Total Project Cost** | **2,973,288** | **23,792,590** |

**C. INDICATIVE SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE, IF AVAILABLE**

| Sources of Co-financing | Name of Co-financier | Type of Co-financing | Amount ($) |
|---|---|---|---|
| National Government | Ministry of Agriculture | In kind | 11,870,590 |
| National Government | National Flora and Fauna Organization | In kind | 4,632,000 |
| Bilateral Donors | European Union (Caribbean Biological Corridor Initiative) | Grant | 6,000,000 |
| Bilateral Donors | WWF Holland | Grant | 200,000 |
| GEF Agency | FAO | Grant | 1,090,000 |
| **Total Co-financing** | | | **23,792,590** |

**D. INDICATIVE TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES) AND THE PROGRAMMING OF FUNDS** [a)]

| GEF Agency | Trust Fund | Country/ Regional/ Global | Focal Area | Programming of Funds | (in $) | | |
|---|---|---|---|---|---|---|---|
| | | | | | GEF Project Financing (a) | Agency Fee (b)[b)] | Total (c)=a+b |
| FAO | GEFTF | Cuba | Biodiversity | (select as applicable) | 2,973,288 | 282,462 | 3,255,750 |
| (select) | (select) | | (select) | (select as applicable) | | | |
| (select) | (select) | | (select) | (select as applicable) | | | |
| (select) | (select) | | (select) | (select as applicable) | | | |
| (select) | (select) | | (select) | (select as applicable) | | | |
| **Total GEF Resources** | | | | | **2,973,288** | **282,462** | **3,255,750** |

a) Refer to the Fee Policy for GEF Partner Agencies.

**E. PROJECT PREPARATION GRANT (PPG)**[10]

Is Project Preparation Grant requested? Yes ☒ No ☐ If no, skip item E.

**PPG AMOUNT REQUESTED BY AGENCY(IES), TRUST FUND, COUNTRY(IES) AND THE PROGRAMMING OF FUNDS**

| Project Preparation Grant amount requested: $ 150,000 | | | | PPG Agency Fee: 14,250 | | | |
|---|---|---|---|---|---|---|---|
| GEF Agency | Trust Fund | Country/ | Focal Area | Programming of Funds | (in $) | | |
| | | | | | | Agency | Total |

[9] For GEF Project Financing up to $2 million, PMC could be up to10% of the subtotal; above $2 million, PMC could be up to 5% of the subtotal. PMC should be charged proportionately to focal areas based on focal area project financing amount in Table D below.

[10] PPG requested amount is determined by the size of the GEF Project Financing (PF) as follows: Up to $50k for PF up to$2m (for MSP); up to $100k for PF up to $3m; $150k for PF up to $6m; $200k for PF up to $10m; and $300k for PF above $10m. On an exceptional basis, PPG amount may differ upon detailed discussion and justification with the GEFSEC.

| | | Regional/Global | | | PPG (a) | Fee[11] (b) | c = a + b |
|---|---|---|---|---|---|---|---|
| FAO | GEFTF | | Biodiversity | | 150,000 | 14,250 | 164,250 |
| | | | | | | | |
| | | | | | | | |
| **Total PPG Amount** | | | | | **150,000** | **14,250** | **164,250** |

**F. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS[12]**

Provide the expected project targets as appropriate.

| Corporate Results | Replenishment Targets | Project Targets |
|---|---|---|
| 1. Maintain globally significant biodiversity and the ecosystem goods and services that it provides to society | Improved management of landscapes and seascapes covering 300 million hectares | *400,000 Hectares* |
| 2. Sustainable land management in production systems (agriculture, rangelands, and forest landscapes) | 120 million hectares under sustainable land management | *Hectares* |
| 3. Promotion of collective management of transboundary water systems and implementation of the full range of policy, legal, and institutional reforms and investments contributing to sustainable use and maintenance of ecosystem services | Water-food-ecosystems security and conjunctive management of surface and groundwater in at least 10 freshwater basins; | *Number of freshwater basins* |
| | 20% of globally over-exploited fisheries (by volume) moved to more sustainable levels | *Percent of fisheries, by volume* |
| 4. Support to transformational shifts towards a low-emission and resilient development path | 750 million tons of $CO_{2e}$ mitigated (include both direct and indirect) | *metric tons* |
| 5. Increase in phase-out, disposal and reduction of releases of POPs, ODS, mercury and other chemicals of global concern | Disposal of 80,000 tons of POPs (PCB, obsolete pesticides) | *metric tons* |
| | Reduction of 1,000 tons of Mercury | *metric tons* |
| | Phase-out of 303.44 tons of ODP (HCFC) | *ODP tons* |
| 6. Enhance capacity of countries to implement MEAs (multilateral environmental agreements) and mainstream into national and sub-national policy, planning financial and legal frameworks | Development and sectoral planning frameworks integrate measurable targets drawn from the MEAs in at least 10 countries | *Number of Countries:* |
| | Functional environmental information systems are established to support decision-making in at least 10 countries | *Number of Countries:* |

## PART II: PROJECT JUSTIFICATION

**1. *Project Description.* Briefly describe: 1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed.**

***General context***

In Cuba 65% of the agricultural land is cultivated. About 50% of land is used for perennial crops, mainly sugarcane, and pastures for livestock.

**Plant and animal genetic resources in Cuba**: Cuba has the greatest diversity of plants in the Caribbean. In 2010, it was reported that Cuba had about 5,778 native seed plants' taxa, of which 51.4 per cent were endemic[13].

[11] PPG fee percentage follows the percentage of the Agency fee over the GEF Project Financing amount requested.

[12] Provide those indicator values in this table to the extent applicable to your proposed project. Progress in programming against these targets for the projects per the *Corporate Results Framework* in the *GEF-6 Programming Directions*, will be aggregated and reported during mid-term and at the conclusion of the replenishment period. There is no need to complete this table for climate adaptation projects financed solely through LDCF and/or SCCF.

Nevertheless, it is estimated that Cuban flora, including *Magnoliophyta, Pinophyta, Pteridophyta* and *Briophyta* reaches 7,500 taxa[14] with a similar percentage of endemism[15]. The diversity of fauna is very important because it contains an immeasurable variety of genetic backgrounds, which can be used rationally for the welfare of mankind. Besides, this is crucial in biological control and provides resources for the development of nature tourism with its ensuing benefits. In analyzing the diversity of invertebrates and vertebrates in Cuba, it has been estimated that there are 11,954 species of invertebrates and 655 species of vertebrates registered, and that is the the most diverse region in the Insular Caribbean[16].

In Cuba, **biodiversity and terrestrial ecosystems** are primarily expressed as mountain ecosystems, heights and plains, with the latter predominating. For their specificity and relevance to conservation, ecosystems are also often distinguished as interior and coastal wetlands and cays, including significant areas of mangroves[17].

Cuba gives top priority to **biodiversity and conservation of genetic resources**. This includes conservation of phytogenetic and zoogenetic resources (Table 1) as well as different strains of microorganisms, many of which are involved in processes of symbiosis with species of economic importance. The Cuban territory possesses a high density of biodiversity, which is present in plant and animal species - managed as well as wild - and within the meso and micro soils. Meso and micro soils show a wide variability in their physico-chemical characterization, their use and conservation. This represents a great natural richness associated with a range of ecosystem services and complex food chains. Food chains incorporate the decomposition and nitrogen cycle associated with plants, such as the activity of pollinators, soil fauna, insects, nematodes, mollusks and vertebrates. Man stands at the center of the system, balancing these chains and creating changes and alternatives.

**Table 1. Biodiversity and state of conservation of genetic resources according to data of species[18]**

| Kingdom | Classification criteria | Description |
|---|---|---|
| *Plantae* | Registered plants | 5,778 native taxa of seed plants. 51.4% are endemic and 2,236 represent newly categorized taxa. Some 47% have some degree of threat, of which 1,725 taxa are of minor concern and 683 have insufficient data. |
| *Animalia* | Terrestrial vertebrates | 655 registered species : 165 with some level of threat, 52 are in critical danger, 42 in danger, 63 vulnerable and 8 without information. |
| | Terrestrial invertebrates | 11,954 species, of which shellfish are the most vulnerable species with 34 threatened species, 31 critically endangered and 9 endangered; for insects there are 7 vulnerable insects, 10 critically endangered and 4 endangered; arachnids have 3 vulnerable species, 5 critically endangered and 1 threatened. |
| *Fungi* | Identified fungi | 108 of the 201 species of fungi and selected myxomycetes are categorized : 20 Critically Endangered (CR), 20 Endangered (EN), and 34 Vulnerable. |

Although agricultural production systems in Cuba are widely distributed throughout the territory, there are **protected areas where endemic genetic resources remain unexploited**, such as legumes, neo-tropical fruits, roots, tubers and spices, including traditional varieties, wild relatives and associated organisms. In these protected areas, there is also an important bio-cultural heritage associated with old traditions. Traditional management has incorporated a high degree of tolerance for associated species, guaranteeing species survival and adaptability to new environmental and anthropogenic conditions.

**Forest cover** is part of the broad phytogenetic richness. In 2000, forest cover in Cuba was 2.43 million ha and by 2012 it had grown to 3.06 million ha, with an annual average increase of forest covered area of 51,790 ha/year. The

[13] Acevedo and Strong, 2010
[14] Gonzalez-Torres, Palmarola and Barrios, 2013b
[15] Cuban report to the Biological Diversity Convention (5th National Report, 2014. All references are based on this report)
[16] Ibidem
[17] Species that is considered key within the so-called *blue forests*.
[18] Data registered until 2014

forest cover rate at the end of 2012 was 28.66 per cent. Productive Forests only account for 31.34 per cent of the total covered area, while Protective Forests and Conservation Forests together account for the 66.86 per cent of the total covered area of the country. Ten basins of national interest have forest rates higher than the national average (27.3 per cent); these are a fundamental axis in carbon sequestration and represent refuges for many wild animals.

**Agrobiodiversity:** Cuba has a unique agrobiodiversity derived from its condition of island. Cuba is one of the top four islands with the largest number of plant species worldwide, and has the greatest diversity of plants in the Caribbean. Moreover, Cuba is the top first regarding the number of taxa per square kilometer. Around 80% of this diversity corresponds to cultivated species and the rest to wild species used by family farmers. In view of these factors, Cuba hosts an heteregoneous agriculture biodiversity that is distinctive in comparison with other Latin American countries, including centers of origin and domestication. This wide agro-biodiversity in Cuba has the large potential of contributing to local and global food security and nutrition. See Annex III for the list of species and varieties covered by this Project.

Cereals represent the most important crops for **food security**. Cuba has registered 37 cultivars in rice production[19]. Traditional varieties represent 12%. There are 33 commercial varieties of rice, with wide genetic variability. Maize contains 47 commercial varieties including traditional cultivars. There are 41 commercial varieties of common bean registered with 344 accessions. Other important crops like tubers contain a high number of varieties which are dispersed in different production systems, as well as the high number of fruit, horticulture and oleaginous cultivars and its wild species.

The **unique bio-cultural heritage** found in Cuban Protected Areas is attributable in part to the presence of people, whose traditional patterns of land use have proven sustainable over centuries. The sustainable and traditional agricultural biodiversity management practices has contributed to a more resilient, diversified agricultural system and to increased food security for the local communities. Most of the communities within the buffer and transition zones base their livelihoods upon family farms and small gardens called *conucos*. The *Conucos* have maintained traditional cultivars even after the introduction of modern varieties and promotion of monocultures of imported varieties by centralized, State-run development projects. Home gardens can preserve threatened diversity under *in situ* conservation, in particular associated species and wild relatives that may not be preserved in *ex situ* modalities (i.e. vegetatively propagated and tropical fruit trees).

The three project intervention areas (see Map 1) have in common just 25% of the total diversity of species, being this an indicator of their differences:

1. The **Eastern region** hosts less species but more intra-specific variability. In this zone, isolation and difficult accessibility along with social and cultural features (i.e. strong Haitian influence) have influenced the agricultural management of targeted species. Roots and tubers are more accepted by farmers and have greater variability than in the other two areas. An example is yam (*Dioscorea* spp.), which is tipically cultivated in this region. In the traditional agricultural systems, each family uses more than 60 wild and cultivated species, keeping a remarkable harmony with nature around the Wildlife Refuge PA *Delta del Cauto*. Traditional farmers collect dry branches from the forest to replace 95% of their fuel needs for elaborating food. This practice avoids the excessive accumulation of dry matter and reduces forest fires.

2. In the Zapata Swamp (*Cienaga de Zapata*) located in **the Western region**, and in the Managed Resource Protected Area *Jobo Rosado* and Wildlife Refuge *Tunas de Zaza* placed in the **Central region,** small-scale farmers cultivate and consume more species of grains than in the Eastern area. Species variability is very high here. *Phaseolus vulgaris*, *Phaseolus lunatus*, *Cajanus cajan*, *Zea mays* and *Vigna umbellata*are are mostly present and used for self-consumption. Small-scale farmers use and select seeds according to family needs, especially at species and intra-species level. Agroecosystem and landscape features influence the selection of crop species, especially of those that generate high economic benefits to family farmers. In this

[19] National list

case, the selection is done by considering ecosystem biotic and abiotic factors in order to increase crop yields and improve crop resilience. Cassava (*Manihot esculenta*), bananas (*Musa* spp.), taro (*Colocasiaesculenta*), cocoyam (*Xanthosoma* sp.), beans (*Phaseolus* spp.) and corn (*Zea mays*), among others, are expressions of long-standing food cultures where roots, tubers and grains play a key role in family diets. These food cultures had origins in indigenous cultures of Central and South America. Those crops cover major areas in family farms, in order to feed family members and domesticated animals.

***Global and local environmental problems***

Cuba is an especial case, where until early 1990s agricultural development was based on a large-scale production approach, crop specialisation, large state-owned farms and agricultural production cooperatives. Since 1993, the Government of Cuba (GoC) has promoted small-scale production and self-consumption for workers and cooperative members, and private smallholders.

**The expansion of agriculture has caused disruption of natural systems**. Major effects of agriculture on biodiversity include: i) conversion of natural habitats into agricultural lands, which has led to habitat fragmentation; ii) reduction of genetic variability of native plants and domesticated animals; iii) changes of natural ecosystems; iv) off-site pollution or alteration due to technologies and inputs used in agriculture such as fertilisers and pesticides. The degree to which agricultural activities affect biodiversity varies with the different types of agriculture. Traditional agriculture is generally perceived to have less adverse impact than the models with high inputs and intensification. Modern intensive agriculture has caused a reduction in biodiversity at all levels: at the ecosystem level, at the species level and at the genetic level.

The **erosion of ecosystem diversity has reduced valuable ecosystem services** such as water and soil conservation, nutrient cycling, and natural pest control. The loss of diversity in crops and livestock and the spread of monocultures and plantations have resulted in an increased vulnerability to pest and diseases. This has in turn led to an increase in the use of agrochemicals with a subsequent detrimental effect on the diversity of the beneficial fauna such as parasitoids, predators, pollinators and other non-target organisms. It also contributes to soil degradation, and water contamination due to leeching of agricultural chemicals into water supplies. The intensive use of pesticides has disrupted, and may increasingly erode, biodiversity in natural habitats near and far from agricultural areas as they accumulate in the food chain. The heavy use of chemical fertilisers usually sometimes has resulted in run-off into neighbouring soils and water supplies.

In Cuba, the **conservation of habitats and agricultural biodiversity is threatened by unsustainable agricultural practices, unsustainable management of natural resources and lack of alternative extraction practices for logging.** Although some progress has been made in raising awareness, it is still necessary to deepen the understanding of the relationship of biodiversity with important issues of socio-economic development. The current problems are enumerated below:

i. **Agricultural production is disjointed from natural resource protection**: A low level of integration of conservation and sustainable use of biodiversity, including agrobiodiversity, has been identified in the economic dynamic. This is based on a low awareness of the importance, contribution and interaction of biodiversity with different areas of development. Biodiversity is not taken into account in sectoral development plans, land use and the process of Environmental Impact Assessment. The levels of public and private investment for the conservation and sustainable use of biodiversity in the agricultural sector are considerably low. Production is lowly diversified. Native crop and animal species and related traditional knowledge are not considered in many land areas. In addition, climate change worsens the status of natural resources by bringing periods of drought, rain, increased average temperature and sea levels, increased storm surges in underground aquifers with consequent salinization and the increased frequency and intensity of extreme hydro-meteorological events.

ii. **Buffer zones of protected areas[20] are exposed to environmental degradation, largely caused by unregulated agricultural management. These pressures also affect protected areas** given that numerous species of agricultural importance are managed within a food chain along with different species of wild animals that make up wildlife fauna (such as pollinating insects, birds, mammals, etc.) and form biological corridors over larger areas. The lack of sustainable production models limit the attainment of a proper balance between agriculture and biodiversity protection. Sometimes there is no proper alignment between local policy and regulatory frameworks and agricultural practices. In some areas there is a lack of knowledge on best practices and technologies for the conservation and sustainable use of biodiversity as well as financial (farm level) and economic (society) gains that may derive from landscape approaches. The fact that fragmentation of natural and semi-natural vegetation cover is high to medium represents a threat. The status of connectivity and biological corridors have not been properly studied in Cuba. Similarly there is a lack of mechanisms for knowledge management and capacity development for the conservation and sustainable use of biodiversity at local level.

iii. **Biodiversity valuation is not duly considered in public policies and sectoral activities**: The coordination between research agencies, incentive provision and decision-makers is low. Biodiversity value is not integrated in economic planning (national, local and territorial), and it is especially absent in sectorial activities that generate higher losses and damages. Sources for adequate local funding and integration of conservation and use of biodiversity are limited. This matter is oversized in the case of agrobiodiversity species: timber and non-timber forest species; plants, fruits and animals, with emphasis on wild relatives; pollinators and micro-organisms that are part of the forest floor.

***Barriers to the sustainable use of biodiversity and agrobiodiversity in Cuba***

As identified by the National Environmental Strategy, Cuba is facing the following barriers to the sustainable use and conservation of BD: (a) existence of numerous specific program frameworks, which do not have a synergistic approach nor were integrated into the National Environmental Strategy; (b) financial and investment limitations; (c) goals that were not endorsed by the relevant national institution; (d) targets that are difficult to assess because of the lack of effective indicators; (e) different levels of advancement, motivation and commitment of the national institutions regarding work on the environment; (f) increase and diversification of political and environmental management stakeholders. Table 2 details the barriers that this Project is going to address.

**Table 2. Barriers to be addressed by this Project**

| No | **Barriers** | **Key elements** |
|---|---|---|
| 1 | Lack of integration and harmonization of biodiversity conservation and sustainable use objectives in the country's policies, legal and regulatory frameworks and development strategies and especially in the area of agricultural development. | Topics such as food production urgency, the tradition of farming in a way that is not respectful to the environment and intersectoral disconnection further complicate and impede the ability to achieve true integration between these two concepts. Lack of adequate regulatory frameworks and mechanisms that would allow to join conservation and sustainable use of biodiversity in agricultural practice. This lack further facilitates the exploitation of regions surrounding protected areas, affecting ecosystem balance. |
| 2 | Prevalence of agricultural models that hinder the conservation, rehabilitation and restoration of ecosystems. | In many cases, alternative land uses with minimally intense practices are unknown, while in others there is a low level of infrastructure development that would facilitate agricultural production based on conservation and wise use of natural resources. |

[20] Including wetlands and coastal zones, which are key given that Cuba is an island.

| | | |
|---|---|---|
| 3 | Agricultural practices associated with local traditional knowledge that have been developed over generations do not include sustainable management that would allow biodiversity conservation. | Farmers do not have access to production practices that are compatible with Conservation Agriculture. Limited continuity of the transmission of agricultural knowledge due to youth migration urban areas in search of better living conditions. Lack of capacity building regarding the field of environmental protection, including on new concepts and scenarios such as climate change. |
| 4 | Lack of diversified agricultural production which prevents a deeper recognition of native species and the need for conservation of plant and animal genetic resources. | There is no proper inventory of endemic species. Community seed banks where farmers can store their own collections to promote increased diversity of managed species are not always within reach. Lack of knowledge about the potential of genetic wealth in protected areas and the role of food chains and biological corridors in the intervention sites. |
| 5 | Threat to protected areas due to agricultural expansion exhausting natural resources. | Even with monitoring and protection programs designed for each Protected Area, production practices and the use of obsolete technologies in the buffer zones and surrounding areas are conducive to pollution, soil degradation and fragmentation of habitats. At the same time, they affect biodiversity and ecological processes. The areas surrounding the PAs generally constitute biological corridors and as they are being invaded by unsustainable agricultural activities, connectivity and the continuous and linear movement of the different species is lost. |
| 6 | Low connectivity and resilience of agricultural and natural ecosystems. Fragmentation of vegetation cover. | Notable shortages and lack of practical methods and tools to incorporate the criteria of "connectivity of habitat" in forest or agricultural planning procedures. The topic of biological connectivity is not addressed in the operational plans. On the other hand, little attention is paid to the processes that maintain the balance of ecosystems, which leads to low connectivity and capacity resistance and resilience. |
| 7 | Lack of awareness at the level of decision makers as well as at the local community level regarding the importance, contribution and interrelation of biological diversity, conservation and productivity and sustainability of agricultural processes. | Both decision-makers and local communities are under pressure due to food production and profits in a country where agriculture and food production has become a national priority. This is done, as a rule, through methods and production systems that exhaust natural resources production and do not take into account the importance of conservation and sustainable use to preserve production and ecosystem health in order to not exhaust its ability to generate wealth in the future. |
| 8 | Inexperience and lack of knowledge about the mechanisms of financial compensation, the value and economic importance of biodiversity and the modalities that would bring adequate income for local communities. | In Cuba, there is no tradition regarding the marketing of products that are friendly to nature and biodiversity. Although the concepts are widely known, it is difficult to implement them because of the incapacity of future beneficiaries. In Cuba there are great pressures for food production. This influence invalidates the implementation of innovative and sustainable methods which generally take time to test and validate. The existence of state marketing mechanisms also invalidates the ability of small local producers to produce sustainably and get adequate returns that allow financial income. |

**2) The baseline scenario or any associated baseline projects**

***Initiatives and actions conducted by the Government of Cuba***

Since the 1970s and 1980s, many technicians and producers in the country began to search for alternatives to solve the vulnerabilities presented by the specialized high-input agriculture that had been in use. Research centers began lines of work in this regard and thus awareness and certainty were created on the possibility of reducing inputs and making agricultural systems more economically and environmentally sustainable.

Since 1992 research institutes in Cuba have carried out studies on *in situ* conservation of agricultural biodiversity. Lessons learned indicate that it is possible to achieve the integration of agrobiodiversity conservation and agricultural use, and provide livelihoods to the communities living in protected areas with high genetic diversity.

***Baseline initiatives for agrobiodiversity conservation in Cuba***

The *National Information-Sharing Mechanism on Genetic Resources* has been created with the support of FAO. Cuba has a network of research centres that manage plant genetic resources, mainly cultivated, with a major emphasis on *ex-situ* conservation. There are germplasm banks in 13 research institutions. Regarding livestock, public enterprises keep a reserve of each introduced and local genotype of livestock (cattle, pigs, horses, poultry, goats, sheep, and rabbits), at a strategic location aimed at protecting them from natural and biological disasters (CENBIO, 2014). In general, *in situ* conservation has been considered more important for wild varieties, native species and microorganisms.

The use of sustainable methods for agricultural production gained importance in Cuba in early 1990s. The GoC had a remarkable change of agricultural policy, from highly modern, input-dependant agricultural to sustainable agriculture, as a response to the food crisis after the collapse of its trade relation with the socialist block. One part of the programme was the promotion of organic or near organic agriculture, and the use of non-chemical technologies. Already before the crisis some scientists had been working on natural ways to control pests and build soil nutrients and had an appropriate infrastructure for research. There was a drastic reduction in use of chemical pesticides and fertilisers, promoted by the ministries in charge of agriculture, sugarcane and forestry. By mid-1990s, Cuba was one of the world leaders in the production and use of biopesticides with over 200 cooperative centres that use natural enemies of crop pests. Integrated Pest Management (IPM) technologies, based on monitoring systems, crop rotation, green manuring, inter-cropping and soil conservation with organic manure, have been incorporated into polyculture farming.

Although most lands are still dedicated to sugar production, Cuba is now aiming for the diversification of agriculture. This is a trend influenced by changes in the policies for land tenure and production systems. The large monoculture State-owned farms are being divided and converted into rural cooperatives. The cooperative members are given the right of using the land, normally consisting of smaller production units. There also efforts to strengthen research to establish crop rotation for sugarcane, traditionally planted in monocultures, and polyculture systems combining agriculture with livestock and forestry.

***Baseline initiatives conducted by the Ministry of Agriculture (MINAG)***

The Ministry of Agriculture (MINAG) supervises the preservation of genetic richness of all domesticated and wild fauna species; the protection and breeding of domesticated animals (e.g. cattle), which are part of the national agricultural heritage, including their genetic development; the conservation and use of phytogenetic resources and seeds in the non-sugarcane agriculture and forestry; and the registration and control of heavy livestock production.

MINAG leads *in-situ* and *ex-situ* conservation of agrobiodiversity in Cuba. *In-situ* is the main national strategy for preserving genetic material of wild and domesticated species in Cuba. The National *Action Plan for Genetic Resource Management* includes the regulation of the access to genetic resources and the international exchange of germplasm. The national stakeholders involved are the MINAG, the Sugar National Group, the National Commission of Genetic Resources, the National Centre of Biosecurity, the National Botanical Garden, the Centre for Information,

Documentation and Environmental Education (CIDEA) and the Ministry of Science, Technology and Environment (CITMA) and the Centre of Research in Biodiversity.

***Baseline initiatives conducted by the Ministry of Science, Technology and Environment (CITMA)***

The CITMA has supported a set of initiatives related to habitat conservation and agro-environmental management, that are detailed in Table 3 below.

**Table 3. Main policies, strategies and plans of the Ministry of Science, Technology and Environment (CITMA)**

| Resources | Policies | Main objectives |
|---|---|---|
| **Soil degradation** | Soil policies. National Program for Soil Improvement and Conservation. Policy for the delivery of idle lands. Urban, Suburban and Family Agriculture Program. Biopesticides, bioproducts and bio-fertilizers program. | Contribute to Cuba's food security through the development of sustainable agriculture. Strengthen monitoring capabilities for Cuba's soils. Reduce climate change impacts on agriculture enhancing the implementation of adaptation and mitigation measures. |
| **Impact on forest cover** | Forest and wildlife policies. National Forest Program.<br><br>Control and Fire Management Strategy 2015-2020.<br>2014-2020 Plan of the National System of Protected Areas. National Biodiversity Program 2015 - 2020.<br>Invasive Alien Species Strategy. | Continue to increase the country's forest cover according to the identified potential area. Prevent the occurrence of forest and rural fires.<br>Reduce pressure on natural forests and fragile areas. Reduce the impacts of climate change by enhancing implementation of adaptation and mitigation measures. Control and manage invasive alien species. |
| **Loss of biological diversity** | National Biodiversity Program 2015 – 2020. Control and Fire Management Strategy 2015 - 2020. 2015-2020 Plan of the National System of Protected Areas. Invasive Alien Species Strategy. Forest and wildlife policy. | Address the underlying causes of biodiversity loss. Control major threats to biodiversity and promote sustainable use. Promote the conservation of ecosystems, habitats, species and genes. Promote the restoration and conservation of ecosystems that provide essential services for all. Improve national capacities for the implementation of the National Biodiversity Program and Action Plan 2015-2020. Promote the recognition of ecosystem goods and services. |
| **Water availability and quality** | Water policy. Strenghten the National Hydraulic Program 2015 – 2020. | Promote the rational and productive use of water based on Cuba's socio-economic development. Improve the quality of drinking water services contributing to human health. Ensure integrated and sustainable river basin water management with a view toward availability, protection and maintenance of the ecosystem. Reduce the impacts of climate change on water resources management by enhancing the implementation of adaptation and mitigation measures. |

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|---|---|---|
| **Pollution prevention and control** | Program for the eradication of pollution sources affecting sources of drinking water 2014 – 2020. Program facing pollution of the bays that are of national interest. Sanitation program. Recycling policy. ODS phase-out program. | Prevent, reduce and control pollution caused by improper dumping of liquid waste, increasing its reuse and treatment, and minimizing generation. Prevent and reduce pollution caused by the inadequate management of solid waste throughout its cycle. Identify alternative solutions for the final disposal of solid waste. Prevent, reduce and control atmospheric emissions, minimize generation, increase the use of clean technologies and treatment. Prevent, reduce and control pollution from chemicals and hazardous wastes, ensuring proper management throughout their life cycle. |

Progress has been made in the provision of a legal and regulatory framework for natural resources but other specific instruments for the conservation and use of biodiversity, including agrobiodiversity, are still needed.

***Baseline initiatives linked to the implementation of the National Biodiversity Strategy***

In terms of funding and other investments that contribute to the implementation of the National Environmental Strategy and the National Biodiversity Strategy, the country has strengthened its **Environmental Investment Plan**; in 2009 8.9 per cent of total public investment was allocated to this and in 2009, 10.6 per cent was allocated[21]. These investments are implemented through **Sectoral Programs** – Water, Soil, Atmosphere, Forest Resources, Solid Waste, Biodiversity Protection and others – which are managed by the main Organisms of the Central Administration (*Organismos de la Administración Central* OACE): Ministry of Agriculture (MINAG); Sugar Group (*Grupo Azucarero,* AZCUBA); Ministry of Food Industry (MINAL); Ministry of Energy and Mines (MINEM); National Institute of Hydraulic Resources (INRH); Ministry of Tourism (MINTUR); and Ministry of the Interior (MININT).

The sectoral programs include the **National Program of Conservation and Land Improvement**, the **National Forestry Program** and the **National Forest Development Fund** (which finances: annual reforestation plans; Forest Fire prevention plans, including an early warning system; Integrated management system; and an update to the forest resources management system). The implementation of actions for biodiversity conservation, access to genetic resources and benefit-sharing, and integration of sustainable production landscapes is still low. The definition of baseline indicators, awareness-raising activities, development and application of scientific knowledge and preservation of traditional knowledge, information systems to facilitate decision-making, implementation of the regulatory framework, and major investments are still missing.

At the territorial level, the 15 provinces and the special municipality of Juventud Island have **Territorial Environmental Strategies.** In all cases, the loss of biodiversity, soil degradation processes and the impact on forest cover, are environmental problems that have been identified and for which have been defined specific objectives, goals and actions to be completed from the local level. At the territorial level it is necessary to strengthen the diagnosis, to reach agreements on approaches to conservation and use of biodiversity as well as enhance local mechanisms for implementation.

With regard to the National System of Protected Areas, there is a **National System of Protected Areas Plan** and **Plans for the Specific Management of Protected Areas within the System**. These plans require greater investment

[21] 5th National Report to the CBD, 2014

in human resources, monitoring, evaluation, infrastructure and financial mechanisms to encourage the implementation of scheduled actions.

***Baseline initiatives related to the Sustainable Agricultural Production Intensification – Save and Grow approach***

FAO is implementing the TC Project: *Sustainable intensification of the production of bio fortified and climate change adapted basic grains* (2015-2017). This project will bring Technical Assistance from FAO in coordination with the capabilities of the Brazilian Agricultural Research Corporation (EMBRAPA). Furthermore, it will strengthen the national capabilities regarding Sustainable Intensification techniques on agricultural production and Conservation Agriculture techniques. These will enable the following: i) steadily increase the crop yield; ii) produce higher revenues at lower costs; iii) improve soil fertility; iv) maintaining healthy soil in order to enhance crop nutrition; v) increase productivity in rain-fed agriculture with the use of improved, water stress tolerant and high yielding crop varieties as well as good quality seeds; vi) cultivate a diversity of species and varieties in associations, rotations and sequences; vii) apply dynamic and sustainable production systems that will offer farmers many possible combinations of practices from which to choose and adapt according to their local production conditions and limitations; viii) combining traditional knowledge with modern technologies that cater to the needs of small-scale producers; ix) apply an ecosystem approach based on nature's contributions to the growth of crops such as organic matter of soil, water flow regulation, pollination and biological control of insect pests and diseases; x) efficiently manage water; xi) strengthening institutional support at both national and local levels.The proposed GEF project is based on the *Save to Grow* approach and actions will be coordinated with the TCP project to draw lessons learned in the Cuba context.

***Civil society initiatives***

Currently, **the agroecological movement in Cuba** has put into practice a reorganization of agricultural production that allows for the development of new scenarios with biological, productive, economic, energy and environmental efficiency. Likewise, it seeks to protect natural resources, reduce environmental pollution and provide quality food in sufficient quantities to supply the population. Althought to date the movement has implemented an input substitution agriculture or horizontal conversion (production with smaller amount of agrochemical inputs, techniques for soil remediation, etc.), the results obtained are still fragmented.

***Legal framework***

Cuba has a progressive and comprehensive legal framework with a number of sectorial policies and a National Environment Strategy related to the conservation of biodiversity. The strategy and action plans prioritize conservation of agricultural biodiversity, forest and marine ecosystems as well as *in situ* conservation. The objectives of the 2015-2020 National Program are: (1) establish strategies for *in situ* conservation of important crop varieties and their wild relatives, as two alternatives and complementary measures for *ex situ* conservation; (2) conservation of associated traditional knowledge and rescue of wild varieties of species threatened with genetic erosion; (3) design of alternative strategies for the development of training and environmental education on genetic plant resources; and (4) an inventory of underutilized species, their uses and market options.

The 2015-2020 National Biodiversity Strategy and Action Plan of the Republic of Cuba has called for the diversification of genetic resources commercialization, for a study on the biodiversity management in protected areas, for the promotion of community projects and awareness campaigns for sustainable use and conservation of biodiversity, as well as for strengthening the capacity of gene banks *in situ* and *ex situ* conservation.

***Brief socioeconomic and environmental description of the project intervention areas***

The proposed project will focus on the buffer zones of three protected areas representing each of the three regions of the Cuban archipelago. These constitutethe 30 per cent of all protected areas in Cuba according to their territorial extension: Zone 1) adjoining the Managed Resource Protected Area (MRPA) "Ciénaga de Zapata." Zone 2) adjoining

the "Jobo Rosado-Tunas de Zaza" MRPA. Zone 3) adjoining the Wildlife Refuge Protected Area (WRPA) "Delta del Cauto". The three regions are characterized by the proliferation of agricultural production systems that cause severe damage to productive lands. These systems are putting pressures over the PAs threatening the conservation and sustainable use of the PAs and genetic resources living in them. Map 1 illustrares the importance of biodiversity in these targeted areas (see Annex II). Table 4 describes the features of the 3 PAs around which this Project will be implemented.

**Table 4. Detailed description of the three project intervention areas**

| | **Name of the Protected Area (PA)** | **Area (ha)** | **Key features** |
|---|---|---|---|
| 1 | Managed Resource Protected Area (MRPA) "Ciénaga de Zapata" | 738,482 ha | Within the protected area:<br>**Types of ecosystems**: Saltwater Vegetation, Salt Marsh Vegetation, Mangroves, Freshwater Vegetation, Grasslands, Sheets (*sensu lato*), Swamp Forest, *Semideciduous* Forest with fluctuating humidity, subperennifolio mesofilo forest, semidecaducifolio mesófilo forest, xeromorfo costero scrub, scrub sp.<br><br>**Endemic species**: The vast wealth of bird species that are endemic to the area is important, given that 20 of them make up 78% of the endemic birds on the island. In this area, six of the seven Cuban endemic genera and three local endemic genera are found: the fermina, the subspecies of *T. i. inexpectata y* Zapata Rail, which for over 20 years was not sighted.<br>The Ciénaga de Zapata has 16 species of amphibians and 36 of reptiles. Of these, 13 and 20 are endemic to Cuba, respectively.<br><br>In the productive areas adjoining the PAs:<br>The buffer zone of the Ciénaga de Zapata MRPA includes villages on both sides of the National Highway. Bordered on the south and east with a forest belt that consists, in part, of a forest plantation managed by the Ciénaga de Zapata Integrated Forest Enterprise. Inside the zone, there are several settlements where the main economic activity is agriculture developed by small farmers and/or cooperatives.<br>The predominant soils are the typical ferriferous red (typical and compacted subtypes). The compacted red Ferrallitic and hydrated subtypes, because they are less limited, are mostly dedicated to various crops and sugar cane. To the northwest, there are category IV soils with moderate erosion and a trend toward increased salinity. There are more than 400 farms containing various crops. It is estimated that total production levels meet 80% |

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| | | | of demand.<br>According to forecast models of the effects of climate change, storm surges on the southern coast of the swamp will influence the increased salinity of the soil in the areas located to the north. Although the purpose of this buffer zone is to serve as a retaining wall for external shocks on the protected area, this area is also threatened. This buffer zone is an agro rice ecosystem of great value to waterfowl, as these paddies have become feeding sites where birds take more than 46 types of food resources including numerous seeds, invertebrates (insects, crustaceans, arachnids, etc.) and vertebrates (fish, amphibians, rodents, etc.). The buffer zone is also used for nesting and rest. A total of 175 species of terrestrial vertebrates, of which 9 are amphibians (7 endemic), 17 are reptiles (15 endemic), 141 are birds (12 endemic) and 12 are mammals (2 endemic) have been reported thus far. One of the main problems is the modification of the water regime caused by physical changes ranging from the construction of roads, drainage, regulation, drainage and damming of water in the feeding area of the basin and the marsh itself to the exploitation of the aquifer located in the northern part of the basin for agricultural purposes. In addition, the progress of the salt wedge is currently the main source of water pollution. According to the Cuban Ministry of Agriculture new human pressures threaten the protected area. These are characterized by human agricultural settlement in the buffer zones and large areas of agricultural plains in its adjacent areas. The problems of ecosystem degradation derivatives that affect the flow and exchange of natural areas located within the environments of the protected area, which are deeply affected by the mismanagement of arable land around them, can be added to the problems mentioned above. |
| 2 | Managed Resource Protected Area "Jobo Rosado" and Fauna Refuge "Tunas de Zaza" | 10,425 ha | Within the protected area:<br>Types of ecosystems: Evergreen mesofilo forest, Semideciduous typical forest, Semideciduous cloud forest on skeletal floor, Gallery forest and soil halomorphic soils (mangroves)<br><br>**Endemic species**: there are 96 endemic wildlife species, of which 22 are mollusks, 4 are arachnids, 23 are insects, 5 are amphibians and crustaceans, 13 are reptiles, 3 are mammals and 26 are birds.<br><br>**Threatened species**: a total of 8 wildlife species |

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| | | | are included in IUCN threat categories (2008); including 4 reptiles tortoise (*Trachemys decussata*) ash chipojo (*Chamaeleolis chamaleonides*), stained majacito (*Tropidophis wrighti*) and the Cuban boa (*Epicrater angulifer*), 3 birds: Paloma Partridge (*Starnoena cyanocephala*) Bootes (*Geotrigon montana*) and butterfly (*Passerine ciris*).<br><br>The "Tunas de Zaza" protected wildlife refuge is located about 70 km south-southwest of Jobo Rosado.<br>In productive areas adjacent to the PA:<br>This area covers the surface area between Jobo Rosado to the north and Tunas de Zaza on the southern coast. The soil is of good quality (classifications I and II), suitable for all crops, with high levels of erosion, salinity and stoniness. There are several settlements with an estimated 12,000 inhabitants, while the production areas are mainly engaged in animal husbandry and various crops, with an approximate area of 9,000 and 5,000 ha, respectively. Other crops such as sugarcane and the management of forest species are located in the northern region, close to the buffer areas of the Jobo Rosado MRPA, where communities that produce meats, vegetables, grains and fruit are located. |
| 3 | "Delta del Cauto" Wildlife Refuge | 66,370 ha | Within the protected area:<br>Types of ecosystems: Natural pre coastal sheets, Evergreen swamp forest, Mangroves, Lakeside vegetation (herbaceous wetland), Lakeside vegetation (rooted to the substrate), Lakeside vegetation (floating), Semideciduous forest with fluctuating humidity, Gallery forest, Scrub trees associated with mangroves, Xeromorfo coastal and subcoastal scrub, and rice fields.<br><br>**Endemic species** of flora:<br>*Chamaesycebiramensis, Catesbaeagamboana, Rondeletiagamboana, Cleomegamboense, Copernicialongiglossa, Catesbaeagamboana.*<br><br>**Threatened species**: **(EN):** *Catesbaeagamboana, Copernicia gigas, Coperniciaoxicalys, Coperniciavespertilionum y Coperniciasueroana),* the colilargo hawk (*Accipitergundlachi*), the Catey (*Aratingaeups*) and the churroso woodpecker (*Colaptesfernandinae).* (**VU**): the yaguasa (*Dendrocignaarborea*), the Bahamas Term (*Tachycinetacyaneoviridis*), *Dendrocygna* |

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| | | | *arbórea, Patagioenasinornata, Aratingaeuops.* **(LR):** the Santa María majá (*Epicratesangulifer*).<br><br>In the productive areas adjacent to the PA:<br>Many of these areas are used for agricultural purposes. Soils are mostly non-gleyed dark plastic (51,000 ha) and gleyed dark plastic (19,000 ha). Over 80% of them are of category IV (little effective depth of less than 30 cm, poor drainage, weakly saline and a slope of less than 5%). More than 9,000 ha are used for rice, about 1,000 ha for cattle, and about 600 ha for other crops. All these areas are distributed in over 200 farms. There is a local fruit development program in the municipality, which is expected to plant a total of 184.2 ha. The Forestry Program covers reforestation in the areas around the Cauto River and all production bases. There are 21 forest farms and 2 nurseries (1 tech and 1 traditional). The Program complies with planned arrangements on the planting of different species to protect the soil, water, flora and fauna.<br><br>The effects of prolonged drought in these areas has lead to instability in the achievement of crops and a high rate of deforestation (40%).<br><br>Shrimp and rice farming are activities that take place in the buffer zone and are closely related to the PA because they use water from the Cauto River and refuge lakes, as well as introducing residual agrochemicals to the ecosystem.<br><br>Livestock is very extensive and develops in inadequate areas; in times of drought, the cattle go into the marsh grasslands harming the ecosystem and the livestock economy. |

Annex I of this PIF includes the Map of three project intervention areas.

**3) The proposed alternative scenario, GEF focal area strategies, with a brief description of expected outcomes and components of the project; 4) incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing.**

The **project objective** is to conserve and sustainably use biodiversity in selected areas of Cuba, through the introduction of sustainable agricultural production intensification and the conservation, adaptation and rescue of globally-important plant genetic resources relevant for agricultural sustainability.

The **project specific objectives** are to: a) Increase plant genetic diversity in areas managed by the project; b) Incrementally adopt production systems that integrate the conservation of biodiversity through the creation of biological connectivity corridors that bring together agricultural and natural ecosystems; c) Integrate concepts of conservation and sustainable management of biodiversity to regulatory and legal frameworks for agricultural production in Cuba.

The **project strategy** is to adapt to the national context two approaches developed by FAO as follows:

a) The FAO's ***Save and Grow*** ecosystem-based approach which was launched by FAO in 2011[22]. Sustainable crop production intensification provides opportunities for optimizing crop production per unit area, taking into consideration the range of sustainability aspects including potential and/or real social, political, economic and environmental impacts. Recent trends would indicate that the incorporation of scientific principles of ecosystem management into farming practices can enhance crop production (yield). With a particular focus on environmental sustainability through an ecosystem approach, sustainable crop production intensification aims to maximize options for crop production intensification through the management of biodiversity and ecosystem services. FAO has recently published the *Save and Grow in practice: maize, rice, wheat*[23] which draw examples from developing countries worldwide, it shows how eco-friendly farming systems are helping smallholder producers to boost cereal yields, improve their incomes and livelihoods, conserve natural resources, reduce negative impacts on the environment, and build resilience to climate change.

b) The **Geographical Indication (GI)** approach, which is being promoted by FAO in Latin America and the Caribbean. GI is a name or sign used on certain products which corresponds to a specific geographical location that gives the product some specific qualities according to traditional methods or natural resources, or a certain reputation, as a consequence of the link to origin . Defined internationally as an Intellectual Property Right (IPR), once specific quality or reputation linked to geographical origin can be demonstrated, a GI has to be protected. This protection is often based on official registration that confers exclusive rights of use to GI producers. GI is therefore primarily a market tool with economic benefits originating from the differentiation process and IP protection. GI strategy is intended here as a plan designed and implemented locally by collective stakeholders, aiming to preserve and promote GI products and related resources, in particular through the definition of the link to origin and the related rules on production and processing methods, the management of the local GI system – including all the local resources involved in the GI product and their interactions – and the marketing strategy.

The Project, aimed at the conservation and sustainable use of agrobiodiversity, will contribute to **Program 7, Objective 3** of the GEF Biodiversity Focal Area. In particular, the *in situ* conservation of plant genetic resources for food and agriculture, including globally-significant wild relatives, will form the main thrust of the proposed project. Specifically, the project will contribute to the generation of data, establishment of linkages and the strengthening of individual human and institutional capacities that will result in the efficient conservation of important globally important crop species (including landraces and wild relatives) that are endemic to Central America; these are sweet potato and maize (see details in Annex III of this PIF). The project is also aimed at the development of measures for the integration of sustainable agricultural production systems in the overarching framework for the safeguarding of the natural habitats of these species so that they could continue to evolve adaptive features that ultimately may be useful in crop improvement programmes. The proposed complementary activities will therefore both enhance sustainable food systems and nutrition for the local populations and also generate global environmental benefits. In addition, the Project will generate co-benefits for the International Treaty of Plant Genetic Resources for Food and

[22] http://www.fao.org/ag/save-and-grow/en/index.html

[23] http://www.fao.org/publications/card/en/c/b22331a7-442b-4454-a951-46cda21055e3/

Agriculture, hosted by FAO and the FAO Commission on Genetic Resources for Food and Agriculture (details in Component 1 and section 6 below). Overall, the project will therefore support both *in situ* conservation and on-farm management of PGRFA through agricultural practices that are based on local and traditional knowledge that allow continued evolution and adaptation of the resources. The project will also promote policies that shift the balance in agricultural production in favor of greater leveraging of ecosystem services. The dual aims of input use-efficient production systems and the enhancement of the resilience of the production systems as means to improved adaptation to shocks related to climate change will be achieved (*Save and Grow*).

The Project, by promoting the mainstreaming of biodiversity and agrobiodiversity in productive landscapes, is also aligned with **Program 9, Objective 4** of the GEF Biodiversity Focal Area. The productive landscapes are globally important given their location adjacent to PAs and Managed Resources PAs in Cuba (see Map 1). These areas are relevant to conserving globally-significant biodiversity (see Table 1 and 4) and sustainably using plant genetic resources, associated species and wild relatives that live and reproduce in a continuum within the MRPAs, buffer zones and productive landscapes. Biological connectivity is key to supporting the adaptability and resilience of these species, associated microorganisms, pollinators, as part of food chains. The project will support the design and implementation of a landscape strategy based on the core pronciples of sustainable intensification of crop production systems (as enunciated in FAO's *Save and Grow*). The result will be a significantly reduced unsustainable management of natural resources which is a major cause of habitat loss in Cuba. In addition, the Project will support the enhancement of the effectiveness of agricultural policy and regulatory frameworks in order to reduce the use of contradictory incentives for agricultural production. Lastly, the project will strengthen the capacities of cooperatives and family farmers and will support sustainable livelihoods to reduce anthropogenic pressures over PAs and buffer zones.

In order to remove the barriers detailed in table 2 and deliver global environmental benefits, GEF incremental financing will be invested in 3 components, as follows:

**Component 1: Conservation of plant genetic resources that are important for the future of agriculture**

***Aimed at removing barriers 3 and 4** identified in table 2.*

Component 1 will include an inventory of the diversity of plant species of global importance, especially: non-timber forest species, plants, fruits with emphasis on wild relatives, pollinators and microorganisms – the characterization of species should include micro-biodiversity on the ground. Animal genetic resources will be analysed during full project preparation, especially domesticated pigs, bees and sheep. In addition, Component 1 will support the development of a catalog of easy access and consultation, and a platform for knowledge management that includes the monitoring and analysis of factors relevant to biodiversity conservation and use as well as alerts for major threats (land use, land cover by type of coverage, variability and climate change – including droughts and fires). Component 1 will link information systems included in the platform with the main government planning and financing tools.

Component 1 will promote the restoration of species and/or varieties with tolerance to abiotic stress, capable of addressing climate change, some of which are described in the catalog of INIFAT varieties (published in 2014). In the same way, the implementation of the National Biodiversity Strategy will be supported by focusing on species of global and local importance (such as forest and non-timber species, plants, fruits with their wild relatives in natural ecosystems, pollinators, and micro-organisms) and including climatic projections. Outcomes, outputs and target indicators are detailed in Table B above.

**Co-financing** will be provided by the EU-funded project *Caribbean Biological Corridor Iniative* in a joint effort with the Government of Cuba (GoC), which will support the conservation of seeds, raw material indispensable for crop genetic improvement, working collections, in vitro collections, and genetics banks. Its geographical scope covers several provinces (including the Project intervention areas); by FAO that will provide support technical assistance and capacity-building in agro-ecosystem management, conservation of plant genetic resources of great importance such as

rice, beans maize, forage resources in livestock systems, while promoting employment for rural youth in local communities. In addition, FAO will provide co-financing through: i) the TCP project *Support system strengthening socio innovation in the livestock sector*, which will develop a productive economic technical model for sustainable management of milk and beef production systems.ii) the TCP project *Sustainable intensification of production of fortified grains, crossing by natural means, and adapted to climate change*, which will test productive practices with an ecosystem approach to complement the natural processes that support plant growth, including pollination, natural predation for pest control, and the action of soil biota that allows plants to access nutrient; and iii) The International Treaty of Plant Genetic Resources for Food and Agriculture (ITPGRFA) project *The diversity of forage resources in livestock systems to mitigate the effect of climate change in Cuba,* which is aimed to increase biodiversity, multiplication and functionality of forage resources based on participatory plant breeding and horizontal construction of knowledge as tools for adaptation and mitigation of climate change on agro-ecosystems in Cuba.

**Component 2: Production landscapes integrate conservation and sustainable use of biodiversity**

***Aimed at removing barriers 2, 5, 6 and 8*** *identified in table 2.*

Component 2 will support a a landascape production strategy agreed by stakeholders, previously identified and mapped, with a particular attention to gender and youth, applying the above mentioned *Save and Grow* approach. The role of stakeholders in the conservation and use of agrobiodiversity will be analysed and classified per value chain (agrobiodiversity food products).
Component 2 will also promote the adoption of sustainable agricultural intensification practices (Save and Grow) at farm level. As well, it will promote capacity development for rural communities, cooperatives and protected areas managers on management, incentives and best practices/technologies, with a gender focus. This will include alternatives such agro-forestry and silvopastoral systems, conservation agriculture, and sustainable forest management. The cooperatives (mainly related to the conservation and use of priority species) will be strenghthened by creating experimental pilot areas and technical services provided for the sustainable management of agricultural production.
Component 2 will support the connectivity of ecosystems: protected areas-buffer zones-productive regions through the creation of three biological corridors with the aim of piloting a sustainable agricultural model that is compatible with biodiversity protection. The Project is expected to provide an important contribution to capacity building for planning, budgeting and enforcing the management of productive landscapes and further scaling-up from lessons learned in the 3 project intervention areas. Outcome, outputs and target indicators are detailed in Table B above.

**Co-financing** will be provided by MINAG, which will support a Program for the creation of 52 polygons of conservation agriculture around protected areas with the aim of rescuing plant genetic resources and provide local communities with tools and incentives to change current farming practices; by the *National Forestry Programme*, which will update the forest inventory and planning to cover 30.4% of the country's forested land by 2018-19. In addition, the National Forest Development Fund (FONADEF) will finance 900,000 ha of new forest plantations; by the *National Programme for Soil Improvement and Conservation*, financed by MINAG, which will support the reduction of soil degradation and soil rehabilitation (especially in priority areas for water catchment and key crops). In addition, this Programme will update the inventory of affected areas and will deliver training to small-scale farmers; by the Research Institutes of CITMA and MINAG will support the followings Programmes: detection and reduction of impacts, environmental monitoring and protection, biodiversity-socio-economic linkages, water resources, and endangered species; and by WWF Holland, which will work in a four years project starting in 2017 which aims to reduce vulnerabilities to climate change in the agricultural sector in Cuba through the inclusion of climate change adaptation measures in local and national agricultural development plans.

**Component 3: Enhanced Policy and Legal Framework**

***Aimed at removing barrier 1 and 7*** *identified in table 2.*

*Target: the new Soil and Water Laws incorporate and implement biodiversity concepts*

Component 3 aims at reviewing the National Soil and Water Laws to incorporate biodiversity considerations. The aim of the GoC is to facilitate the enforcement of these Laws by the end of project implementation. In view of this target, Component 3 will support the revision of the policy, legal and regulatory frameworks to ensure that conservation of plant genetic diversity is mainstreamed in the national system. The conservation and sustainable management of biodiversity, including agro-biodiversity, in agricultural production will be mainstreamed as well. Component 3 will also facilitate the diseemination of best practices at territorial level and will promote the replication at national and regional level through the publication of legal and informative manuals that illustrate the process of sustainable management of productive landscapes. Outcome, outputs and target indicators are detailed in Table B above. Component 3 will be further detailed during full project preparation.

**Co-financing** will be provided by MINAG which will conduct studies and legal adjustments necessary to introduce new laws of Water and Soil. Further co-financing initiatives will be explored during full project preparation.

**5) Global Environmental Benefits (GEFTF) and/or Adaptation Benefits (LDCF/SCCF)**
The governmental agencies, local municipalities, cooperatives and small-scale farmers will help deliver the following GEBs: (a) a set of management practices for the protected areas that incorporate the conservation of agricultural biodiversity contributing to food security; (b) identification of species, landraces and breeds that have the potential to better adapt to climate change, and the natural landscape; (c) enhanced knowledge on the genetic resources; (d) a strengthened adaptive agricultural system that include plant diversity and local communities; (e) improved connectivity among PAs and reduced threats over endemic and endangered species; (f) Enhanced genetic diversity in at least 100,000 hectares of production landscapes, including crop species (Diversity status measured by the BD tracking tool); (g) An increase of at least 300,000 hectares of productive landscapes managed with a view toward conservation and sustainable use of biodiversity; (h) At least 9 areas of productive landscapes managed sustainably and with GI labelling (ref. Indicator BD 9.1); (i) the new Soil and Water Laws have incorporated and implemented biodiversity concepts (measured by the BD tracking tool). GEBs generated by the project will be of interest to tropical island regions (SIDS, especially in the Caribbean) and shared through Cuba's Program for South-South Cooperation as well as FAO global biodiversity and ecosystem services networks.

The project will contribute to reaching the following **Aichi Biodiversity Targets:**

| **Aichi Biodiversity Target** | **Project Outputs** | **Selected SMART Indicators[24]** |
|---|---|---|
| Target 1 - By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably. | **2.1.1, 2.1.2,2.1.3** | Trends in awareness, attitudes and public engagement in support of biodiversity<br>Trends in identification, assessment and establishment and strengthening of incentives that reward positive contribution to biodiversity and ecosystem services penalize adverse impacts |
| Target 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity | **2.1.1,2.1.2,2.1.3,2.1.5** | • Trends in pressures from unsustainable agriculture and forestry.<br>• Trends in proportion of products derived from sustainable sources |
| Target 13 | **1.1.1,1.1.2,1.1.3,1.1.4,2.1.4** | • Trends in genetic diversity of |

[24] The intermediate milestones to be achieved during project implementation will be established in the full project formulation phase.

| | | |
|---|---|---|
| By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity. | | cultivated plants and their wild relatives<br>• Trends in genetic diversity of selected species<br>• Trends in integration of biodiversity into planning, policy formulation and implementation<br>• Trends in number of effective policy mechanisms implemented to reduce genetic erosion and safeguard genetic diversity related to plant and animal genetic resources |
| Target 19<br>By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied. | **1.1.4,1.1.3,2.1.1** | • Trends in accessibility of scientific/technical/traditional knowledge and its application |

**6) Innovation, sustainability and potential for scaling up**

**Innovation**:The innovative feature of this project is based on the application of the *Save and Grow* approach in buffer zones and productive landscapes that are suffering and putting pressure over Protected Areas, in order to both protect globally-important biodiversity and generate sustainable livelihoods for family farmers in this context of land tenure change in Cuba (i.e. from State-owned to cooperative/smallholder farms). The project strategy is also to improve the knowledge of the species, their features, plasticity, ranges of resistance and tolerance to drought and other problems, as well as their food quality and potential for cultivation. The application of the GI approach is also innovative in rural areas of Cuba.

**Scaling-up:** Cuba is one of the leading countries in terms of South-South cooperation. Given this peculiarity and the usual Cuban cooperation with other Southern countries, especially SIDS and LDCs in Africa and the Caribbean, the Project offers the opportunity to replicate their positive experiences in other GEF recipient countries. Similarly, prominent Cuban participation in facing natural disasters, the anticipation of hazards, vulnerabilities and risks of climate change and Cuba's key role in the Caribbean in terms of innovation, provide important channels of influence to establish conceptualizations associated with project outcomes and results that may be undertaken by other countries in the region especially on sustainable agricultural practices and protection of genetic diversity. FAO, through its Commission on Genetic Resources for Food and Agriculture, will serve as the forum to share this information at regional and global levels. The Commission is the only permanent forum for governments to discuss and negotiate matters specifically relevant to the conservation and sustainable use of genetic resources for food and agriculture and the fair and equitable sharing of benefits derived from their use. In particular, its Intergovernmental Technical Working Group on Plant Genetic Resources for Food and Agriculture will provide the forum for peer review of methodologies and data and for the exchange of information with other FAO member countries on this subject. The scalability will be further analysed and described during full project preparation and will certainly benefit from lessons being learned from the activities of the Global Crop Diversity Trust, IUCN, CBD and the centres of the Consultative Group for International Agricultural Research (CGIAR). FAO collaborates actively with all these entities and their expertise will also be brought to bear upon the implementation of this project.

**Sustainability:** this project is designed in line with the three pillars of sustainability: i) Social sustainability: the project approach is people-centered and aims at mainstreaming biodiversity conservation and sustainable use in the

management of production landscapes, while generating increased crop yields and resilience to climate change (i.e. *Save and Grow* approach). Plant genetic resources are also part of local production systems. Project specific sites (i.e. municipalities) will be selected in consultation with local stakeholders. Gender mainstreaming is part of the project design, given that women represent 37.9% of total active workforce in rural areas of Cuba. The role of women regarding the implementation of agroecological practices in local communities has been extensively documented[25]. This will be further discussed with women's groups during full project preparation; ii) Environmental sustainability: the project is aimed at supporting the natural potential of elements of the agrobiodiversity that are now being lost or pressured by production models that are unsustainable. In addition, the project will support the introduction of sustainable agriculture production including good practices (i.e. conservation agriculture, integrated pest manageemt, water efficiency[26]). A social and environmental risk analysis will be conducted during full project preparation, in line with FAO Environmental and Social Management Guidelines[27]; iii) Economic sustainability: the project will promote the generation of incentives, market linkages and organizational support to allow traditional farmers to reinforce their livelihoods the sustainable intensification of agricultural production, including genetic resources. An economic analysis will be conducted during full project preparation once the local intervention sites will be defined in a participatory way. The type of production system and geographical location will be included as variables of the analysis.

**2. *Stakeholders.* Will project design include the participation of relevant stakeholders from civil society organizations (yes ☒ /no☐) and indigenous peoples (yes ☐ /no☒)? If yes, identify key stakeholders and briefly describe how they will be engaged in project preparation.**

**Table 5. Main stakeholders that participate in the Project**

| Institutions | Role | Responsibility in the Project |
|---|---|---|
| Ministry of Agriculture (MINAG) | Project implementing partner | Responsible for project coordination in the field and main project partner |
| FAO | GEF Implementing Agency | Provide technical assistance, support and monitor project implementation |
| Ministry of Science, Technology and Environment (CITMA) | GEF focal point | National project partner |
| National Association of Small Farmers | Coordination of activities with of small-scale farmers | Replication of production practices at local level |
| Popular Powers | Local Authorities | Provide support and coordination at local level |
| Agricultural production cooperatives | Beneficiaries | Participatory adaptation and incorporation of sustainable models of agricultural production |
| Research centers and universities | Partners | Provide support in the preparation of curricula and research processes associated with the project |
| Flora and Fauna Organization | Administrator of Protected Areas | Local coordination of the project around protected areas |
| Ministry of Education | Project partner | Coordinate environmental education actions |
| Cuban Women's Federation | Project stakeholder | Coordinate actions that benefit and |

[25] There is plenty of bibliography and case studies worldwide that support these finding on the role of women to conserve and use agrobiodiversity. See for example: http://www.agriculturesnetwork.org/images/homepage/magazine-covers/314women1.pdf
[26] See more about best practices included in the Save and Grow approach at http://www.fao.org/ag/save-and-grow/en/2/index.html
[27] http://www.fao.org/3/a-i4413e.pdf

| | | |
|---|---|---|
| | | include women |
| Young Communists Union | Project stakeholder | Coordinate actions that benefit and include youth |

*3. Gender Equality and Women's Empowerment.* **Are issues on gender equality and women's empowerment taken into account? (yes ☒ /no☐). If yes, briefly describe how it will be mainstreamed into project preparation (e.g. gender analysis), taking into account the differences, needs, roles and priorities of women and men.**

The project gives priority to gender equality and women empowerment based on the fact that Cuba already pays particular attention to this issue. Previous experiences from GEF-financed and other projects in Cuba indicate that women are farm owners in many communities, are more willing to participate in training courses, and have a sense of belonging in areas where they have lived for generations. Women are key stakeholders in preserving cultural and traditional heritage associated with landscape conservation. The Project will support and encourage gender-sensitive communication, both in institutions and communities, encouraging gender equality by recognizing women's needs and disadvantages as well as their contextualized problems and potentials in each project region. The Project aims also to implement actions for the promotion of women leadership in the agriculture sector. As the project is developed in rural areas, the policy that will be used covers all aspects and directions in the *Gender Strategy of the Cuban Agriculture System.*

*4 Risks.* **Indicate risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the project design (table format acceptable).**

| RISK | RATING* | RISK MITIGATION ACTIONS |
|---|---|---|
| (a) Instable political and economic environment | L | Project activities are based on the national long-term commitments and international treaties relating to the conservation of biodiversity (eg, CBD) and with the support of international networks. |
| (b) Potential conflicts between conservationists and natural resource users | M | Creation of a participatory approach to channel and reconcile different needs and points of view.<br>Focus the issue of participatory activities on the ability to transition, and minimize the differences between the development of local communities and the need to protect natural ecosystems.<br>Reach agreements of understanding between all stakeholders. |
| c) Climate change | M | Introduction of cultivars that are tolerant to abiotic stress situations. Capacity development of farmers and producers on adaptive management. |
| d) Beneficiaries, including local communities, not willing to adopt FAO recommendations and best practices | L | Preparation of a document with recommendations and best practices that will be made on the basis of a participatory research process.<br>Design practices that improve livelihoods and increase family incomes.<br>Capacity building and provide support to structures to reduce obstacles to adoption. |

| | | |
|---|---|---|
| e) Farmers and communities not interested in engaging in project activities, contributing nor sharing information | L | The project will promote social inclusion and equality in its application, taking into account the gender perspective. Application of community-based biodiversity management practices, support to local institutional capacity in decision-making and implementation of conservation actions at the local level. |
| f) Management personnel of PAs and local stakeholders are not willing to assist in the implementation of project activities | M | Demonstration of the mutual benefits of integrated landscape management strategies.Discussion forums to encourage communication and greater understanding between communities and PA administration. Participation as co-authors and collaborators in publications. |

* *Ratings - H (high risk), S (substantial risk), M (moderate risk), and L (low risk).*

The Risk Matrix will be further elaborated during full project preparation, in line with the FAO Environmental and Social Management Guidelines[28]. An environmental and social risk analysis, and a social targeting will be conducted. Risk mitigation actions will be refined accordingly.

***5. Coordination.*** **Outline the coordination with other relevant GEF-financed and other initiatives.**
The Project will coordinate actions, find synergies and avoid duplications with the following initiatives financed through international funds:

a. *Environmental bases for local food sustainability* (BASAL) (2014-2018). Project goal: To support the adaptation to climate change in agriculture, contributing to continued and sustainable socio-economic development of the Republic of Cuba. Initial amount: EU 6,300,000 (European Union)/CHF 3,000,000 (Swiss Cooperation - COSUDE) – CUP 4,700,000.

b. *Reducing vulnerability to coastal flooding by sea penetration in the southern provinces of Artemisa and Mayabeque* (2014-2018). Project goal: Increase resilience to the effects of climate change on populations living in the coastal areas of the provinces of Artemisa and Mayabeque. Initial Amount: US$ 6,067,320 (Adaptation Fund) – CUP 5,052,700.

c. *Landscape approach to preserve threatened mountain ecosystems* (EPMA-Cuba). (2014-2022). Project goal: Reduce the vulnerability of biodiversity to present and future threats with a landscape approach in order to protect the core refuges of biodiversity in mountain ecosystems. Initial amount: US$ 7,481,940 (GEF) – CUP 57,536,630.

d. Country Partnership Program (OP-15): *Support for the Implementation of the National Action Program to Combat Desertification and Drought in Cuba* (PAN). (2008-2018). Project 5: *Coordination, Monitoring and Evaluation of the Partnership Program for Sustainable Land Management in Cuba.* (2008-2018). Initial amount: US$ 800,000 (GEF).

e. *Implementation of a regional approach to the management of marine and coastal protected areas in the region of the Southern Archipelagos of Cuba.* (2009-2014). Project goal: To contribute to the conservation of marine biodiversity in Cuba, including fishery resources of regional importance, through capacity building for the implementation of a regional approach to the management of marine and coastal protected

[28] http://www.fao.org/3/a-i4413e.pdf

areas in the islands of the southern region, as part of SNAP. Initial amount: US$ 5,710,000 (GEF) – CUP 13,550,000.

***6. Consistency with National Priorities.*** **Is the project consistent with the National strategies and plans or reports and assessments under relevant conventions? (yes ☒ /no☐ ). If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, etc.**

The Project is aligned with the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), which Cuba has ratified. The Cuban Report on Plant Genetic Resources for Food and Agriculture highlights the importance of completing the inventories of agricultural biodiversity in rural communities where high genetic variability of a wide range of crops is concentrated. Priorities are identified for *in situ* conservation, to promote the establishment of community seed banks, and to strengthen institutional capacities to regenerate the genetic diversity that is suffering erosion. In addition, the 5th National Report to the CBD (2014) emphasizes the need for conservation and sustainable management of natural resources.

The Project also aligned with the 2nd National Report on Plant Genetic Resources for Food and Agriculture published in 2007, which recognized the need of identifying methodologies that support the regeneration of genetic material under threat, the reintegration of species in favorable environments and the development of local biodiversity throughout the country. Table 6 illustrates the alignment of the Project with national priorities.

**Table 6. Project consistency with national priorities/**

| | |
|---|---|
| **Alignment with national priorities** | General Strategic Goals – **National Environmental Strategy**:[29]<br>- Establish priorities and lines of action to achieve higher levels in the protection and rational use of natural resources, public environmental awareness and quality of life of the population.<br>- Contribute to the pursuit of food security by promoting the rational use of soil, water, biodiversity and other natural resources.<br>- Achieve a significant impact on the protection and rehabilitation of the environment in Cuba through prevention, minimization and systematic solution of the major environmental problems in the country.<br>- Improve the implementation of policy instruments and environmental management.<br>- Promote the implementation of instruments and mechanisms of a financial nature to assess and manage environmental elements related to economic and social activities.<br>Specific Goals – **National Environmental Strategy**:[30]<br>- Develop sustainable agriculture in harmony with the environment, that is conducive to the efficient use of plant and animal genetic resources, including seeds, varieties, technological discipline, and plant protection.<br>- Maintain, restore and rehabilitate ecosystems in order to increase their level of resilience, enhance the provision of goods and services and their role in the adaptation and mitigation of climate change.<br>- Promote the conservation of ecosystems, habitats, species and genes, focusing on areas with significant biodiversity losses, controlling the main threats.<br>- Harmonize and integrate the objectives of conservation and sustainable use of biodiversity in the country's policies and development strategies and in decision-making processes at all levels |

[29] National Environmental Strategy 2011-2015 http://www.educambiente.co.cu/index.php?option=com_content&view=article&id=52&Itemid=37.
[30] Ibidem

| | |
|---|---|
| | **Fifth national report to the Convention on Biological Diversity:**<br>- Prioritize living and preserved biological collections as a way of "ex situ conservation" and concerning intangible heritage.[31]<br>- Devote greater efforts to the assessment and protection of traditional knowledge and the gender component, taking into account the current undervaluation and limited dissemination of goods and services provided by biodiversity, including those that can be valued economically.[32]<br>- Diversification of agricultural production based on the recognition of indigenous species and traditional knowledge and practices and the need for conservation of phyto and animal genetic resources[33]<br>**National Biodiversity Program:**<br>- 1. Biodiversity conservation<br>- 1.1 Generate new knowledge of the components of biological diversity, to ensure their conservation.<br>- 1.2 Address the underlying causes of fragmentation to achieve ecosystem connectivity.<br>- 1.3 Identify environmental indicators that affect biodiversity and develop methodologies to assess the services of mountain, coastal marine and agricultural ecosystems.<br>- 2. Use and management of biodiversity<br>- 2.1. Develop proposed plans of restoration and/or rehabilitation of prioritized ecosystems.<br>- 2.2. Implement the use of biomarkers and environmental technologies aimed at the application of bioremediation and treatment of major pollutants.<br>- 2. 3. Develop the planning of biodiversity.<br>- 2.4. Differentiate the formulation of adaptation and mitigation measures to avoid the loss of biodiversity. |

*7. Knowledge Management.* **Outline the knowledge management approach for the project, including, if any, plans for the project to learn from other relevant projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.**

The project will coordinate actions with other agrobiodiversity project proposed or submitted by FAO for GEF financing in the region (i.e. Peru, Mexico, Bolivia, Ecuador). All these project are intended to share knowledge through the FAO's World Information and Early Warning System on Plant Genetic Resources for Food and Agriculture (WIEWS)[34]. Snapshots of information available on WIEWS will feed into the preparation of the *Third Report on the State of the World's Plant Genetic Resources for Food and Agriculture*. Cuba has commitments to provide data for this report and this project enhances the country's capacity to fulfill this commitment – in addition to the more immediate and direct benefit of providing data on these resources in the country. The project design and implementation phase will be based on a participatory approach. Knowledge will be systematized in collaboration with the communities, government agencies, academia and FAO officers who will work at field level. The project approach recognizes the potential of agrobiodiversity being a key solver of future challenges.

[31] Fifth National Report to the Convention on Biological Diversity (2014).
[32] Ibidem
[33] Ibidem
[34] http://www.fao.org/wiews/en

Knowledge management is key for this purpose. In addition, new opportunities which improve the management of plant genetic resources for food and agriculture promoted by the ITPGRFA[35] Global Plan of Action will be useful for mobilizing awareness among the general public and policy-makers regarding the work of the FAO Commission on Genetic Resources for Food and Agriculture.

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

### A. RECORD OF ENDORSEMENT[36] OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):

(Please attach the Operational Focal Point endorsement letter(s) with this template. For SGP, use this SGP OFP endorsement letter).

| NAME | POSITION | MINISTRY | DATE *(MM/dd/yyyy)* |
|---|---|---|---|
| Enrique Moret Hernandez | Director/Cuba GEF Political and Operational Focal Point | MINISTRY OF SCIENCE, TECNOLOGY AND ENVIRONMENT | 3 MARCH 2016 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

### B. GEF AGENCY(IES) CERTIFICATION

**This request has been prepared in accordance with GEF policies[37] and procedures and meets the GEF criteria for project identification and preparation under GEF-6.**

| Agency Coordinator, Agency name | Signature | Date *(MM/dd/yyyy)* | Project Contact Person | Telephone | Email |
|---|---|---|---|---|---|
| Gustavo Merino<br>Director,<br>Investment Centre Division<br>Technical Cooperation Department<br>FAO<br>Viale delle Terme di Caracalla (00153)<br>Rome, Italy<br>TCI-Director@fao.org | | 4 March 2016 | Allan Hruska<br>FAO Plant Production and Protection Officer<br><br>&<br><br>Jorge Fernandez Esperon<br>FAO Cuba | | Allan.hruska@fao.org |

[35] International Treaty on Plant Genetic Resources for Food and Agriculture

[36] For regional and/or global projects in which participating countries are identified, OFP endorsement letters from these countries are required even though there may not be a STAR allocation associated with the project.

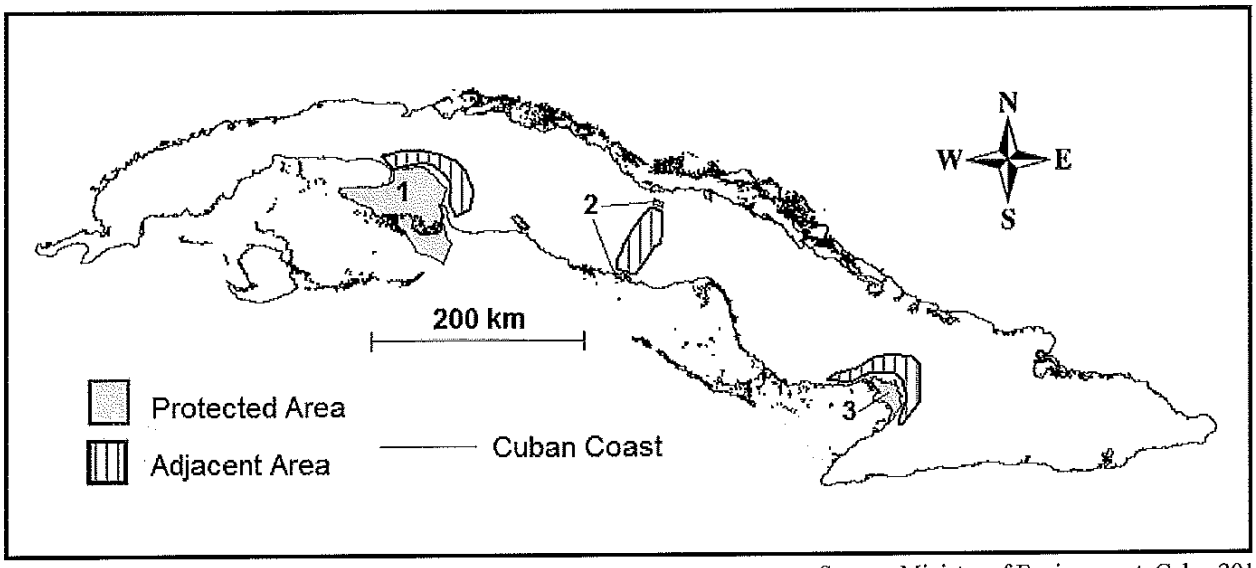
[37] GEF policies encompass all managed trust funds, namely: GEFTF, LDCF, and SCCF

**C. ADDITIONAL GEF PROJECT AGENCY CERTIFICATION (APPLICABLE ONLY TO NEWLY ACCREDITED GEF PROJECT AGENCIES)**

For newly accredited GEF Project Agencies, please download and fill up the required **GEF Project Agency Certification of Ceiling Information Template** to be attached as an annex to the PIF.

## Annex I: Map 1. Three project intervention areas

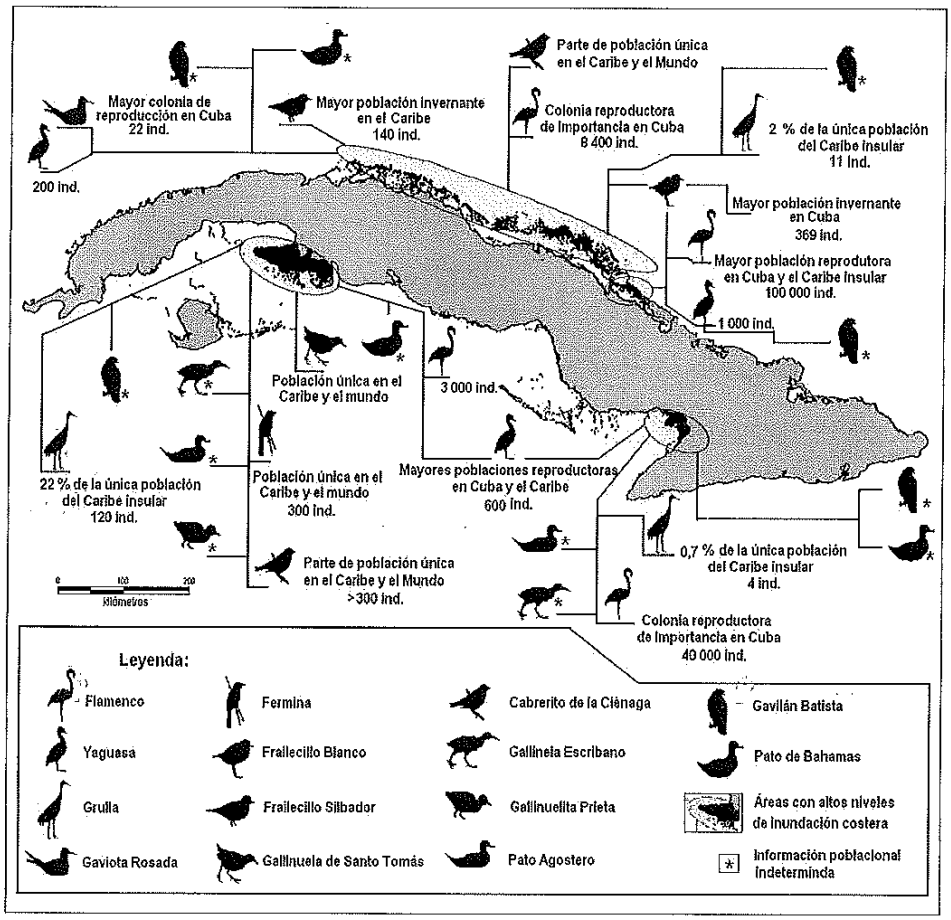
1- Managed Resource Protected Area "Ciénaga de Zapata"
2- Managed Resource Protected Area "Jobo Rosado" and Wildlife Refuge "Tunas de Zaza"
3- Wildlife Refuge Protected Area "Delta del Cauto




Source: Ministry of Environment, Cuba, 2016

## Annex II

## Map 2. Main bird species that inhabit or migrate to the three areas of project intervention



## Annex III
## Agrobiodiversity plant groups addressed by the Project

| Cultivated crop | Common name | Wild relative | Common name |
|---|---|---|---|
| **Roots and tubers** | | | |
| *Dioscorea alata* | *Ñame blanco* | *Dioscorea cubensis* | ** |
| *Dioscorea bulbifera* | *Ñame volador* | *Dioscorea chondrocarpa* | ** |
| *Dioscorea cayenensis* | *Ñame amarillo* | *Dioscorea nipensis* | ** |
| *Dioscorea esculenta* | *Bondá* | *Dioscorea pentaphylla* | ** |
| *Dioscorea opposita* | *Ñame chino* | *Dioscorea polygonoides* | ** |
| *Dioscorea rotundata* | *Ñame blanco* | *Dioscorea tamoidea* | ** |
| *Dioscorea trifida* | *Ñame llampín* | *Dioscorea villosa* | ** |
| *Ipomoea batatas* | Sweet potato | *Ipomoea alba* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea alterniflora* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea aquatica* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea argentifolia* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea arnoldsonii* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea asarifolia* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea balioclada* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea bayeriana* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea cairica* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea calantha* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea carnea* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea carolina* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea clarensis* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea cordatotriloba* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea cubensis* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea erosa* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea excisa* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea falkioides* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea fimbriosepala* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea flavopurpurea* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea fuchsioides* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea hederacea* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea hederifolia* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea hypargyrea* var. *baracoensis* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea hypargyrea* var. *hypargyrea* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea imperati* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea incerta* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea jalapoides* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea lacteola* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea lindmanii* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea merremiodes* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea microdactyla* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea montecristina* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea nil* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomea obtusata* | * |

| | | | |
|---|---|---|---|
| *Ipomoea batatas* | Sweet potato | *Ipomoea ochracea* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea passifloroides* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea perichnoa* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea pes-caprae* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea purpurea* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea robusta* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea sagittata* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea setifera* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea subrevoluta* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea tenuissima* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea tiliacea* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea trifida* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea triloba* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea violacea* | * |
| *Ipomoea batatas* | Sweet potato | *Ipomoea wrightii* | * |
| *Xanthosoma atrovirens* | malanga | *Xanthosoma cubensis* | malanga |
| **Vegetables** | | | |
| *Solanum lycopersicum* | tomato | *Solanum americanum* | Yerba Mora |
| | | *Solanum bahamense* | * |
| | | *Solanum betaceum* | * |
| | | *Solanum boldoense* | * |
| | | *Solanum campechiense* | * |
| | | *Solanum chamaecanthum* | * |
| | | *Solanum elaegnifolium* | * |
| | | *Solanum erianthum* | * |
| | | *Solanum glaucescens* | * |
| | | *Solanum gundlachii* | * |
| *Solanum melongena* | eggplant | *Solanum havanense* | * |
| | | *Solanum jamaicense* | * |
| | | *Solanum maestrense* | * |
| | | *Solanum moense* | * |
| | | *Solanum myriacanthum* | * |
| | | *Solanum nudum* | * |
| | | *Solanum pachyneuroides* | * |
| | | *Solanum pachyneurum* | * |
| | | *Solanum schlechtendalianum* | * |
| | | *Solanum sisymbriifolium* | * |
| | | *Solanum tampicense* | * |
| | | *Solanum tetramerum* | * |
| | | *Solanum umbellatum* | * |
| | | *Solanum wendlandii* | * |
| | | *Solanum wrightii* | * |
| **Fruits and others** | | | |
| *Annona cherimola* | chirimolla | *Annona bullata* | ** |
| | | *Annona cascarilloides* | * |
| | | *Annona crassevenia* | * |
| *Annona diversifolia* | anon | *Annona cristalensis* | * |
| *Annona glabra* | anon | *Annona cubensis* | * |
| *Annona lutescens* | anon | *Annona ekmanii* | * |
| *Annona* | anon | *Annona elliptica* | * |
| | anon | *Annona havanensis* | * |
| | anon | *Annona moaensis* | * |
| | anon | *Annona nipensis* | * |

| | | | |
|---|---|---|---|
| *lutescens*<br>*Annona muricata*<br>*Annona reticulata*<br>*Annona squamosa* | | *Annona oblingifolia*<br>*Annona sclerophylla* | *<br>* |
| *Psidium guajava* L. | Guava | *Elibertia edulis* | Guava |
| Red and green peppers | *Capsicum annum-chinense – frutescense*<br><br>*C. baccatum* | Red and green peppers | *Capsicum annum - chinense – frutescense*<br><br>*C. annuum var. glabriusculum* |
| Common beans | *Phaseolus vulgaris* | *Phaseolus lunatus* | "Caballero" Bean is a traditional crop in Cuban traditional system |

*Common name and use are unknown.
** Can be potentially used in the same way with respect to the managed crop