Meeting of the Board
10 – 12 March 2020
Geneva, Switzerland
Provisional agenda item 17

GCF/B.25/02/Add.03

18 February 2020

Consideration of funding proposals - Addendum III

Funding proposal package for FP126

Summary

This addendum contains the following seven parts:

a) A funding proposal titled "Increased climate resilience of rural households and communities through the rehabilitation of production landscapes in selected localities of the Republic of Cuba (IRES)";
b) No-objection letter issued by the national designated authority(ies) or focal point(s);
c) Environmental and social report(s) disclosure;
d) Secretariat's assessment;
e) Independent Technical Advisory Panel's assessment;
f) Response from the accredited entity to the independent Technical Advisory Panel's assessment; and
g) Gender documentation.

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Funding Proposal

Project/Programme title:	Increased climate resilience of rural households and communities through the rehabilitation of production landscapes in selected localities of the Republic of Cuba (IRES)
Country:	*Cuba*
Accredited Entity:	*Food and Agriculture Organization of the United Nations*
Date of first submission:	*[2017/09/08]*
Date of current submission	*[2019/11/07]*
Version number	*V.001*

GREEN CLIMATE FUND

Contents

Note to Accredited Entities on the use of the funding proposal template

- Accredited Entities should provide summary information in the proposal with cross-reference to annexes such as feasibility studies, gender action plan, term sheet, etc.
- Accredited Entities should ensure that annexes provided are consistent with the details provided in the funding proposal. Updates to the funding proposal and/or annexes must be reflected in all relevant documents.
- The total number of pages for the funding proposal (excluding annexes) **should not exceed 60**. Proposals exceeding the prescribed length will not be assessed within the usual service standard time.
- The recommended font is Arial, size 11.
- Under the GCF Information Disclosure Policy, project and programme funding proposals will be disclosed on the GCF website, simultaneous with the submission to the Board, subject to the redaction of any information that may not be disclosed pursuant to the IDP. Accredited Entities are asked to fill out information on disclosure in section G.4.

Please submit the completed proposal to:

fundingproposal@gcfund.org

Please use the following name convention for the file name:

"FP-[Accredited Entity Short Name]-[Country/Region]-[Dates]"

ACRONYMS

AMA	Executive Environmental Agency
AMA	Accreditation Master Agreement
CCS	Credit and Service Cooperatives
CEE	Co-executing Entity
CIMINAGT	Center for Research on Animal Improvement
CITMA	Ministry of Science, Technology and Environment
CTNPF	Close-to-Nature Planted Forest
CP	People's Councils
EE	Executing Entity
ESC	Commodities and Trade Division
FAA	Funded Activities Agreement
FONADEF	National Forestry Development Fund
GEF	Global Environment Facility
GoC	Government of Cuba
IAGRIC	Institute of Agricultural Engineering
INIFAT	Institute for Fundamental Research on Tropical Agriculture
INISAV	Institute of Plant Health
INRH	National Institute for Hydraulic Resources
ISTA	Agrarian Tenure Institute
LRF	Landscape Resilience Fund
M&E	Monitoring and Evaluation
MINAG	Ministry of Agriculture
MINCEX	Ministry of Foreign Trade
MPMU	Municipal Project Management Unit
MPCC	Municipal Project Coordinating Committee
MTE	Mid-Term Evaluation
NAP	National Adaptation Plan
NAMA	Nationally Appropriate Mitigation Actions
NDA	National Designated Authority
NDC	Nationally Determined Contribution
NPSC	National Project Steering Committee
NPMU	National Project Management Unit
NOAA	National Oceanic and Atmospheric Administration (US)
O&M	Operations and Maintenance
OSFMU	Operational Support and Financial Management Unit
PCC	Project Coordination Committee
PPMU	Provincial Project Management Unit
SCF	Soil Conservation Fund
SPI	Standard Precipitation Index
TSC	Technical and Scientific Committee
UBPC	Base Units of Cooperative Production
UEB	Base Enterprise Unit
UEBIST	Base Enterprise Units for Integrated Technical Services

A. PROJECT/PROGRAMME SUMMARY

A.1. Project or programme	Project	**A.2. Public or private sector**	Public
A.3. Request for Proposals (RFP)	Not applicable Not applicable		
A.4. Result area(s)	Mitigation: Reduced emissions from: ☐ Energy access and power generation: ☐ Low-emission transport: ☐ Buildings, cities, industries and appliances: ☒ Forestry and land use: Adaptation: Increased resilience of: ☒ Most vulnerable people, communities and regions: ☐ Health and well-being, and food and water security: ☐ Infrastructure and built environment: ☒ Ecosystem and ecosystem services:		GCF contribution: Enter number% Enter number% Enter number% 32% 35% Enter number% Enter number% 33%
A.5. Expected mitigation impact	2,675,727 million tCO2-eq in 20 years	**A.6. Expected adaptation impact**	Direct beneficiaries 51,713 23,788 women[1] 0.45% of total population
A.7. Total financing (GCF + co-finance)	119,914,000 USD	**A.9. Project size**	Medium (Upto USD 250 million)
A.8. Total GCF funding requested	38,206,790.80 USD		
A.10. Financial instrument(s) requested for the GCF funding	☒ Grant Enter number ☐ Loan Enter number ☐ Guarantee Enter number ☐ Equity Enter number ☐ Results-based payment Enter number		
A.11. Implementation period	7 years	**A.12. Total lifespan**	20 years
A.13. Expected date of AE internal approval		**A.14. ESS category**	B
A.15. Has this FP been submitted as a CN before?	Yes ☒ No ☐	**A.16. Has Readiness or PPF support been used to prepare this FP?**	Yes ☐ No ☒
A.17. Is this FP included in the entity work programme?	Yes ☒ No ☐	**A.18. Is this FP included in the country programme?**	Yes ☒ No ☐
A.19. Complementarity and coherence	*Does the project complement other climate finance funding (e.g. GEF, AF, CIF, etc.)? Please see section B.1.* Yes ☐ No ☒		
A.20. Executing Entity information	***Co-executing Agencies**: Ministry of Agriculture (MINAG); Food and Agriculture Organization of the United Nations*		

A.21. Executive summary

1. According to the Vulnerability and Climate Change Adaptation Index in the Latin America and Caribbean region, Cuba is classified as a "high risk" country[2]. Observations show that the country's climate has been changing, and studies carried out under the Second National Communication to the UNFCCC (2015)[3] indicate the occurrence of: i) increases in temperature; ii) increasingly erratic seasonal rains; iii) greater frequency of long and severe droughts; iv) increased frequency and severity of cyclonic activity; and v) moderate and strong coastal flooding[4].
2. The changes in rainfall patterns and its overall reduction, as well as expected increases in evaporation due to increased temperatures, have a significant impact on droughts. Future climate change impacts will affect agricultural production, particularly of staple crops, negatively impacting the livelihoods of farm households and the general availability of agricultural and food products, ultimately putting food security at risk. Projected climate scenarios show that for 65% of 29 crops studied, the potential yields will suffer a reduction of 12% (beans and rice), 16% for manioc and as much as 48% for potatoes (see Annex 2, Table 4).[5,6] Seventy-eight municipalities, representing an area of 50,907 km^2 and about 46% of the national territory, are the most affected in terms of intensity of agricultural drought during more than 50 days a year[7]. Among these are Corralillo, Quemado de Güines and Santo Domingo in Las Villas province; Los Arabos in Matanzas province (Central Region); and Amancio Rodríguez, Colombia and Jobabo in Las Tunas province (Eastern Region). These are the target municipalities for this project.
3. With the analysis of trends towards increasing vulnerability to climate change based on historic records and climate models, the Government of Cuba has concluded that the entire archipelago is at risk[8]. In 2017, the Council of Ministers approved "*Tarea Vida*", the Cuban State Plan to address climate change. The Plan proposes five Strategic Actions with eleven immediate Tasks, chosen based on a multidisciplinary analysis of vulnerability and other factors, with highest priority given to 73 of Cuba's 168 municipalities (63 in coastal areas and 10 inland). If the 73 highest priority, seven have been selected as target areas for this project.
4. Of the five Strategic Actions defined in the "*Tarea Vida"*, two directly address the agricultural sector:
   A) adaptation of agricultural activities, particularly those with the greatest impact on the country's food security, to changes in land use as a consequence of drought and other climate change impacts.
   B) diversification of crops, improvement in soil conditions, introduction and development of varieties resistant to new temperature scenarios.
5. This Project is fully aligned with the Government`s strategic actions defined to address the adverse effects of climate change in the agricultural sector and its objective is to *increase the climate resilience of agricultural production and ensure food security through improved ecosystem services from landscape management using agroforestry, silvopastoral systems, reforestation and assisted natural forest regeneration in seven highly vulnerable municipalities to the impacts of climate change*. Through this project, critical ecosystem services will become more CC-resilient, especially regulation of the hydrological cycle, through landscape rehabilitation and management that enhances agro-ecosystem productivity and sustainability by improving water infiltration rates and reducing or preventing run-off and soil erosion. At the same time, significant mitigation benefits (e.g. from increased carbon in soils and biomass) will result from the integration of trees and bushes in agroforestry and silvopastoral systems, as well as through reforestation with close-to-nature planted forests and assisted natural regeneration. Furthermore, improved ecosystem services and productive agricultural systems will help to increase communities' resilience to climate change, improving their food and water security.
6. This project constitutes the second phase of a three-phase program to enhance climate resilience of Cuba's agricultural sector countrywide. A first phase of research, testing and analysis of potential resilience-enhancing land use systems identified agroforestry, silvopastoral and forestry modules that are both productive and sustainable has been concluded. The second phase consists of this proposed GCF project, which will implement these proven modules on a mesoscale to build on the knowledge of these modules' performance in the field and at scale, enhance institutional capacities for extension and adaptation of the modules, and establish and operationalize a financial mechanism to support farmers in applying resilience-enhancing technologies and practices to their agro-ecosystems. A third phase will, in future, take the lessons learned from this project and extend this knowledge through more robust institutional capacities to farmers nationwide, who will be supported by the financial mechanism established under this proposed GCF project.

[1] An average of 46% women has been taken into consideration for the Project Intervention Area, according to Annex 8- Gender assessment and project-level action plan.
[2] Corporación Andina de Fomento, 2014. Índice de vulnerabilidad y adaptación al cambio climático en la región de América Latina y el Caribe
[3] Second National Communication to the UNFCCC. 2015. Havana: Republic of Cuba https://unfccc.int/sites/default/files/resource/cubnc2.pdf
[4] Further information on observed climate changes in Cuba are provided in Appendix 4 of this document: Somoza J., De la Colina A.: Estudio de Linea Base de Adaptación y Vulnerabilidad para el Proyecto IRES FAO. La Habana, Cuba, 2018. (Appendix 4)
[5] Rivero R., et al (2010) in SNC Cuba (2015). In Somoza J., De la Colina A., 2018
[6] Municipal Statistical Data. Centella Artola et al (2006). In Somoza J., De la Colina A., 2018
7 Centella A, B. Lapinel, O. Solano, R. Vázquez, C. Fonseca, V. Cutié, R. Baéz, S. González, J. Sille, P. Rosario y L. Duarte (2006). La sequía meteorológica y agrícola en la República de Cuba y la República Dominicana. Tomo I, 172 pp,
[8] Second National Communication to the UNFCCC. 2015. Havana: Republic of Cuba https://unfccc.int/sites/default/files/resource/cubnc2.pdf

7. The Project is structured in three mutually reinforcing and interdependent Outputs: Output 1 will utilize investment in resilience-enhancing technologies to rehabilitate production landscapes through agroforestry, silvopastoral systems, reforestation and assisted natural regeneration modules tested and evaluated in the completed earlier Phase 1 of the project. Rehabilitation of these landscapes will involve removal of marabu, an aggressive, non-native invasive shrub as an essential first step. Through Output 2, technical assistance, capacity building and know-how will be extended to ensure that farmers know how to replace traditional carbon intensive practices with new resilience-enhancing production practices necessary for effective implementation of the landscape rehabilitation modules under Output 1. Output 3 will support the transformation of the political, institutional and legal framework required to shift the prevailing paradigm of production maximization to the new paradigm of economically viable climate-resilient and sustainable production systems; this will include analyses of and reforms to current financial mechanisms and economic incentive structures. GCF funds will be used to purchase essential machinery, equipment, and inputs (e.g. seedlings), train institutional staff and farmers in climate-resilient agricultural practices and systems, and assist government to analyze and enable the appropriate reforms to relevant political, institutional, legal and financial frameworks; government co-financing will cover the costs of technical and logistical support to establish the land management modules, to train farmers, and to provide assistance to farmers for business planning and access to credit and markets.
8. The project will directly benefit approximately 51,713 people, of which 23,788 women throughout the seven target municipalities; an additional 240,117 inhabitants of the target areas will benefit indirectly from increased food security from enhanced and more stable production, improved hydrological regulation, and increased opportunities for employment in agricultural tasks and value addition.

B. PROJECT INFORMATION

B.1. Climate rationale and context

9. Cuba is a Small Island Developing State (SIDS), consisting of the island of Cuba, the Isle of Youth and more than 1,600 islands, islets and cays, which altogether cover a surface area of 110,922 km^2. The country is divided into Western, Central and Eastern regions, as shown in Figure 1 of the Feasibility Study (FS), comprised of 116 provinces and 168 municipalities.

10. According to the *Vulnerability and Climate Change Adaptation Index in the Latin America and Caribbean Region*, Cuba is classified as a "high risk" country in terms of its vulnerability to the effects of climate change[9]. Observations indicate that the country's climate has been changing, and studies carried out under the Second National Communication to the UNFCCC (2015)[10] describe the occurrence of: i) increases in temperature; ii) increasingly erratic seasonal rains; iii) greater frequency of long and severe droughts; iv) increased frequency and severity of cyclonic activity; and v) moderate and strong coastal floods[11]:

11. **Temperature rise**: The surface air temperature has increased by 0.9°C since the middle of last century, conditioned by the increase of the average minimum temperature by 1.9°C, thereby producing a decrease in the daytime temperature oscillation (see Figure 3 in the FS). The rise in temperatures in the Central Region is even higher than the national average, at an incremental rate of 1.6% per year during the last 35 years.

12. **Changes in precipitation patterns**: There has been a slight increase in positive precipitation anomalies since the late 1970s with an increase in rainfall during the rainy season (from November to April)[12].

13. Although the time series of annual precipitation observations for Cuba during 1961-2007 does not show a statistically significant trend, there has been a slight but steady increase in positive anomalies since the end of the 1970s and especially since the 1990s. In general, the slight increase in annual values is fundamentally conditioned by the variations that occurred during the dry season.

14. Table 1 (Appendix 2.4 of the FS) also shows that in the *dry season* (corresponding to November-April), negative average values predominate in the period 1961-1979. The tendency in the following decades is towards positive values with a reduction of the range of variation of the magnitude means and an increase in extreme positive anomalies. Consequently, there is a change in the mean values and in the variance in the period between 1980 and 2007, in comparison to the period 1961-1979, which in the case of the Central Region is -0.81 in the period 1961 -1979, to 0.05 in the period 1961-2007. In the Eastern Region, we can also see a tendency of increased average values of positive anomalies, particularly in the period 1980-2007 (-0.44 to -0.15), also with a reduction in the variation of the mean values.

15. Regarding the rainy season, the distribution of precipitation anomalies reveals a change in average values during recent decades, but contrary to the trend described for the non-rainy period, in this case there is a tendency for negative anomalies. In the rainy months, despite the predominance of negative anomalies in recent years, there has been a slight upward trend, which has been observed since the mid-1970s to the present, particularly with the increase in the magnitude of positive anomalies in the central region (see Appendix 2.4 of the FS, Table 1). This behavior implies reduction of the range of variation of the average values of rainfall, particularly in the Eastern Region. Most notable in this rainy period is the sharp decrease in the average values and variation in the Eastern Region. The reduction of accumulated rainfall in the Eastern Region is largely due to the more frequent occurrence of meteorological drought processes in recent years in that region.

Extreme events

16. **Droughts:** There has been an increase in drought events in the period 1961-1990 when compared to 1931-1960[13] . In the 1990s, a notably intense drought occurred in the Caribbean Basin, Central America, Mexico and the Southeastern United

[9] Corporación Andina de Fomento, 2014. Índice de vulnerabilidad y adaptación al cambio climático en la región de América Latina y el Caribe

[10] Second National Communication to the UNFCCC. 2015. Havana: Republic of Cuba https://unfccc.int/sites/default/files/resource/cubnc2.pdf

[11] Further information on observed climate changes in Cuba are provided in Appendix 4 of this document: Somoza J., De la Colina A.: Estudio de Linea Base de Adaptación y Vulnerabilidad para el Proyecto IRES FAO. La Habana, Cuba, 2018. (Appendix 4)

[12] Planos Gutiérrez, E.O., Rivero Vega, R., Guevara Velazco, V., 2012. Impacto del Cambio Climático y Medidas de Adaptación en Cuba. La Habana: Cuba / *Climate Change Impact and Adaptation Measures in Cuba*. Havana: Cuba.

13 Lapinel, B., Rivero, R.E., Cutié, V., Rivero, R.R., Varela, N., 1993. Sistema Nacional de Vigilancia de la Sequía: Análisis del Periodo 1931-1990 (Informe Técnico). Instituto de Meteorología, La Habana, CUBA.

States (from April to July 1998), generated under the influence of the 1997-1998 ENSO. The event affected the entire Cuban archipelago and in particular the municipalities of the Eastern Region. Starting in 2000, there have been more frequent and severe drought periods, especially in the Eastern Region and in some municipalities in the Central Region, which have extended to almost the entire country in the years 2003-2005. In 2004-2005 a severe drought (catalogued as the most critical event for Cuba in the last 100 years) threatened the livelihoods of more than two million people (17% of the entire population) by causing agricultural losses and livestock death, and facilitating the invasion and spread of alien species such as *Dicostrachys cinerea* (marabú or sicklebush)[14].

17. **Hurricanes:** Tropical cyclones, severe local storms and hurricanes are the meteorological phenomena that are associated with the greatest risk of disasters[15]. The frequency of such events in Cuba varies from zero to four annually. On average, Cuba is affected by one tropical cyclone per year and one hurricane every two years. The occurrence of these events is more frequent in the Western-Central Region of the country. Between 2005 and 2017, Cuba was affected by 11 hurricanes. Two tropical cyclones occurred in 2005, affecting[16] 2,600,000 people (approximately 22% of the total population) causing damage equivalent to USD 2,100,000. The impact of storms occurring from 2007 to 2017 affected 1,090,053 people and caused USD 6,672,000[17] in damages. From 1980 to 2000, Cuba was affected by 10 tropical cyclones and over the period of 2001 to 2018, the occurrence of such phenomena doubled (19 tropical cyclones affected Cuba from 2001-2018)[18]. Two tropical cyclones occurred in 2005, affecting[19] 2,600,000 people (approximately 22% of the total population) causing damage equivalent to USD 2,100,000. In recent years, the province of Las Tunas (Eastern Region) has been affected by four tropical storms (See Annex 2, Table 2, p.14). They bring massive amounts of rainfall which, given soil compaction and the presence of hardpans, are unable to penetrate the soil to recharge groundwater, since dramatic increases in precipitation intensity may exceed soil infiltration capacities[20].

18. **Floods**: Cuba suffers from moderate and strong coastal flooding caused by sea water intrusion or intense rains. In the period from 1996 to 2016, 12 flood events occurred affecting 134,957 people[21].

Climate projections

Temperature

19. An increase in temperature as expected in national climatic scenarios signifies that temperature values in 2050 would represent mean temperatures of 29°C in the Central Region and 30°C in the Eastern Region; while the average maximum temperature values would be 35 and 36°C respectively. Trends in temperature variables are expected to increase (Appendix 2 of the Feasibility Study (FS), Figures 3, 5-a, 5-b), consistent with national trends. CMIP5 projections indicate that by 2050 the mean annual temperature will rise by 1.6°C, the total annual hot days of temperature above 35°C will rise by 20.8 days (RCP 8.5, High Emission)[22]

Precipitation

20. National rainfall scenarios foresee drastic reductions for 2050-2100, between 15 and 63% of the current averages. As such, according to this scenario, accumulated annual rainfall would hover between 975-481 millimeters in the Central Region and 750-370 millimeters in the Eastern Region, leading to a situation of water crisis with repercussions on crop yields and human health. CMIP5 projections indicate that the mean annual precipitation will fall by -48.7mm (RCP 8.5, High Emission)[23]

21. Of even greater concern are the anticipated changes in precipitation intensity. Anomalies in precipitation patterns have increased significantly (see FS Figure 7-b) for the Eastern Region (Station Las Tunas). A rise in mean annual precipitation is

[14] Somoza J., De la Colina A.: Estudio de Linea Base de Adaptación y Vulnerabilidad para el Proyecto IRES FAO. La Habana, Cuba, 2018. (Appendix 4)
[15] As severe tropical storms are included tornadoes, hailstorms, waterspouts and linear winds above 90 km / h. The cyclonic season goes from June 1 to November 30, in which the September-October bimester is the most affected and October the most dangerous month, in which most of the intense hurricanes have been reported.
[16] It includes, Injured, Affected and Homeless estimates.
[17] EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium
[18] EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir - http://www.emdat.be/, Brussels, Belgium
[19] It includes, Injured, Affected and Homeless estimates.
[20] Liu, 2011; Taylor R. et al., 2013.
[21] EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium
[22] https://climateknowledgeportal.worldbank.org/country/cuba/climate-data-projections?variable=pr
[23] https://climateknowledgeportal.worldbank.org/country/cuba/climate-data-projections?variable=pr

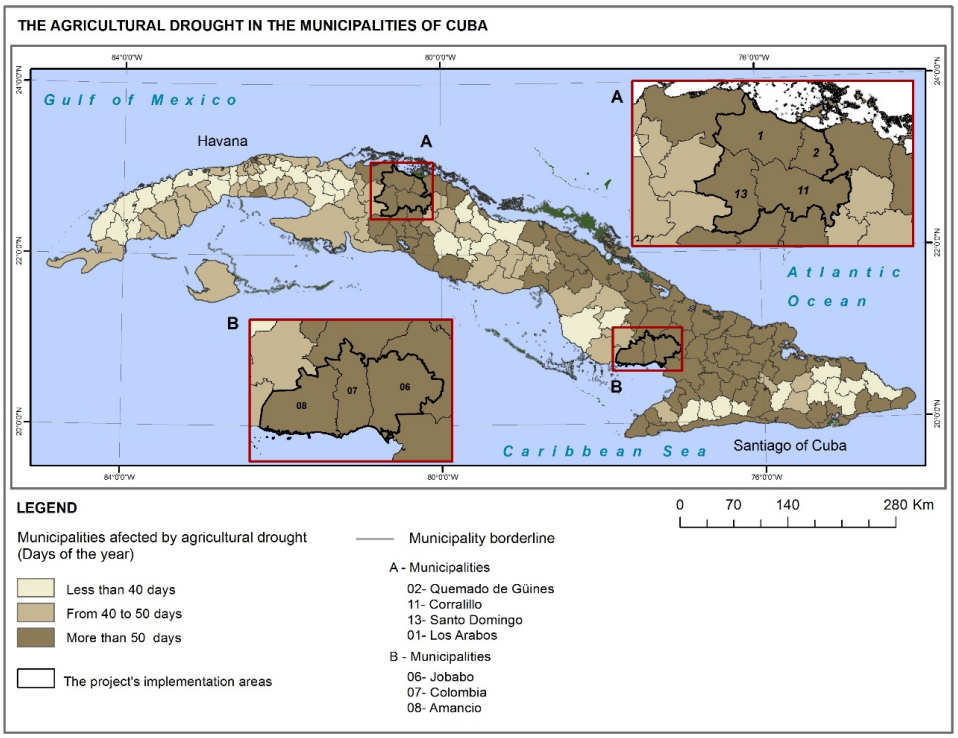
caused by cyclones and hurricanes, whose intensity has increased significantly: during the last decade, 11 hurricanes have struck Cuba.

Agricultural drought

22. Future climate change patterns will, therefore, affect agricultural production, particularly of staple crops, negatively impacting the livelihoods of farm households and the general availability of agricultural products, ultimately putting food security at risk. Projected net primary agricultural productivity and biomass potential density will decline; estimated yield reductions under projected climate scenarios show that for 65% of 29 crops studied, potential yields will suffer reductions from 12% (beans, rice), 16% (manioc) to as much as 48% (potatoes) (FS, Table 5[24,25], *Estimated yields reductions for selected agricultural crops for the years 2030, 2050 and 2100 under climate change scenarios*).

23. Changes in the patterns of rainfall and its reduction, as well as expected increases in evaporation, have a significant impact on soil moisture and agricultural droughts. Data extracted from the map in Figure 1, below, show that 78 municipalities, representing an area of 50,907 km^2 and about 46% of the national territory, are affected most by this phenomenon in terms of intense values of agricultural drought during more than 50 days a year[26] . (FS, Table 3). Among these are Corralillo, Quemado de Güines and Santo Domingo in Las Villas province; Los Arabos in Matanzas province (Central Region); and Amancio Rodríguez, Colombia and Jobabo in Las Tunas province (Eastern Region).

Figure 1: Cuban municipalities affected by agricultural droughts



Source: Adapted from information on agricultural droughts in Centella A. et al. (2006)[27]

24. In both the Central and Eastern regions, the drought processes have favored the expansion of invasive plants better adapted to the scarcity of water and the aridity of the soils. These areas are also characterized by the exodus of the population and abandonment of rural areas.

Flooding

25. The increased occurrence over the last three decades of moderate and strong coastal flooding is closely related to the passage of cyclones of different categories and the entry of cold fronts; consequently, the areas facing the greatest dangers are

[24] Rivero R et al (2010) in SNC Cuba (2015). In Somoza J. De la Colina A., 2018
[25] Municipal Statistical Data. Centella Artola et al (2006). In Somoza J. De la Colina A., 2018
[26] Centella A, B. Lapinel, O. Solano, R. Vázquez, C. Fonseca, V. Cutié, R. Baéz, S. González, J. Sille, P. Rosario y L. Duarte (2006). La sequía meteorológica y agrícola en la República de Cuba y la República Dominicana. Tomo I, 172 pp,
[27] Centella A, B. Lapinel, O. Solano, R. Vázquez, C. Fonseca, V. Cutié, R. Baéz, S. González, J. Sille, P. Rosario y L. Duarte (2006). La sequía meteorológica y agrícola en la República de Cuba y la República Dominicana. Tomo I, 172 pp,

located in low-lying areas, areas with flat relief, areas near rivers or channels or with poor drainage and, locations where surface runoff can exceed the water infiltration capacity of the soil. The north coast of the Central Region, in particular the municipalities of Corralillo and Quemado de Guiñes, and the south coast of the Jobabo, Amancio and Colombia municipalities are among the territories affected periodically by flooding, which has worsened with meteorological events whose impacts have increased in these territories in the last 30 years (see FS, Figure 11).

26. Based on the trend analysis of increased vulnerability to climate change based on historical records and climate models, the Government of Cuba has concluded that the entire archipelago is at increasing risk. As a consequence, in 2017, the Council of Ministers approved "*Tarea Vida*", the Cuban State Plan to address climate change. The Plan proposes five Strategic Actions and eleven more immediate Tasks based on a multidisciplinary analysis of vulnerability and other factors, with highest priority given to 73 of Cuba's 168 municipalities (63 in coastal areas and 10 inland). Of the five Strategic Actions, two directly address the agricultural sector:

    A) Adaptation of agricultural activities, particularly those with the greatest impact on the country's food security, to changes in land use as a consequence of drought and other climate change impacts.

    B) Diversification of crops, improvement in soil conditions, introduction and development of varieties resistant to new temperature scenarios.

The eleven immediate Tasks identified in Tarea Vida include the following five, linked to /of relevance to the proposed porject:

- identification and implementation of activities to adapt to climate change and reduce vulnerability particularly for priority areas with threats to population and food security and recovery of mangroves and other protective ecosystems (#1);
- ensuring the availability and efficient use of water in adapting to drought, from the application of technologies for conservation (including metering for efficiency) and the satisfaction of local demands to improve and maintain hydraulic infrastructure (#4);
- reforestation for maximum protection of soils and water in quantity and quality, including mangrove recovery, prioritizing reservoirs, channels and hydro-regulatory boundaries of watersheds and basins (#5);
- implementing and monitoring sectoral climate change adaptation and mitigation measures in programs, plans and projects related to food security, renewable energy, energy efficiency, regional and urban planning, fisheries, agricultural activities, and integrated management of forests (#8);
- raising awareness of risk and increasing knowledge and participation of the entire population in addressing and adapting to climate change (#10).

27. This strategy is consonant with Cuban national policies, programs and legislation encompassing climate adaptation and mitigation priorities, particularly Cuba's Nationally Determined Contribution (NDC). Chiefly NDC priority 3: *Incorporating the adaptation dimension into programs, plans and projects related to food production, integrated water management, land management, forestry, fisheries, tourism and health* is particularly linked to the proposed project.

28. Although it considers the entire country to be at risk from climate impacts, and has prioritized 73 municipalities as highest priority, the GoC has identified two specific areas of the country for immediate action encompassing four municipalities in ***Las Tunas*** province (Jobabo, Amancio, Colombia) in the Eastern Region and three in ***Villa Clara/Matanzas*** provinces (Los Arabos, Quemado de Guines, Coralillo, Santo Domingo) (Figure 2) in the Central Region. *These are the two target areas for this project.*

29. The selected municipalities of Corralillo, Quemado de Güines and Santo Domingo in Las Villas province and Los Arabos in Matanzas province (Central Region); and Amancio Rodríguez, Colombia and Jobabo in Las Tunas province (Eastern Region) are among the municipalities most affected by agricultural drought in Cuba. Also, the municipalities of Corralillo and Quemado de Guiñes in the Central Region, and the south coast of the Jobabo, Amancio and Colombia municipalities in the Eastern Region are among the territories most affected by periodic flooding worsened by climate-driven meteorological events whose impacts have increased in these territories in the last 30 years (see Appendix 2 of the FS, Figure 11).

Figure 2 – Project areas

30. More than one third of soils in the two project target areas are rated as having medium to high vulnerability to temperature rise, precipitation anomalies and drought (Appendix 4, Table 18 and Figure 20). Eleven per cent (57,235 ha) of soils in the target areas are at very high risk of desertification and degradation, including 11,414 ha that are currently under pasture. Only a tenth of the area in the two target regions is forested, three times less than the overall national forest cover of 31.2%. An estimated 90% of the 14,505 ha of currently idle land is infested with marabú (Appendix 2, Figure 27). In stakeholder consultations and discussions with the local population it was found that 28 of the project areas' 55 "consejos populares" (CPs)[28] considered themseleves to be 'vulnerable' or 'very vulnerable' to the impacts of climate change (Appendix 2.4, Tables 37- 50).

31. Water supply from 21 surface watersheds as well as 30 groundwater aquifers will be affected significantly by climate change impacts on rainfall variability and seal level rise in the target areas: the National Institute for Water Resources (INRH) predicts a reduction of 17% in 2050 and up to 52% by 2100, from 835 to 695 and 398 million m^3 respectively (Scenario A2, IPCC)[29]. *Villa Clara/Matanzas* will be the most affected since the water baseline there is already relatively low: only 66 and 90 hm^3 respectively (Appendix 4, Table 27). Meanwhile, the reservoirs in *Las Tunas* monitored by INRH over the past 34 years had volumetric levels below 50% of nominal volume in 26 years (See Appendix 2.4, p.10 and p.81). The study carried out in the eastern area of the PIA for a period of 34 years showed that only in 8 of the 34 years (70s-2000s), the average volumes have behaved close to the nominal volumes, the other years have been below 50% of filling, evidencing that the precipitation parameters for which these dams have been designed have had changes in their behavior.

32. The Standardized Precipitation Index (SPI) for *Las Tunas* (Appendix 2.2 of the FS, Figure 8-a) shows that the accumulated water balance during the dry season reflects more frequent and more extreme droughts. In contrast, during the rainy season, water balance deficits have increased steadily, putting crops under significant water stress. Severe recurring droughts (years 2004, 2008, 2009) and a diminishing water balance have been observed in Cuba´s Eastern Region (which includes *Las Tunas*)

[28] The *Consejos Populares* (People's Councils) cover specific neighborhoods or territories within a municipality; they represent the population in this area and act, at the same time as a link to municipal, provincial and national instiutions and bodies.

[29] The A2 scenario family is based on a high population growth scenario of 15 billion by 2100. Intergovernmental Panel on Climate Change. Emissions Scenario. https://www.ipcc.ch/site/assets/uploads/2018/03/sres-en.pdf

during the last decades. The region is becoming more arid, with significant reductions in relative humidity (Appendix 2 of the FS, Figure 8-b). This, in synergy with farmers' current coping strategies, has led to a steady reduction of the area covered with agricultural crops and pastures, making them more susceptible to invasion by marabú (*Dichrostachys cynerea*).

Climate Change Impact	*Villa Clara/Matanzas*	*Las Tunas*
Temperature rise (Appendix 4 of the FS)	Increase of 1.6% per year during the last 35 years with the average minimum temperature increasing by at least 0.9 ^{o}C	The average minimum temperature has increased by at least 0.8 ^{o}C since the 1970s
Rainfall change (Appendix 4)	Drought affects 41% of the target area.	Drought affects 37% of the target area. Four hurricanes in Las Tunas in last 10 yrs.
Area of CC-enabled invasive species: Marabú, (*Dichrostachys cynerea*; Appendix 6) in Province	75,398 ha	215,387 ha

33. As climate becomes dryer, soil degradation accelerates and farmers are forced to abandon their land (Appendix 4 of the FS, Tables 24, 46 and 48). Subsequently, an aggressive, non-native invasive species, marabu, is able to establish itself and thoroughly colonize and dominate vegetative regrowth on the abandoned lands. Large areas of the project target municipalities (Appendix 2 of the FS, Figure 27) are now infested with marabu, and expansion to other areas continues to occur. Currently, 75,398 ha in *Villa Clara/Matanzas* (Central Region) and 215,387 ha in *Las Tunas* (Eastern Region) are covered with dense, impenetrable thickets of these thorny bushes. There is a direct, positive correlation between increasing climate change and the increase in infestation in these areas.[30,31]

Complementarity with other relevant land-use and climate financing initiatives

34. The project builds on previous and existing projects related to climate change adaptation and sustainable food production, including the following (for further detail, please see Annex 18 of the Funding Proposal: *Appraisal, due diligence or evaluation report for proposals based on up-scaling or replicating a pilot Project*):

- **Coastal Adaptation to Climate Change in Cuba through Ecosystem Based Adaptation (UNDP/GCF in preparation):** This Project integrates 3 lines of action for effective climate adaptation of coastal areas: i) strengthening existing ecosystem structure (Ecosystem Based Adaptation- EBA), ii) building capacity at community and local government levels for EBA management and iii) mainstreaming adaptation to climate change (CC) within territorial institutions responsible for coastal management[5]. This project will enable GoC's implementation of the principal elements of the recently approved National Programme for Adaptation to Climate Change (Tarea Vida). It will do so by responding to the CC-related threats affecting Cuban coastal communities that have prioritized as the most vulnerable population to CC, mainly sea level rise and increase intensity of hurricanes. The project will directly benefit 490,773 people and indirectly 1,285,322 people in 20 coastal municipalities by increasing the resiliency of coastal landscapes and communities to CC. It will facilitate a shift in coastal adaptation from a traditional hard risk management and reactive strategies to a preventive approach based on maximising the natural infrastructure of Cuban coastal zones and their management.

- **Enhancing the Prevention, Control and Management of Invasive Alien Species in Vulnerable Ecosystems (UNDP/GEF):** This project resulted in a set of good practices, monitoring protocols and methodologies for managing IAS in Cuba. In the GCF project, the good practices to stop the spread and propagation of IAS are being considered as an input. Additionally, the monitoring protocols for managing and eradicating Marabú will be utilized during GCF's project implementation, and have been a basis for project design. Finally, the methodologies to apply IAS management plans have been utilized for the developing of the eight modules, and will continue to be used during project implementation.

- **Support for the strengthening of the socio-productive innovation system of the livestock sector in Cuba. Demonstration actions in Las Tunas (FAO):** This project is aimed at supporting the reorganization of the dairy chain into sustainable production and efficient marketing, from the creation of economic incentives and efficient distribution and consumption to fulfilling the basic needs of the most vulnerable population. The sustainable production of milk and beef is aimed by introducing a techno-economic-productive and efficient model in the selected demonstration areas, with

[30] Somoza J., De la Colina A.: Estudio de Linea Base de Adaptación y Vulnerabilidad para el Proyecto IRES FAO. La Habana, Cuba, 2018.
31 See FS paragraph 224

emphasis on the strengthening of capacities with a gender perspective and bringing the technical and research knowledge to the countryside. This Project has served as the basis for the development of sustainable livestock management in the modules SILSOM and SILEC of the proposed GCF Project, and especially for the case of Las Tunas region, with its characteristics of drought and salinity.

- **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 (GEF):** This project will support a landscape production strategy agreed by stakeholders, previously identified and mapped, with a particular attention to gender and youth, applying the Save and Grow approach (FAO). The role of stakeholders in the conservation and use of agrobiodiversity will be analyzed and classified per value chain (agrobiodiversity food products). It will also promote the adoption of sustainable agricultural intensification practices (Save and Grow) at farm level. It will also 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 silvo-pastoral systems, conservation agriculture, and sustainable forest management. The cooperatives (mainly related to the conservation and use of priority species) will be strengthened by creating experimental pilot areas and technical services provided for the sustainable management of agricultural production. 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 project intervention areas. The synergies with GCF project will be multiple, as both will be working in sustainable agricultural intensification practices in parallel, giving space for exchange of information and lessons learned.

- **Environmental basis for local food production (BASAL) (EU):** The project builds up on past and on-going experiences with a view to systematize the lessons learned and expand the effective agro ecological, low-input and sustainable practices, through the reconciliation of three poles, namely the applied and model-based science, the extension networks and the farmers. The project objective is to reach the adequate decision-making level and the widest number of food producers, on the basis of the experiences acquired to the modernization of local agriculture. This project has set the environmental basis for local food production. This environmental basis (more specifically: adaptation measures for confronting climate change that consider the specific needs of women and men and the differentiated impacts of climate change in both groups, with an emphasis on local food production; the use of more resistant species for the purposes of CC; measures for the saving, use and capture of water; of soil improvement and conservation; good agroforestry practices and silvopastoral system), as well as the resilience and adaptation measures proposed have been incorporated by the GCF project, for the planning of the Modules. The experience gained during the BASAL project on training for local farmers through the Farmer Field Schools will be incorporated by IRES, to be applied in the Farmer Field Schools (FFS) that will be implemented in the seven municipalities.

- **Project to Strengthen Agro-environmental Policies in Latin American and Caribbean Countries through Dialogue and Exchange of National Experiences (FAO):** This project produced a set of tools aimed at promoting dialogue and knowledge exchange among the actors involved in the formulation and implementation of policies and strategies for rural development and natural resource management. The objective being to move towards an agro-environmental policy that goes hand in hand with economic and development policies, through actions of remediation, mitigation and adaptation, as indispensable alternatives for the sustainable development of the country. The project developed a consultative process involving around 30 governmental and civil society institutions in general, and about 375 people among Cuban specialists, researchers, farmers, students, innovators, extension Agents and decision-makers from 13 provinces. Some of the actors that were consulted in this project were also part of the formulation and design of the proposed GCF FP (especially the Direction of Science, Technology and the Environment; the National Company for Flora and Fauna Protection; and some Research Institutes, such as the Research Institute of Tropical Agriculture “Alejandro de Humboldt” (INIFAT)). Additionally, the set of tools and indicators that were produced with this agro-environmental policy project will also be utilized as a basis to build the indicators for the Landscape Resilience Fund.

- **Enhancing Cuba's institutional and technical capacities in the agriculture, forestry and other land-use sector for enhanced transparency under the Paris Agreement. (GCP/CUB/020/CBT) (GEF)**: The main objective of the project is to improve monitoring and planning systems for the agricultural sector’s activities to adapt to the impacts of climate change and address the factors that affect the sector’s anthropogenic GHG emissions in order to promote sustainable development in Cuba. It is an enabling project, that aims to enhance institutional and technical capacities in the country to report mitigation and adaptation actions in compliance with the Enhanced Transparency Framework (ETF), and to integrate knowledge and data and into policy and decision-making. All of these Outcomes will take place in the

agriculture, forestry and other land-use sector. The objectives of this project align directly with the Activity 8 of the National Plan Tarea Vida, and also with the output 3 of GCF IRES Cuba Project. More specifically, the methodologies and results of the GEF project will be applied to strengthen the institutional capacities to operate and monitor the Landscape Resilience Fund created by the IRES Cuba project. Synergies from both projects are increased by the fact that both have been designed, and will have active participation of the same national institutions, such as the Ministry of Science, Technology and Environment (CITMA) and the Ministry of Agriculture (MINAG).

B.2. Theory of change

35. The project's **Theory of Change** starts with recognition of Cuba's increasing vulnerability to CC due to its geographic location in a hurricane-prone region, increasing hurricane strength, increasing variability in rainfall (periodicity, timing and intensity), leading to flooding, land degradation from soil erosion and drought and dry decads (10-day dry periods within the historic pattern of rainy seasons), as well as sea-level rise leading to salinization of coastal groundwater and soils and increasing damage to coastal infrastructure and vegetation. While vulnerability varies somewhat across the island as a result of heterogeneous topography, vegetative cover, meteorological patterns, etc., the entire country is correctly considered vulnerable or highly vulnerable to climate change, particularly rural areas and populations (please see section B.1 Climate Rationale and Context, above).

36. Agroecosystems, as currently configured, degrade rapidly, losing productivity and sustainability due to maladaptive land preparation, cultivation and irrigation techniques for monocultures leading to exposed soils, rapid runoff, infestation by invasive species – particularly marabu - soil erosion and sediment transport to coastal areas, salinization and increased risk of flooding and loss of life and property. This business-as-usual scenario increases producer vulnerability to extreme weather events and climate variability and reduces the capacity of the country to maintain its food security.

37. Effective climate change adaptation in this context requires climate-resilient production systems that can withstand or mitigate stresses and shocks from rainfall variability and precipitation extremes i.e. either too much (e.g. dramatic torrential downpours from hurricanes and tropical storms) or too little (periodic droughts, or lengthy dry periods in the growing season). *The overarching framework for effective adaptation then is one of climate-resilient production systems aimed at maintaining/enhancing hydrological regulation as a primary ecosystem service in the production landscape*. As such, the priority management objectives for resilient agroecological landscapes in Cuba are to reduce rainfall impact on soil, slow water flow across it, and enhance infiltration into and through the soil profile, all the while maintaining or enhancing production for food security, well-being and livelihoods. Reduced impact and velocity of flow decrease erosion, while improved water infiltration into the soil increases groundwater – vital for irrigation during drought and, in coastal areas, a factor against saltwater intrusion.

38. As a consequence, management to enhance the climate-resilience of agroecosystems focuses on establishing and managing the vegetative cover appropriate to a strategy of both optimizing ecosystem function and meeting sustainable production and food security needs, while minimizing GHG emissions. As such, in Cuba, climate-resilient production systems for different areas of the production landscape will combine trees and/or shrubs with crops and livestock. These agroforestry and silvopastoral systems diversify production, thereby reducing risk to farmers and livestock producers from climate extremes. The vulnerability of production landscapes to climate change is reduced with widespread adoption and implementation of climate-adapted, resilience-enhancing agroforestry and silvopastoral systems.

39. To decrease vulnerability and enhance resilience of farmers to climate-driven impacts such as drought and rainfall variability (including torrential downpours), Cuba aims to strengthen ecosystem function aimed primarily at water regulation to maintain and enhance agricultural production. This includes reforestation of key areas less suitable for agriculture to create close-to-nature planted forests (CNPFs) and assisted natural regeneration of degraded forests and logged-over areas. It is important to note that this strategy of integrating trees and bushes into the production landscape, through the proposed agroforestry, silvopastoral and forestry systems, also results in generation of significant mitigation benefits over and above the current baseline values of current maladaptive production systems and degraded and abandoned areas subject to invasion by marabu.

40. The Cuban government has adopted a three-phase strategic approach to enhancing the resilience of agricultural landscapes to increasing climate change while generating mitigation benefits: a first phase of research and piloting of resilience-enhancing agricultural production systems; a second of mesoscale replication based on lessons learned and knowledge from phase one; and a third of upscaling countrywide based on lessons, capacities, financial mechanisms and enabling policies resulting from phase two implementation.

41. In a now-concluded first phase, the Ministry of Agriculture supported research into optimal agroforestry systems for the wetter and drier areas of Cuba and identified and tested a number of options, leading to the six agroforestry, silvopastoral and forestry "modules"[32] proposed here (see Appendix 6 for detailed descriptions). These modules will be replicated at mesoscale in the two representative regions selected for this project located in *Las Tunas* and *Villa Clara/Matanzas* provinces (Eastern and Central Regions, respectively). By implementing these modules at the selected project sites in this, the second phase, the project will reduce the climate vulnerability of approximately 7,728 lower income producers, enhance climate resilience of approximately 35,734 hectares of production landscapes, increase producers' and institutional capacities to manage climate risk, and generate further detailed knowledge of the performance of these agroforestry systems at scale. This will include the corresponding institutional and producer capacities required for a future third phase of out-scaling countrywide. This strategy builds on Cuban national policies, programs and legislation encompassing climate adaptation and mitigation priorities (including Cuba´s NDCs) ensuring coherence between the project proposed here and national objectives.

42. However, there are significant barriers to effectively implementing this strategy for climate adaptation and mitigation. In general, institutional staff and producers do possess insufficient awareness and knowledge of the climate risk reduction benefits of integrated agricultural and landscape management, and they lack the technical skills to manage climate risk by applying resilience-enhancing agricultural practices and systems. Existing financial mechanisms available to farmers and producers' organizations do not consider farmers' adaptation needs nor do they support resilience-enhancing initiatives to manage landscape resources for improved ecosystem services. Youth and women are disadvantaged when it comes to accessing financial, technical and other resources and training to enable them to address impacts of climate change on-farm. At the same time, Cuban agricultural and forest management institutions have limited access to international finance and are therefore unable to access and use the agricultural, information and communication technologies that would allow them to effectively support farmers and producers' organizations to implement resilient production systems and restore and enhance ecosystem services, including carbon sequestration.

43. This second-phase project will overcome these barriers by focusing on three *Fund level Impacts*: A1.0 Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions – by targeting farmers and producers' associations in areas experiencing significant drought or other climate-driven impacts; A4.0 improved resilience of ecosystems and ecosystem services – particularly, improved hydrological regulation as a result of widespread implementation of agroforestry, silvopastoral and forestry systems; M4.0 reduced emissions from land use, reforestation, reduced deforestation and through sustainable forest management and conservation and enhancement of forest carbon stocks – through the use of trees and shrubs in agriculture and livestock production systems, establishment of close-to-nature forests and assisted natural regeneration of forest plots.

44. These impacts will be the result of the corresponding *Fund level Outcomes*: M9.0 improved management of land or forest areas contributing to emissions reductions – corresponding to increased CC-resilient production landscapes through investment in innovative agroforestry and forestry systems, as well as in close-to-nature planted forests; A7.0 strengthened adaptive capacity and reduced exposure to climate risks – from training producers and institutional staff and equipping them to manage climate risk; and A5.0 strengthened institutional and regulatory systems for climate-responsive planning and development – through analysis, discussion and potential reform of current policies, and regulatory and planning instruments including establishment and operationalization of an explicit funding mechanism – the Landscape Resilience Fund - to provide resources and incentives to producers to adopt and maintain resilience-enhancing practices and systems.

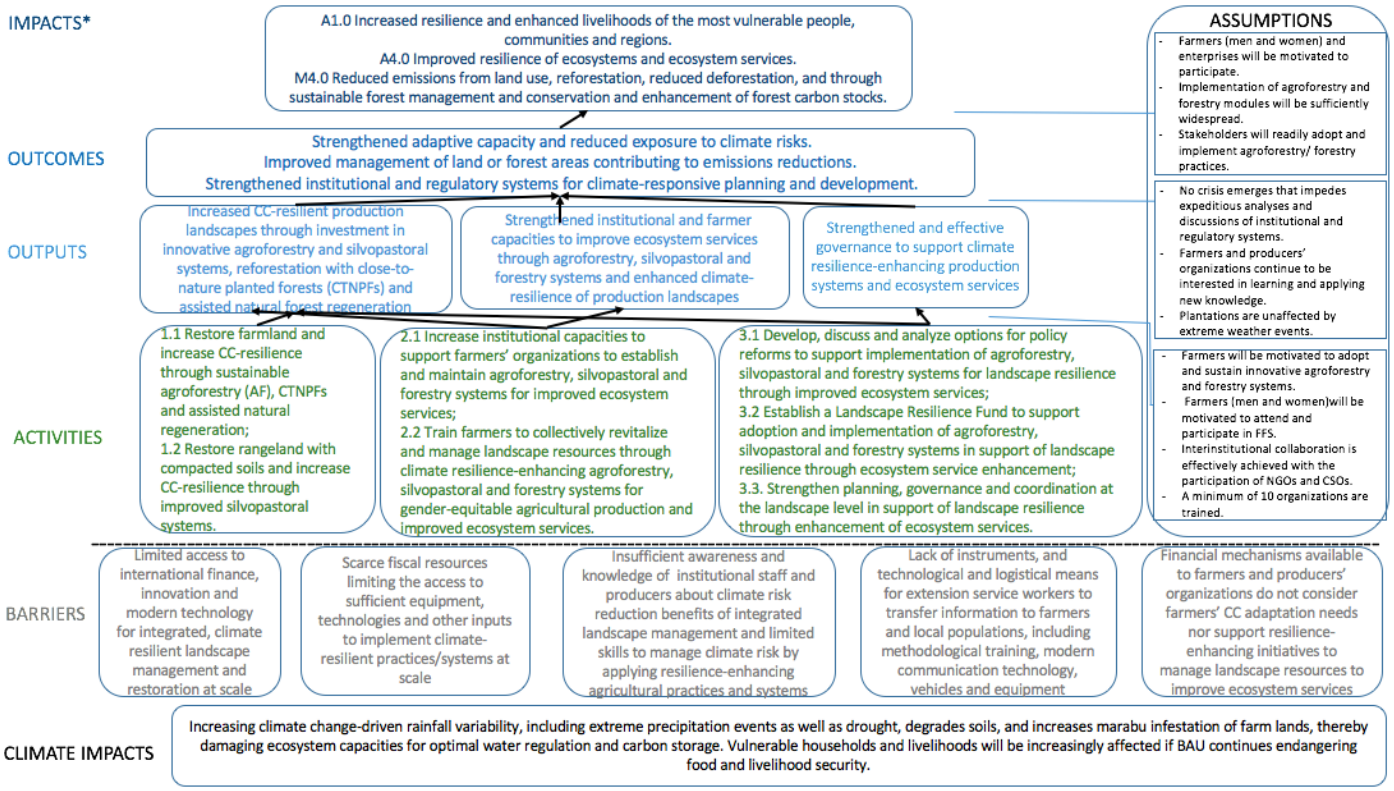
45. To achieve increased CC-resilient production landscapes through investment in innovative agroforestry and forestry systems, it will be necessary to strengthen ecosystem services of landscapes that have been infested with marabu (*Dichrostachys cinerea*), a non-native invasive woody bush species that dominates other plant species and damages or displaces crops and livestock (Appendix 2 of the FS). The spread of marabu is driven by decreasing and more erratic rainfall resulting from CC and enabled by maladaptive farmer practice; as marabu invades agricultural and pasture land, farmers struggle to cope with it without the tools and equipment this requires. This project will support farmers and producers' associations to eradicate marabu from agricultural landscapes and replace it with climate resilience-enhancing agroforestry, silvopastoral or forestry systems selected from the six tested options. These will be established and implemented by producers receiving technical

[32] A "module" is a specific agroforestry, silvopastoral or forestry system that enhances resilience by optimizing water regulation in the production landscape while enhancing agroecosystem productivity and sustainability; a "module" comprises the structure of the system (trees, bushes, row crops, etc.), the species involved (e.g. mango, maize, beans, etc.), the inputs and land preparation needs (e.g. marabu clearance, sub-soiling, no-tillage, etc.), crop production methods (transplanting, pruning, etc.) and other elements.

support and instruction from specialized trainers of the Ministry of Agriculture to be trained by this project. Producers' adaptive capacities will be strengthened through Farmer Field Schools[33], farmer-to-farmer exchanges, and specialized training. The efficiency and effectiveness of institutional and regulatory systems to assist farmers to build the resilience of their agroecosystems will be enhanced through awareness and technical training in regard to ecosystem services and agroforestry systems, farm enterprise planning and value chain development to generate the revenue farmers require to continually invest in resilience-enhancing practices and equipment, and improved monitoring and evaluation instruments and technologies. Finally, after combining the Forestry Development Fund and Soil Conservation Fund, the project will support the development and operationalization of a Landscape Resilience Fund, to be financed from GoC fiscal resources on an annual basis, which will provide a mechanism for financial support in a third phase for countrywide out-scaling of lessons learned. The project proposed here upscales a proven approach based on research and piloting of agroforestry, silvopastoral and forestry modules in-country; the knowledge, skills, capacities and financial mechanism resulting from this second phase will provide the foundation for future countrywide upscaling.

46. The Project aims at shifting the paradigm of agricultural policy and programs from production maximization to implementation of CC-resilient production systems that enhance ecosystem services of production landscapes through agroforestry systems, silvopastoral systems, reforestation and assisted natural regeneration for improved water security and regulation and carbon storage. As presented in the Project Theory of Change, if policies and regulatory frameworks are enhanced, investment opportunities are created. This - together with capacity building of farmers and technical support for the implementation of innovative agroforestry and silvopastoral systems, reforestation with close-to-nature planted forests (CTNPFs) and assisted natural forest regeneration – will result in a strenghtened institutional and regulatory system that supports climate-responsive planning and development, improved management of land and forest areas contributing to emissions reductions and improved ecosystem services, and strengthened adaptive capacity and reduced exposure to climate risks.

The following diagram illustrates this Theory of Change:



* Impacts and outcomes corresponding to GCF Performance measurement framework.

[33] See Farmer Field Schools description under Activity 2.2.

B.3. Project description

47. The Project's objective is to *increase the climate resilience of agricultural production and ensure food security through improved ecosystem services from agroforestry, silvopastoral systems, reforestation and assisted natural forest regeneration in seven municipalities vulnerable to climate change*. Critical ecosystem services will become more CC-resilient, especially regulation of water flows into and through the production landscape, through landscape rehabilitation and management that enhances agro-ecosystem productivity and sustainability by improving water infiltration rates and reducing or preventing run-off and soil erosion. At the same time, significant mitigation benefits will result from the integration of trees and bushes into agroforestry and silvopastoral systems as well as through reforestation using close-to-nature planted forests and assisted natural regeneration.In proposing the project target regions, the government of Cuba undertook a selection process to identify those areas that have been most vulnerable to climate change impacts but also possessed of the greatest potential for impact and the potential to generate lessons useful to a subsequent phase of systematic upscaling nationwide. This initial geographic selection was refined in selecting project beneficiaries[34]:

Type	Criteria	Result
Selection of municipalities in the target regions	- Municipalities most affected by the impacts of climate change based on the increase in average local temperatures and the interconnections with extreme hydro-meteorological events, in particular hurricanes. This includes prevalence of marabu in crop areas. - Municipalities with lower average economic income linked to impacts of climate change on income-generating activities, e.g. agriculture. - Municipalities suffering from outmigration due to impacts of climate change on livelihoods, including demographic aging - Prevalence of non-state agricultural production forms in Project intervention Area (PIA) municipalities e.g. cooperatives, independent producers' associations[35] - Comparative advantages from proximity of PIA to principal tourism regions and facilities (market access potential for products used by the sector's hotels and restaurants) These criteria are summarized in Sections 1.3 and 1.4 of the Feasibility Study with data, maps and indicators.	The following municipalities were selected: <u>Las Tunas Province</u> *Municipalities:* Amancio, Colombia y Jobabo. <u>Villa Clara Province:</u> *Municipalities:* Quemados de Güines, Corralillo y Santo Domingo <u>Matanzas Province:</u> *Municipality:* Los Arabos

[34] See Appendices 2.1, 2.4 and 2.5 of the Feasibility Study.

[35] Women and men have equal access to information and opportunities to participate in and benefit from the project, there are no educational gaps between women and men that prevent access to understanding and access to project information Most of the beneficiaries belong to cooperatives that have an internal government system that obliges them to discuss and report on project issues in member assemblies, decisions are taken collectively, and participation follows voluntary principles. This process has already occurred in its initial stage, and should be ratified during the implementation of the project. The project will seek to develop a gender-sensitive communication strategy or a broad, robust and inclusive information and dissemination system that in a special way helps to make visible the successful experiences of men and women in the territories and to reduce some information gap that can be identified during implementation.

Equal participation of women and men in the project is aspired to. The specific tasks will be determined by the will, aptitudes and aspiration of each person. The project plans to create jobs that traditionally result from women's preference such as seedling management and grafting in nurseries of forest and fruit species, activities in mini-industries, management of collected milk and quality assessment, as well as in laboratories that will be strengthened to ensure essential services to support agricultural and livestock production, among others. It is possible that jobs may also arise for women who are traditionally male, and that they feel interest and empowerment to assume them or vice versa.

Some elements that can be valued as roles to be played by women in the project can be linked to the recovery of the reproduction of vegetable fibers, and the women who live in the settlements can count on sufficient raw material to develop the handicraft, be able to market it and thus improve their quality of life. There would also be potential in improving the capacity and working conditions in a CREE (Entomophagous and Entomopathogenic Reproduction Center), in linking them to the breeding of rams, chickens and rabbits, condiment plants, as well as medicinal plants to be distributed to pharmacies in forest areas or in small mini-industries to favor their use in the processing and conservation of different productions such as tomato, cucumber and some fruits such as guava and mango that develop well in these municipalities.

(Please see further information on the Gender Analysis and Action Plan in Annex 8).

The table below lists modules implemented in each municipality. Modules were selected for each municipality based on agronomic, edaphological, climatic and other factors. Please see Annex 2.6 of the Feasibility Study for further details.

Table: Modules per municipality (hectares)

	Area Villa Clara - Los Arabos				**Sub total (ha)**	***Area Las Tunas***			**Sub total (ha)**	**Total (ha)**
	Los Arabos	Santo Domingo	Corralillo	Quemado de Güines		Jobabo	Colombia	Amancio Rodríguez		
C	94	0	79	0	**173**	1053	61	467	**1581**	1754
MG	724	360	650	510	**2244**	651	200	0	**851**	3095
MF	510	2000	4757	0	**7267**	0	0	900	**900**	8167
F	227	750	515	0	**1492**	522	59	456	**1037**	2529
SC	490	150	2465	214	**3319**	5198	1982	0	**7180**	10499
SL	537	2214	4603	210	**7564**	0	0	2127	**2127**	9691
T	**2582**	**5474**	**13069**	**934**	**22058**	**7424**	**2302**	**3950**	**13676**	**35734**

Modules: C: CEDPLA: Agroforestry system with Cedrela odorata (cedar) intercaled with other forest species and agricultural crops with live perimeter fences;
MG: MAREG: Establishment of forests through natural regeneration assisted in marabou affected areas;
MF: MARFOM: Establishment and management of polifunctional forest plantations in zones invaded by marabou;
F: FRUAGR: Agroforestry system with fruit trees, agricultural crops and living fences;
SC: SILLEC: Silvopastoril system with arbustive leguminous;
SL: SILSOM: Silvopasture with shadow trees and protein Banks;
T: Total AREA in hectares

48. The project will directly benefit approximately 51,098 smallholders throughout the seven target municipalities corresponding to the number of households benefiting from the project activities[36]; an additional 240,117 inhabitants of the target areas will benefit indirectly from increased food security from enhanced and more stable production, better hydrological regulation, and increased opportunities for employment in agricultural tasks and value addition. Indirect beneficiaries correspond to the total population of the seven municipalities targeted by the project. Approximately 20% of lands in which the Project will be implemented belong to private owners and 80% are lands owned by the Government granted to cooperatives under National Decree n° 358, which guarantees the right to freely use the lands for a 20-year period, extendable for another 20 years. Cooperatives are voluntary associations of small farmers who have the property or usufruct of their respective lands and other means of production. It is a form of agrarian cooperation through which the technical, financial and material assistance that the State provides to increase the production of small farmers and facilitate their commercialization is processed and made viable. It has its own legal personality and they respond to their actions with their assets.

49. Project beneficiaries include: Note that in addition to the 51,098 direct smallholder beneficiaries, a number of other stakeholders will also benefit directly from capacity development (primarily training) carried out by the Project. These are, along with the 51,098 direct smallholder beneficiaries (15,968 households):

    a. 51,098 people (farmers and their families) (activities 1.1 and 1.2, 2.2)

    b. 74 machinery operators (activity 1.1)

    c. 68 machinery operators (activity 1.2)

    d. 443 extension service technicians, agricultural technicians, and cooperative leaders/administrators (activity 2.1)

    e. 30 leaders of local producers' organizations (activity 3.3)

[36] The number of household members being considered is 3,2 and the number of farmers is 15,968.

50. The following table includes the stakeholders and the criteria for selection:

Type of Beneficiary	Selection Criteria
Farmers[37] Sub-activities: 1.1.6, 1.2.6, 2.2.1, 2.2.2	- Farmers most threatened by the impacts of climate change, especially those whose agricultural lands are driest and/or most affected by hurricanes and torrential rains. - Farmers participating in different cooperative production modalities (Credit and Service Cooperatives, Base Units of Cooperative Production, etc.) which will allow them a greater capacity to adapt or assimilate the changes in production that the project will bring about, and are readier to work in groups and more inclined to share knowledge with others. - Farmers with different extensions of agricultural land and with different uses of land from the production of grains and vegetables to larger extensions such as cattle farms. - Farmers living in communities most affected by outmigration. - Farmers willing to assimilate new knowledge, with leadership capacity and willing to apply science and technology on their farms and production areas. - Farmers who have developed different experimental production models and who are positively inclined to participate in upscaling processes.
Local Producers' Organizations[38] Sub-activities: 3.1.1, 3.2.2, 3.3.1, 3.3.3	- Geographical proximity of these organizations to the project target areas. - Organizations have been and/or will be identified based on alignment between the proposed activities and the organizations' mandates, expertise and/or services delivered. Note that these determinations have been/will be made by MINAG, in consultation with FAO. - Organizations must be assessed as possessing the potential capacity to sustain the implementation of the new productive modules as a viable enterprise beyond the duration of the project. - Taken into account the singularities of the economics conditions in Cuba Organizations must have financial independence to manage their financial resources including bank accounts to deposit their incomes. - Identified organizations will be invited to nominate staff to participate in the activities based on the alignment between the contents of the proposed activity (e.g. technical focus of the training) and the respective individuals' responsibilities and expertise within their organization. - Gender balance prioritizing women and young people (over 18 years old according to Cuba regulations)
Extension service technicians, agricultural technicians, and cooperative leaders/administrators[39] (Professional Beneficiaries) Sub-activities: 1.1.2, 1.2.2; 2.1.1, 2.1.2, 2.1.3; 3.1.1-3.1.4; 3.2.1-3.2.3; 3.3.3f	- Organizations have been and/or will be identified based on alignment between the proposed activities and the organizations' mandates, political roll, expertise and/or services delivered and territorial representation in the project target areas (note that these determinations have been/will be made by the Project Coordination Committee); - Identified organizations will be invited to nominate staff to participate in the activities based on the alignment between the contents of the proposed activity (e.g. technical focus of the training) and the respective individuals' responsibilities and expertise within their organization

[37] As per defined in the funding proposal

[38] Credit and Service Cooperatives, Base Units of Cooperative Production, and Base Enterprise Units

[39] Under this definition are considered: a) Governments representatives from national, provincial and municipality levels, b) extension service technicians and agricultural technicians, c) Base Enterprise Units for Integrated Technical Services d) other representatives of specialized research institutions.

Machinery operators Sub-activities: 1.1.3, 1.1.4, 1.1.5; 1.2.3, 1.2.4, 1.2.5	- Gender balance prioritizing women and young people (over 18 years old according to Cuba regulations) - Licenses and permits in accordance to the Cuban legislation. - Minimum of 5 years-experience in operating machinery in agricultural labors. - Commitment to serve in the Producer Organization at least during the project implementation (desirable)

Component 1: Climate reslient agricultural systems

Output 1: <u>Increased CC-resilient production landscapes through investment in innovative agroforestry and silvopastoral systems, reforestation with close-to-nature planted forests (CTNPFs) and assisted natural forest regeneration</u>

51. Agroforestry, silvopastoral and forestry principles, methodologies and low-impact modern technologies will be applied to restore vital ecosystem services for water regulation on 35,734 ha of production landscapes across the seven municipalities of the target project areas. This will be achieved by implementing six climate-resilient production modules (described in Appendix 6 of the Feasibility Study) in seven vulnerable municipalities. These modules have been assessed for their technical, financial and social feasibility. They are based on local best practices, applied research results from national institutions, and thorough assessments of their climate resilience, adaptation and mitigation benefits. The modules were presented, discussed and adjusted during two consultation workshops with the active participation of farmers (cooperatives and independent producers), experts and stakeholders from national, provincial and municipal institutions, as well associal actors in both project areas40. The implementation of these modules will result in improved water regulation, decreased soil erosion, augmented soil moisture content, increased groundwater, and improved root penetration, as well as substantially increased carbon storage in soils and biomass. Crop yields will improve, as will the health and well-being of farmers, by reducing water scarcity and food insecurity. To ensure effective establishment of these modules, it will be necessary to build and revitalize irrigation systems, including small water reservoirs for rainwater.

52. Land productivity will be reconditioned through the implementation of agroforestry systems, silvopastoral and forestry systems (Modules 1-6, described in Appendix 2.6 of the Feasibility Study). Successful establishment of these systems will require installation of small-scale water reservoirs to ensure adequate and timely supply, specifically, water storage and irrigation for agroforestry modules and water storage and livestock drinking facilities for silvopastoral systems. The GCF will cover the costs of land preparation, small water reservoirs and provision of equipment, inputs and training to producers to establish the modules but not pay them to implement them.

53. Further information on water availability, crop water requirements and irrigation requirements is provided in Appendix 2.6 of the Feasability Study and relates to: water reservoir volume; monthly potential water harvesting for representative reservoirs; potential irrigation needs, calculated for representative modules, using crop-specific coefficients and considering an irrigation efficiency of 90%; and change in volume of water in the reservoirs considering monthly water harvesting and crop / irrigation water requirements. In addition, in the case of silvopasture modules, the reservoirs have been designed to provide drinking water for cattle. The harvested water in the reservoirs will be distributed to a network of drinking troughs that will be built for each reservoir. Although recycling of water resources is not applicable in this case, distribution efficiency will be ensured.

54. The government and FAO will coordinate the purchase and distribution of the machinery, equipment and inputs required for the implementation of the modules. The government will guarantee the implementation and efficient use of these resources. The GoC has established Base Enterprises for Integrated Technical Services (UEBIST) in each municipality to provide agricultural mechanization services and technical assistance to producers (see Appendix 6 of the FS for more detailed information) through which the implementation of the six agroforestry and silvopastoral and forestry system modules will be supported. The direct beneficiaries of the services will be farmers, including women farmers, and other individual producers or extension officers from MINAG and the National Association of Small Farmers (ANAP). The UEBIST will continue to provide mechanization and technical assistance services to farmers after completion of the project and will be an essential part of the countrywide up-scaling in phase three of the program. UEBIST will also provide maintenance and technical

[40] The technical description of each of the modules, as well as the documentation of the two consultation workshops, can be found in Appendices 6 and 10 of the Feasibility Study. Also, for further information on stakeholders' engagement process during the project formulation, please see Annex 7.

assistance for the efficient use of irrigation equipment and infrastructure, as well as all land preparation machinery.The multiple ecosystem goods and services provided by agroforestry, silvopastoral, and forestry systems (CTNPFs and assisted natural regeneration) have been extensively documented, indicating their suitability for restoring degraded soils[41] and increasing resilience to climate change[42] (please see Appendix 2.6 of the FS and Table 30 in Section 5.1 of the FS for expected climate change benefits with the implementation of the proposed modules). Implementation of these systems will also produce significant mitigation benefits over the 20-year span of growth and utilization of agroforestry, silvopastoral and forestry systems (see section 5.5 of the FS for methodology and results regarding carbon calculations / Appendix 2.3).

55. Regarding socio-economic benefits, production landscapes with multifunctional forests provide promising options for increasing income and sustaining livelihoods[43]. They enable diversified production systems because of various intercrops, and reduce risks associated with pests and diseases, while also enabling a wider diversity of products, which reduces the impact of variations of seasonal harvests[44] .

Activity 1.1 Restore approximately 15,544 ha of farmland, and increase CC-resilience through sustainable agroforestry (AF), CTNPFs and assisted natural regeneration (mitigation co-benefit 833,950.60 million tCO^2-$_{eq}$. in 7 years of implementation)

GCF: 20,513,221 USD
MINAG: 38,840,764 USD

56. While marabú provides some soil cover and fixes atmospheric nitrogen, it accumulates only a fraction of the biomass of forests or agroforestry systems[45]. From the climatic and hydrological points of view, the replacement of marabú by planted forests has the following advantages:Forests can buffer the effects of extreme climate events, higher temperatures and provide alternative sources of food during droughts or floods[46]. Moreover, agroforestry systems and CTNPFs are known to improve microclimate[47].
57. Forests contribute a greater volume of biomass (litter, branches, fruit, etc.) to the soil that, when decomposed, constitutes a fundamental factor in the improvement of the hydrophysical properties of the soils (structure and porosity among others). In addition, a planted forest root system is deeper and more expansive such that when penetrating the ground, it opens tunnels through which the water filters towards lower levels, thereby influencing infiltration capacity and soil moisture retention.
58. Planted forests have also been shown to regulate the quantity and availability of water, improve water quality, increase groundwater recharge and provide riparian buffers[48]. Marabú's relative influence on the water regime is considered comparable to a permanent crop such as fruit trees (mango or citrus), which uses soil similarly to marabú. In this case, forest-covered soil has an average runoff coefficient 3.4 times lower and an erosion rate 13 times lower than marabu-dominated

[41] Miccolis Andrew et al 2017: Restoration through agroforestry: options for reconciling livelihoods with conservation in the Cerrado and Caatinga biomes in Brazil. Cambridge University Press doi:10.1017/S001447971700013

[42] Jacobi, J., Schneider, M., Bottazzi, P., Pillco, M., Calizaya, P. and Rist, S. (2013). Agroecosystem resilience and farmer's perceptions of climate change impacts on cocoa farms in Alto Beni, Bolivia. Renewable Agriculture and Food Systems 30(2):170–183.

[43] Bene et al., 1977; Sinclair, 2004; Vira et al., 2015, in Miccolis A 2017

[44] Izac, a. M. N. and Sanchez, P. a. (2001). Towards a natural resource management paradigm for international agriculture: The example of agroforestry research. Agricultural Systems. 69(1-2):5–25.

[45] Only 2-3% of Marabú biomass is actually used for poles or charcoal (Herrero J. 2018)

[46] Lasco, R. D., Delfino, R. J. P. and Espaldon, M. L. O. (2014). Agroforestry systems: Helping smallholders adapt to climate risks while mitigating climate change. Wiley Interdisciplinary Reviews: Climate Change 5:825–833.

[47] Kandji, S. T., Verchot, L. V., Mackensen, J., Boye, A., Noordwijk, M., Tomich, T. P., Ong, C., Albrecht, A. and Palm, C. (2006). Opportunities for linking climate change adaptation and mitigation through agroforestry systems. Chapter 13. In World Agroforestry into the Future, 113–123 (Eds D. Garrity, A. Okono, M. Grayson and S. Parrott). World Agroforesty Centre.

[48] Araújo Filho, J.A. de (2013). Manejo Pastoril Sustentável da Caatinga, 200. Recife, PE: Projeto Dom Helder Camara. Bargués Tobella, A., Reese, H., Almaw, A., Bayala, J., Malmer, A., Laudon, H. and Ilstedt, U. (2014). The effect of trees on preferential flow and soil infiltrability in an agroforestry parkland in semiarid Burkina Faso.Water Resources Research 50:2108–2123.

soil (Appendix 6 of the FS). Planted forests are also effective at controlling erosion and landslides and at producing organic matter and cycling nutrients[49].

59. Planted forests decrease wind speed, which is critical for managing the water economy in production systems (reducing losses from evapotranspiration in pastures and agricultural crops). Planted forests, even those not designed as windbreaks, fulfill these functions:

    a. Planted forests can reach up to three times the height of marabú and thereby lengthen the distance of their influence on winds; and
    b. Planted forests have a complex vertical structure, composed of herbaceous, shrub and other strata that serve as obstacles and barriers to the passage of prevailing winds in the area. These characteristics are absent in marabu-infested shrublands.

60. Planted forests are superior in the provision of other services, such as CO2 sequestration, which is much lower in marabú due to its slow increase in biomass (Vidal et al. 2015 in Appendix 6 of the FS); the increase in biomass in the planted forest is 12 times higher than in marabu. The conversion of marabú to planted forests provides a notable contribution to CC mitigation.

61. Through the project, GCF funds will be used to purchase low impact modern machinery, such as a mulching tractor[50], successfully pilot tested under Cuban conditions, that will be applied at scale to clear marabú thickets on soils at high risk of climate-driven desertification and degradation. Marabú wood and biomass will be ground to wood chips to form a mulch layer that will support in protecting soils from erosion and sun and eventually restore soil organic matter. The land will then be reconditioned through the implementation of agroforestry systems or CTNPF (Modules 1-4, described in Appendix 6 of the Feasibility Study). Other alternative uses for the marabu were discarded due to its aggressive and invasive nature. The GCF will provide equipment and training to producers to establish the modules and develop resilience-enhancing farm management plans. The government and FAO will coordinate the purchase and distribution of the machinery and equipment, and the government will guarantee the implementation and efficient use of these resources through its Base Enterprise Units for Integrated Technical Services (UEBIST).

62. The UEBIST are internal divisions that are created to organize the processes of production of goods and provision of services, act with relative independence, subordinate to the head of the entity that creates them and have no legal personality or heritage of their own. They are characterized by having controlled autonomy under the principle of covering their expenses with their income.

63. Approximately 20% of lands on which the Project will be implemented belong to private owners and 80% are lands owned by the Government granted to cooperatives under National Decree n° 358, which guarantees the right to freely use the lands for a 20-year period, extendable for another 20 years. Cooperatives are voluntary associations of small farmers who have the property or usufruct of their respective lands and other means of production. It is a form of agrarian cooperation through which the technical, financial and material assistance that the State provides to increase the production of small farmers and facilitate their commercialization is processed and made viable. It has its own legal personality and they respond to their actions with their assets.

64. GCF will finance acquisition of identified technologies, development of training materials, and training of machinery operators, implementation of marabu eradication and soil preparation, establishment of agroforestry and CTNPF modules, and O&M of the marabu eradication and soil preparation technologies during the life of the project. The Government of Cuba will finance logistical and technical support (transportation, lodging, trainers, materials) to trainees; supervision, management and execution of agroforestry and CTNPF production modules once they have been planted and established; and O&M of marabu eradication and soil preparation technologies, and irrigation equipment and infrastructure after project end. The average implementation area for each beneficiary is estimated to be 2.3 ha. Please see Appendix 2.6 of the Feasibility Study for further information on the agroforestry modules.

GCF investments to support this activity will consist of the following sub-activities:

1.1.1: Procure identified technologies and equipment
1.1.2: Develop training materials for operations and maintenance
1.1.3: Train 74 machinery operators
1.1.4: Eradicate marabu on 15,544 ha

[49] Souza, M. de and Piña-Rodrigues, F. (2013). Desenvolvimento De Espécies Arbóreas Em Sistemas Agroflorestais para Recuperação de Áreas Degradadas na Floresta Ombrófila Densa, Paraty, RJ. Revista Árvore 37(1):89–98

[50] An example of a mulching tractor can be seen at https://www.youtube.com/watch?v=fVygSS7i3kA

1.1.5: Construct/ Install 452 water reservoirs for the agroforestry systems of a capacity of no more than 4900 m3 and 440 irrigation systems
1.1.6: Establish agroforestry, reforestation and assisted natural regeneration modules, including development of farm management plans

Activity 1.2 Restore approximately 20,189 ha of rangeland with compacted soils and increase CC-resilience through improved silvopastoral systems (mitigation net co-benefit 381,311.51 million t CO^2_{eq} in 7 years of implementation).

GCF: 14,151,122 USD
MINAG: 37,453,037 USD

65. There are 20,189 ha of degraded grasslands in the two project target areas with compacted soils, often with a hardpan layer, into which root systems grow very poorly because of physical resistance and poor moisture movement. These compacted soils do not absorb rainfall, causing accelerated runoff and erosion. During dry periods, the hardpan is an impermeable barrier for plant roots to reach groundwater reserves. To loosen the soil and break the hardpan, the project will introduce low-disturbance sub-soiling, designed for conservation agriculture[51], which will restore the soil's porosity, so that rainfall can be absorbed and excess moisture drain away, recharging groundwater tables and making groundwater accessible to roots during dry periods. Soil structure improvement and stabilization, introduction of trees and improved, more drought resistant, deep rooting and nutrient rich pastures, as well as grazing rotation, will be achieved through the implementation of the two modules for silvopastoral systems adapted to climate change, described in Appendix 2.6 of the FS. The average implementation area for each beneficiary is estimated to be 2.3 ha.
66. GCF will finance acquisition of identified technologies (e.g. sub-soilers, rippers), development of training materials, training of trainers and training of farmers to carry out soil restoration, implementation of sub-soiling of compacted area, establishment of silvopastoral modules, O&M of the soil preparation technologies during the life of the project and resilience-enhancing farm management plans. The Government of Cuba will finance logistical and technical support to trainees during and after training, implementation of silvopastoral modules following initial established and O&M of sub-soiling technologies, water storage, and livestock drinking stations after project end.
67. The UEBIST are internal divisions that are created to organize the processes of production of goods and provision of services, act with relative independence, subordinate to the head of the entity that creates them and have no legal personality or heritage of their own. They are characterized by having controlled autonomy under the principle of covering their expenses with their income.
68. Approximately 20% of lands on which the Project will be implemented belong to private owners and 80% are lands owned by the Government granted to cooperatives under National Decree n° 358, which guarantees the right to freely use the lands for a 20-year period, extendable for another 20 years. Cooperatives are voluntary associations of small farmers who have the property or usufruct of their respective lands and other means of production. It is a form of agrarian cooperation through which the technical, financial and material assistance that the State provides to increase the production of small farmers and facilitate their commercialization is processed and made viable. It has its own legal personality and they respond to their actions with their assets.
69. The project will ensure effective establishment of silvopastoral systems by guaranteeing their water security through improved small-scale water reservoirs and livestock drinking facilities (fountains). The project will construct a reduced number of new water-harvesting and storage facilities. These structures and facilities will be fed from rainwater harvesting and runoff water and conditioned to maximize their efficiency and sustainability through appropriate soil conservation and landscaping. GCF will also finance acquisition of water provision equipment and materials for these modules. The Government of Cuba will cover the costs of labor and other locally available materials for construction of these small water reservoirs, as well as their Operations and Maintenance.
70. GCF investments in support of this activity will consist of the following sub-activities:

    1.2.1: Procure identified technologies and equipment
    1.2.2: Develop training materials
    1.2.3: Train 68 machinery operators

[51] Livingston and Blade. Texas A&M University System (http://publications.tamu.edu/FORAGE/PUB_forage_Paratill%20Renovations%20of%20Pastures%20and%20Hayfields.pdf).May 5th 2018.

1.2.4: Implement low impact sub-soiling of 20,189 hectares of compacted rangeland
1.2.5: Construct 700 water reservoirs for livestock (no more than 63m3).
1.2.6: Establish and implement silvopastoral modules, including improved grazing systems and development of farm management plans

Component 2: Strengthened institutional and technical capacities

Output 2: Strengthened institutional and farmer capacities to improve ecosystem services through agroforestry, silvopastoral and forestry systems and enhance the climate-resilience of production landscapes

71. To catalyze the shift from a tightly focused production maximization paradigm to one of productive climate resilient agroecosystems that enhance ecosystem services, farmers, producer organizations and institutional staff require significant capacity building. These stakeholders require technical training to understand climate change and its effects on agroecosystems and production landscapes, the role of forests, agroforestry and silvopastoral systems in the production of ecosystem goods and services, and how to adapt agricultural production to continually evolving climate change - farmers need to develop the skills to adopt and apply resilience-enhancing agricultural practices and systems. Part of the impetus to adopt and apply these systems stems from interest in the sale under contract of agricultural products to government programs and the possibility of accessing growing supply-and-demand markets, combined with the reduction in crop losses and food insecurity.

72. The Cuban agricultural sector is currently immersed in major reforms and transformations with the objective to implement new economic measures aimed at facilitating the development of sectoral production, while establishing a resilient and sustainable agriculture in the face of growing climate change. The aim of government policy is to achieve efficient agricultural production based on resilience to climate change as well as incentives for sustainable production.

73. These reforms encourage production by farmers and act to balance supply and demand, contain prices at equitable levels, guarantee consumer safety and interests, guarantee sustainability of production, and enhance resilience to climate change. This project is integrated within the framework of these reforms and transformative actions, including the benefits to agriculture and food security from markets and marketing. Activity 3.2 of the Funding Proposal, in particular, will support further analysis of the current transformations.

74. As part of capacity development activities under this Output, farmers will receive training in how to effectively access the secondary supply-and-demand markets, and producers' organizations will work with MINAG to analyze and develop value chains for specific products from climate-resilient production systems. GoC will ensure that production contracts are provided to producers' organizations for adequate sale of harvests, and will provide technical assistance to producers to access supply-and-demand markets.

75. The Government of Cuba is implementing several programs to improve human nutrition through national food production and by reducing food lost and waste and dependence on imported food. In support of this, the National Committee for the Reduction of Food Loss and Waste (CNPDAC) was established in 2017 and its Secretariat is hosted by FAO Cuba. In 2018 and 2019, a National Strategy for the Prevention of Food Loss and Waste was developed, including three reinforcing programs: 1) Integrated Productive Program for Urban, peri-urban and Family Farming; 2) Municipal Food Self-Supply Plan, and; 3) Program for the development of small scale agro-industry.

76. A major focus of the strategy has been strengthening capacities of staff from different Ministries and other institutions, as well as stakeholders on Food Loss and Waste. Nutrition and food loss and waste are an integral part of Farmer Field School training under Output 2.2, below.

Activity 2.1: Increase institutional capacities to support farmers and producers' organizations to establish and maintain agroforestry, silvopastoral and forestry systems for improved ecosystem services

GCF: 108,000 USD
MINAG: ---------- USD

77. The project will apply a comprehensive approach to agroecosystem management with the aim of maximizing the ability of agroforestry, silvopastoral and forestry systems to cope with variations in water availability and volumes, while maintaining or increasing productivity. This approach builds on farmers' knowledge and experience, observations and response to observed changes in climate conditions, cropping and livestock production systems and water management, incorporates

use of resilience-enhancing soil, water and crop cultivation technologies (sub-soiling, zero-till, precision fertilization, drip irrigation, etc.), and implements a package of low-cost agricultural practices based on agro-ecological principles that reduce risk from drought. Adoption of this approach by farmers and producers' organizations will be enabled through training, coaching and technical advice by institutional staff from the Ministry of Agriculture and its affiliated institutes and agencies.

78. The Ministry of Agriculture will strengthen and intensify its training-and-visit system, coupling off-site instruction and participatory research through Farmer Field Schools (FFS) with farm visits to provide technical assistance. MINAG extensionists and "champion farmers" (see Activity 2.2, below) will be trained to support farmers and producer organizations to acquire the necessary skills to establish, maintain and operate resilience-enhancing agroforestry, silvopastoral and forestry systems across production landscapes. The project will train extension workers from MINAG to train farmers in Farmer Field Schools (FFS) in the seven municipalities, according to the type of agroforestry, silvopastoral or forestry system to be implemented and provide technical expertise to help farmer groups maintain the agroforestry, silvopastoral and forestry systems established under Output 1, above. Trainers of extensionists will be identified from an in-house roster of qualified MINAG experts. Extension workers will also promote farmer-to-farmer exchanges in the FFS and through farmer markets and agricultural fairs.

79. At the same time, extensionists will receive the logistical and technological support they need from MINAG to monitor the agroforestry, silvopastoral and forestry systems in the field, collect data and store it appropriately, provide on-site advice and training, and build an interactive network of agroforestry/silvopastoral/forestry practitioners.

80. GCF will finance acquisition or development of substantive pedagogical materials, training of trainers and training of extensionists.

81. GCF investments in support of this activity will consist of the following sub-activities:

    2.1.1: Develop training materials
    2.1.2 Train 443 extension service technicians, agricultural technicians, and cooperative leaders to lead farmers in gender and age-sensitive learning-by-doing regarding the implementation, operations and maintenance of their agroforestry or forestry systems; topics covered will include no-till cultivation; inter-cropping; cut-and-carry forage feeding; sub-soiling; soil conservation with gabions, gully plugs, bunds, and contour farming; agroforestry and silvopastoral system design; application of efficient irrigation technologies (FS paragraphs 210-212) and water harvesting and storage systems;
    2.1.3 Development of supplementary learning materials and information on CC impacts, projections, ecosystem function and services, agroecology, agroforestry and forestry systems, and farm business planning and marketing.

Activity 2.2 Train agricultural producers to collectively revitalize and manage landscape resources through climate resilience-enhancing agroforestry, silvopastoral and forestry systems for gender-equitable agricultural production and ecosystem services

GCF: 718,870 USD
MINAG: ---------- USD

82. The long-term construction of climate-resilient production landscapes requires that farmers adopt and apply cropping and livestock systems that improve and maintain ecosystem services and agricultural productivity as they adapt to evolving climate hazards. Aside from the concrete inputs and activities provided under Output 1, above, to establish agroforestry and forestry systems, farmers require a substantial body of knowledge on agroecology, climate change adaptation and mitigation, agroforestry, silvopastoral and forestry systems management, and basic business economics so that farmers can generate the revenue needed to sustain adopted resilience-enhancing practices and systems. Farmers, through their day-to-day activities, possess a solid basis of experience and knowledge to build on and complement. At the same time, farmers also need to acquire the practical skills to apply new knowledge to concretely enhance the climate resilience of their production systems. Farmer Field Schools (FFS) are the most effective and efficient way to carry out farmer training. The project will establish an integrated FFS program to cover the seven municipalities and their different agroforestry, silvopastoral and forestry systems. FFS programs work at multiple scales to build social capital by helping strengthen producer organizations and by contributing to greater organizational capacity along the entire value chain – from financing, post-harvest processing and marketing, to investments.

83. The Farmer Field Schools (FFS) approach[52] was developed by FAO and its partners over 20 years ago as an alternative to the then prevailing top-down extension method of the Green Revolution, which failed to work in situations where more complex and counter-intuitive problems existed (see the FS- Annex 2- Section 5.3- Output 2 description- for more detail on FFS).

84. This project will establish 17 FFS in the seven project municipalities in appropriate locations based on agroforestry, silvopastoral or forestry systems to be implemented, and logistical and other considerations such as the availability and access to markets. These FFS will provide farmers with updated information and knowledge on CC, ecosystem function and services, agroecology, agroforestry, silvopastoral and forestry systems, and farm economics, as well as knowledge and information regarding practical consequences and applications for their farming practice. In order to generate revenue to pay for ongoing adaptation to climate change, farmers will learn farm and business planning, as well as new practices e.g. no-till cultivation, inter-cropping, cut-and-carry forage feeding, sub-soiling, soil conservation with gabions, gully plugs, bunds, contour farming, agroforestry system design, application of efficient irrigation technologies and water harvesting and storage systems. The FFS will pay particular attention to the specific needs of women farmers and youth, devising gender-sensitive and age-sensitive curricula and learning-by-doing methodologies.

85. GCF will finance the establishment of Farmer Field Schools – not actual buildings but rather agroforestry, silvopastoral and/or forestry plots on farmers' fields where irrigation and soil preparation technologies can be demonstrated and where training and experience of new systems and technologies can take place. GCF resources will also cover the costs of training farmers throughout the seven target municipalities. The Government of Cuba will finance logistical and technical support to trainees during and after training. GCF investments in support of this activity will consist of the following sub-activities:

    2.2.1 Establish Farmer Field Schools (17) in appropriate locations in the seven municipalities based on type of agroforestry, silvopastoral or forestry system to be implemented and logistical and other considerations;

    2.2.2 Operation of 17 Farmer Field Schools and training of 15,549 farmers using the participatory research and learning-by-doing approach.

Component 3: Strengthened governance, legal and regulatory framework

Output 3: <u>Effective governance to support climate resilience-enhancing production systems and ecosystem services</u>

86. This project is posited as a second phase of a three-phase program aimed at establishing and operationalizing agroforestry/silvopastoral/forestry systems for landscape resilience countrywide. To enable implementation of this longer-term vision, concrete policy options will be identified, analyzed and discussed under Activity 3.1. These options, structured and adopted into a comprehensive legal and regulatory framework, will ensure effective institutional coordination and support to farmers to build the productivity and sustainability of their agroecosystems and the resilience of their shared production landscapes. The project will analyze and evaluate existing policies such as land usufruct Decree No 300/2012 (see paragraph 22) and propose any needed reforms to remove barriers and facilitate individual landholders to adopt resilience-enhancing practices and technologies.

87. The landscape resilience policy developed under Activity 3.1 will be implemented *on the ground* by farmers and producers' organizations who will be financed through a Landscape Resilience Fund developed under Activity 3.2, below. This Fund will provide financial resources to farmers and production units as risk-reducing incentives to motivate adoption of resilience-enhancing production practices and technologies. The Fund will also lower the inherent risk associated with entry into the supply-and-demand markets for agricultural produce. Please see below under Activity 3.2 for more details.

88. Under Activity 3.3, below, the project will work directly with local level organizations and the local branches of national organizations to build their capacities for multi-sectoral and multi-stakeholder support and coordination in implementing the landscape resilience policy from Activity 3.1 through programs and projects on the ground. An in-depth analysis of existing coordination mechanisms at the provincial and local level, as well as the institutional resources and capacities for project implementation can be found in Appendix 7 of the FS.

89. Through this Output, FAO will provide the Government with assistance in legal, normative and policy matters needed to implement the clear political mandate contained in the NDP 2030, Tarea Vida and the NDCs described in paragraphs 25 and 26 above, and to overcome the barriers that still hinder their implementation.

[52] For a description of FFS, please see http://www.fao.org/agriculture/ippm/programme/ffs-approach/en/

Activity 3.1 Develop, discuss and analyze options for policy reforms to support implementation of agroforestry, silvopastoral and forestry systems for landscape resilience through improved ecosystem services

GCF: 260,500 USD
MINAG: ---------- USD

90. A concrete policy to support the building of landscape resilience through ecosystem service enhancement is essential. This policy will build on current policies e.g. Tarea Vida, etc., but also incorporate analyses and information from other experiences and studies.

91. The policy analysis and development process will identify gaps and weaknesses in the current policy framework vis a vis the long-term goal of landscape resilience through enhanced ecosystem services. These include identifying *substantive weaknesses* e.g. insufficient understanding of and focus on ecosystem services and their relation to vulnerability and resilience; general lack of a comprehensive approach (multi-sectoral, multi-stakeholder) to building landscape resilience; *implementation weaknesses* include a lack of coordination among key actors/sectors/stakeholders at the local and landscape levels; and the absence of local level strategic planning instruments; *financial weaknesses* include the insufficient availability of micro-credit, grants, loans; insufficient farm-level business planning and management capacities; inefficient marketing capacities, etc.

92. The project will analyze stakeholder roles and responsibilities under potential policy reforms, defining specific mandates and areas of action depending on the type of reforms envisioned.

93. Multi-stakeholder and multi-sectoral workshops will identify or discuss policy objectives and outcomes and the role of the different actors in implementing a landscape resilience policy. Expert assistance will be applied to draft policy options and lead workshops and consultations. The consultation process will be highly participatory and well documented. Draft policy options will be discussed and input incorporated into final drafts which will then be validated by national authorities.

94. GCF investments in support of this activity will consist of the following sub-activities:

    3.1.1 Ten workshops with expert assistance and input (international and national experts) and involving national stakeholders, including farmers to facilitate inter-institutional analyses and discussions regarding policy objectives, needs and options for the modification or reform of agricultural and land-use policy;
    3.1.2 Definition and discussion of institutional modifications or adaptations to support the different options for policy reforms for landscape resilience through improved ecosystem services;
    3.1.3 Development of specific proposals for policy reforms;
    3.1.4 Discussion and subsequent validation of reform proposals at national level.

Activity 3.2 Establish a Landscape Resilience Fund to support adoption and implementation of agroforestry, silvopastoral and forestry systems in support of landscape resilience through ecosystem service enhancement

GCF: 91,500 USD
MINAG: 551,192 USD

95. MINAG, with project support, will transform its Forestry Development Fund (FONADEF) and Soil Conservation Fund (SCF), as well as any other funds established to support land use and rural development, into a single Landscape Resilience Fund (LRF); no GCF funding will be used to capitalize the LRF. The purpose of the Landscape Resilience Fund will be to motivate, incentivize and otherwise support resilience-enhancing land use – particularly agroforestry, silvopastoral and forestry systems - by farmers and producers' organizations around the country, starting with the most vulnerable geographic areas. As such, the Landscape Resilience Fund (LRF) is intended to support on-the-ground implementation of landscape resilience policy (see Activity 3.1) by farmers. The LRF will be designed and legally established by the end of this project.

96. Transformation of FONADEF and SCF will initiate with expert analysis of their current funding scope, organization, financing, management and administration, and identification of strengths and weaknesses, lessons and best practice of these funds as well as others from around the world. At the same time, expert analysis will be carried out on the feasibility of a single Landscape Resilience Fund (LRF), identifying the necessary modifications, reforms and other steps required to transform FONADEF and SCF into a single funding mechanism. Experts and their institutional counterparts will identify potential legal requirements; governance and management arrangements; operational modalities; financing modalities; project eligibility criteria, review, approval and support processes; organizational structures for portfolio management, monitoring, evaluation and reporting and other decision making and management factors. A draft proposal for the LRF and its establishment and operationalization will be formulated.

97. As part of the LRF feasibility study, analysis will be undertaken on options for economic instruments to capitalize and sustain the fund, criteria for grants and loans, governance arrangements, integration with public policy priorities, and other topics. Experts and institutional counterparts will review existing experience in the region and globally and explore options for adoption and application of appropriate economic instruments. Proposals for the most efficient economic instruments will be drafted and submitted to national authorities with the proposal for the LRF. MINAG and other authorities, as appropriate, will discuss and debate the expert analysis and LRF study as prelude to establishment and operationalization of the Landscape Resilience Fund. With establishment of the LRF, MINAG will elaborate and carry out a communication strategy to generate interest by farmers throughout Cuba in the Fund and its objectives and to encourage their engagement with it.

98. It is anticipated that farmers and production units will use LRF funds to purchase inputs and services (e.g. land preparation, transport), storage, processing and value-addition facilities, breeding stock, tools, irrigation equipment and other essential elements of climate-resilient agricultural production and animal husbandry.

99. Workshops will be held with representatives of producers' organizations, Ministries, institutions, tourism industries to discuss on-the-ground implementation of the landscape resilience policy and what financial and technical and operational resources and support would be required. These workshops will generate support for and validate the LRF and landscape resilience policy.

100. The GCF will cover the costs of workshops and expert analyses and assistance, international exchanges to incorporate lessons learned from other governments and institutions, development of proposals for reforms to regulations, policies and planning; analyses of financial mechanisms and economic instruments to incentivize farmers to adopt and maintain resilience-enhancing practices and cropping systems, and development and execution of a communication strategy to engage farmers with the LRF. The Government of Cuba will provide discussion and working spaces for consulting experts and task forces and working groups, as well as logistical and organizational support.

101. GCF investments in support of this activity will consist of the following sub-activities:

3.2.1 Expert analyses of existing funds (FONADEF, SCF) and other funds both regionally and globally (current funding scope, organization, financing, management and administration, and identification of strengths and weaknesses, lessons and best practice);
3.2.2 Ten workshops to analyze and develop options for a Landscape Resilience Fund to support implementation of landscape resilience policies on the ground;
3.2.3 Design of a Landscape Resilience Fund to support resilience-enhancing land use by farmers and producers' organizations;
3.2.4 Formal legal establishment of the Landscape Resilience Fund (LRF)[53];
3.2.5 Elaboration of communication strategy and materials, and dissemination.

Activity 3.3 <u>Strengthen planning, governance and coordination at the landscape level in support of landscape resilience through enhancement of ecosystem services</u>

GCF: 41,500 USD
MINAG: ---------- USD

102. The purpose of this activity is to build the capacities of the different institutional and organizational stakeholders in the project areas to coordinate their support to farmers and producers' organizations for the implementation of the Landscape Resilience policy, as well as localized multi-stakeholder governance. This support will take the form of direct technical assistance, provision of inputs, aid in marketing produce, support to maintenance of machinery and equipment, enabling access to financing, as well as other factors. Interinstitutional coordination is essential to avoid duplication of efforts, stakeholder confusion and potential loss of beneficial synergies among landscape players. By coordinating their programming and on-the-ground efforts, institutions will be better able to contribute more efficiently and effectively to landscape resilience and producer productivity.

103. This project will train key organizations and farmers in the seven target municipalities to participate collaboratively in planning and decision-making processes that determine the management outcomes, outputs and activities in the production landscapes to enhance their climate resilience. Strengthening of governance mechanisms will also include development of

[53] The formal legal establishment of LRF is part of the project scope and will require the government endorsement/approval which will be granted through the publication of an Executive National Decree.

norms, agreements and organizational capacities for the collaborative management of areas targeted for restoration with the aim of augmenting the stability and sustainability of the management and use of water flows into, across and out of the landscape as a key element to enhancing its climate resilience.

104. Targeted organizations will have access to required modeling and visualization technologies to improve their analytical capacities, as well as the most effective tools and instruments for coordinated planning and management of landscape resources from farm to landscape level. These organizations are selected for their character of mass stakeholder organizations that represent different key constituencies at grassroots level both in the target areas, as well as nationally. The project will ensure that women and youth have equal opportunities to participate in the project activities[54]. The project aim at ensuring that their interests, concerns and perspectives are represented in these processes both individually as members of organizations, as well as collectively in women and youth organizations. Participating organizations include cooperatives and other producer's associations, entrepreneurship groups, youth groups, and women's groups, including the *Asociacion Cubana de Tecnicos Agricolas y Forestales (ACTAF)*, *Asociacion Cubana de Produccion Animal (ACPA), Asociacion Nacional de Agricultures Pequeños (ANAP),* and *Federaciòn de Mujeres Cubanas (FMC).* Experience accrued by these organizations during the project will contribute to country-wide replication of project technologies, methods and practices in phase three of this landscape resilience program.

105. While capacity development under Output 2 is aimed squarely at building technical capacities of farmers on the ground and the Ministry staff directly providing them services, capacities to be strengthened under this Output are intended to strengthen key organizations to support landscape resilience policy at municipal and provincial levels, including planning and programming. These capacities include technical and analytical skills to better understand the links between landscape resilience, ecosystem services and farming sustainability and productivity; pedagogic skills for extension of climate-resilience enhancing farming practices; logistical capacities to ensure institutional staff can meet farmers in the field; data and information management technologies so that monitoring and evaluation of performance with new practices can be credibly recorded and analyzed; and abilities of stakeholder groups at local level to participate in multi-stakeholder deliberations and decision making.

106. The project will also support multi-level review and analyses of existing landscape planning methodologies through inter-institutional collaborative teams (including ACTAF, ACCPA, ANAP, FMC, amongst others) and provincial discussion and debate forums, with the aim of integrating climate adaptation and mitigation principles and concerns into these instruments, including the prioritization of agroforestry/silvopastoral/ forestry systems for sustainable production and ecosystem service restoration. Institutional staff will train municipal environmental units, local development associations, and local communities to analyze, discuss and propose agreements and negotiated norms on the governance of natural resources at landscape level, including the protection of aquifer recharge areas, micro-watersheds and headwaters, and areas targeted for restoration.

107. GCF will cover the costs of development of strategies and local planning for resilience-enhancing land use management, integration of climate change principles into local plans and programs, and use of modeling and visualization technologies for coordinated planning and management of landscape resources. Government of Cuba resources will cover logistical and ongoing support to local organizations and institutional staff to participate in training workshops and forums.

108. GCF investments in support of this activity will consist of the following sub-activities:

3.3.1: Train 10 local branches of established organizations (*Asociacion Cubana de Tecnicos Agricolas y Forestales* - ACTAF, *Asociacion Cubana de Produccion Animal* - ACPA, *Asociacion Nacional de Agricultures Pequeños* -ANAP, and *Federaciòn de Mujeres Cubanas* - FMC) to participate effectively in local planning and decision-making for climate-resilience land use;

3.3.2 Multi-level review and analysis of landscape resilience policies and planning instruments as a framework for adaptive landscape management to enhance climate resilience and integration of CC adaptation principles into local plans and programs;

3.3.3 Fifteen workshops to strengthen coordination in local landscape governance structures for climate change adaptation: *Comision de Reforestacion, Grupo de Bahia, Comision de Cuencas Hidrograficas, Comision de Asuntos Agrarios; Grupos Provinciales y Municipales de Tarea Vida.*

109. In addition to the costs of the Outputs and Activities, the project includes a Project Management Unit:

GCF: 1,760,079 USD

[54] The project aim at ensuring women and youth participation in all activities proposed. For further information, please see Annex 8 on Gender Analysis and Action Plan as well as the Appendix 2.5 of the Feasibility Study which presents the Socio Economic Characterization of the PIA.

MINAG: 4,612,400 USD

110. Finally, some costs for Evaluation have been considered, including costs of an Impact Evaluation (for more details see Annex 11):

GCF: 562,000 USD
MINAG: 250,000 USD

B.4. Implementation arrangements

111. The governance of the project and the institutional arrangements reflected below are the result of an inter-ministerial dialogue facilitated by FAO, led by the Ministry of Agriculture (MINAG), which includes the Ministry of Science, Technology and Environment (CITMA), which is the GCF's National Designated Authority (NDA) in Cuba, and the Provincial Agricultural Delegations.

112. The government of Cuba, represented by MINAG, will act as the Executing Entity (EE) of the project, and FAO, as requested by the NDA (Annex 1), will serve as the Accredited Entity (AE) and as a Co-Executing Entity (CEE) responsible for the project financial and operational implementation[55]56.

113. As FAO functions as both AE and Co-EE, FAO will consequently separate both functions and establish the following:

- An appropriate institutional arrangement for the separation of both functions in different departments of FAO; and
- Clear lines of responsibility, reporting and accountability within FAO between project implementation and execution functions. This separation will help ensure the financial management and segregation of duties is maintained between: processing of payments, procurement processing, evaluation and monitoring, risk management and accounting.

114. FAO, in its role as AE, will be responsible for the overall management of this project, including (i) all aspects of project appraisal; (ii) administrative, financial and technical oversight and supervision throughout project implementation; (iii) ensuring funds are effectively managed to deliver results and achieve objectives; (iv) ensuring the quality of project monitoring, as well as the timeliness and quality of reporting to the GCF; and (v) project closure and evaluation. To perform the AE functions, FAO will set up a dedicated FAO-GCF project task force comprising relevant staff from the FAO Country Office in Cuba, the FAO Regional Office for Latin America in Chile, and FAO Headquarters in Rome (Appendix 2.7 FS). The project supervision team will remain independent of the Executing Entity functions also performed by FAO.

115. FAO, in its role as a EE, will set up a Project Operational Support and Financial Management Unit (OSFMU), which will be led by the FAO Representation of Cuba and will have the main function of supporting the National Project Management Unit (NPMU), providing procurement services and financial management services for the GCF proceeds. The OSFMU will be financed through the Project Management budget line of the project's overall budget.

116. A Project Agreement will be signed between FAO and MINAG as co-EE, which will be legally binding and detail the roles and responsibilities of FAO, CITMA, MINCEX, and MINAG, and contain the relevant provisions for the compliance by FAO with the requirements from the Accreditation Master Agreement (AMA*) and Funded Activity Agreement (FAA). The Project Agreement will also contain provisions on the applicability of the Convention on the Privileges and Immunities of the Specialized Agencies (the "the Specialized Agencies Convention") to FAO, including to the GCF Proceeds held by FAO.

Project Governance Structure

117. For the governance and strategic decisions of the project, a National Project Steering Committee (NEC) will be established, composed of Ministers from MINCEX, CITMA, MINAG and the FAO representative in Cuba. The NC will be chaired by MINAG.

118. The main function of the NEC is to coordinate, guide and provide political and strategic guidance for the implementation of the project, as well as to ensure strong inter-institutional coordination. It will also ensure that planned co-financing from government entities is delivered in a timely manner, verify and approve annual work plans, and approve Financial and Technical Reports (IFTs).

119. Project governance also includes a Project Coordination Committee (PCC) composed of the National Project Director, technical representatives from MINAG and FAO, and the National Project Coordinator (NPC). The PCC will serve as a key communication channel between the National Project Management Unit (NPMU) and key local stakeholders and will assist

[55] The cost of salaries and benefits of all government officials, in whichever capacity associated with the project, will be provided as co-financing by the Government Executing Entity. The government recognizes the key importance of the project implementation and they will therefore ensure the mobilization of the human resources to focus on the project activities.

in the implementation of the stakeholder participation plan. The PCC will be accompanied by national technical and scientific institutions (extensionists, academia) and provincial coordinators.

Project Implementation Structure

120. For project implementation, a government-funded National Project Management Unit (NPMU) will be established with the primary function of ensuring project coordination and execution through the effective implementation of annual work plans, following the guidelines of the NEC and PCC. The NPMU reports to the PCC, and will be led by the NPC. The NPC will be selected by MINAG, in consultation with FAO.

121. The NPMU will establish three Provincial Project Management Units (PPMU- Las Tunas, Villa Clara and Matanzas/Los Arabos) to ensure sound implementation at the local level (provincial). Each PPMU will have a Provincial Coordinator, a Logistics and Training Assistant and an Administrative Assistant. The PPMU will be advised by a Provincial Project Coordinating Committee (PPCC)- represented by the provintial delegetaions of MINAG, CITMA, National Association of Small Farmers, Council of the Provincial Administration, Council of the Municipal Administration and academic and scientific institutions (more details in Appendix 2.7 FS)- who will guarantee the effectiveness of the actions at the provincial level, in terms of planning, coordination, implementation and evaluation of the processes required as part of the project.

122. In addition, the NPMU will establish seven Municipal Project Management Units (MPMU) to ensure solid implementation at the municipal level. Each MPMU will have a Municipal Coordinator, a Logistics and Training Assistant and an Administration Assistant. The MPMU will be advised by a Municipal Project Coordinating Committee (MPCC), which will guarantee the effectiveness of actions at the municipal level and promote a fluid exchange of information for decision making.

123. The provincial coordinators of Las Tunas, Villa Clara and Matanzas will be the link with the seven municipal coordinators and will promote a fluid exchange of information and decision making at two specific levels of management and articulation: territorial/national. Staff from the provincial and municipal units will be financed by the government and will report to the NPMU.

124. A description of the governance and implementation units' functions/responsibilities can be found in Appendix 7 of the Feasibility Study. The governance and implementation structure of the project is shown in figure 3.

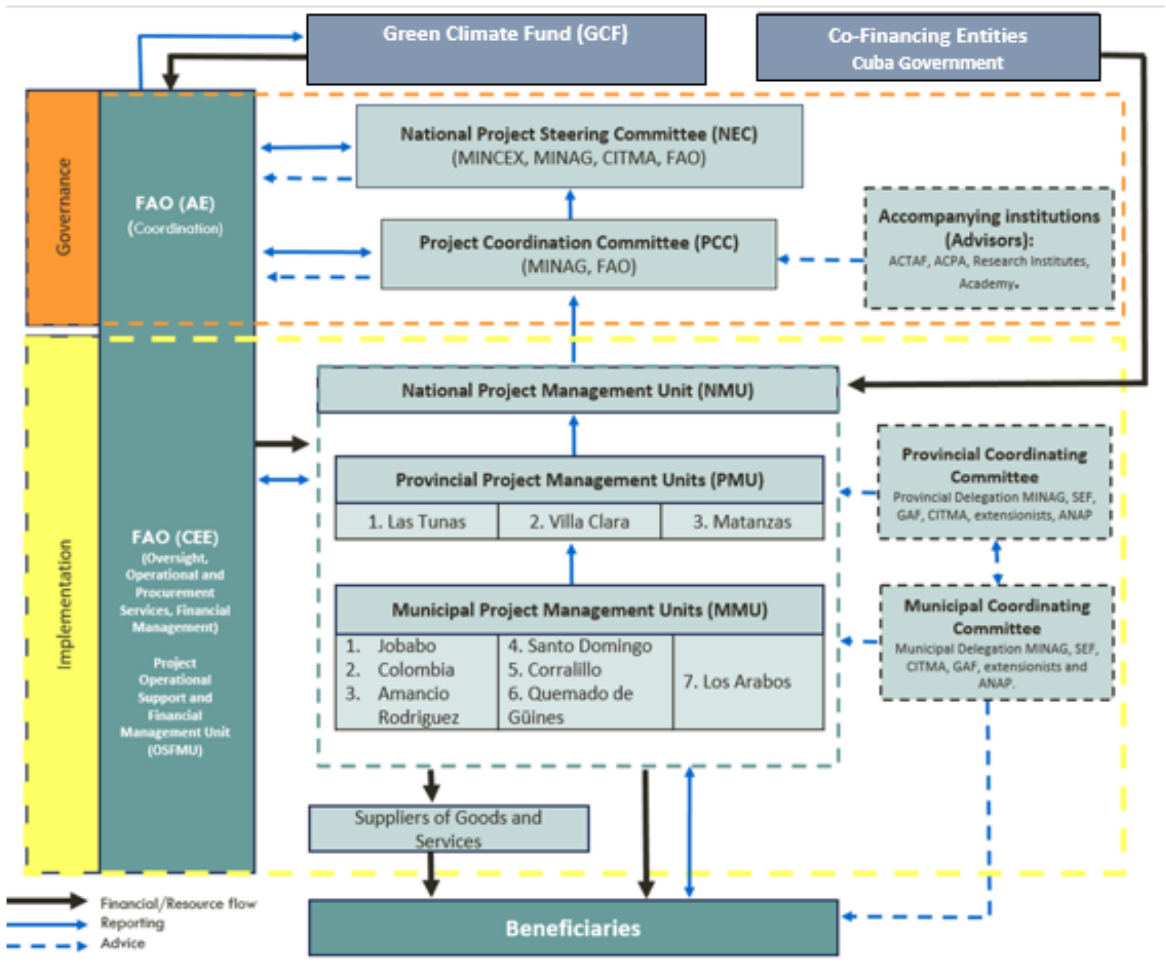


Figure 3. Governance and Implementation Structure of the IRES Cuba Project.

Collaborating Institutions

125. The **Ministry of Science, Technology and Environment (CITMA)** has the mission of directing, executing and controlling State and Government policy in the areas of science, technology and environment; promoting the coherent integration of these to contribute to the sustainable development of the country. It is the National Authority Designated by Cuba for the Green Climate Fund. CITMA will be part of the National Project Steering Committee (NSC), according to its functions as the governing body, facilitating knowledge management processes and compliance with environmental regulations. CITMA will manage the application and development of scientific knowledge, technological innovation and environmental protection in the process of sustainable agricultural development, promoting actions to adapt to climate change. This Institution has provincial delegations and a representation at the municipal level.

126. The **Ministry of Agriculture (MINAG)** is in charge of proposing and implementing the policy on the use, tenure and sustainable exploitation of the country's agricultural surface; agricultural and forestry production for the satisfaction of the food needs of the population, industry and export. In addition, it regulates and controls local administrations in terms of their competence, directly or through the structures of provincial and municipal delegations. It generates learning and technology, and coordinates the exchange of information and decision-making. The MINAG is the counterpart of the Cuban government for the project, will be part of the National Project Steering Committee (NSC) and will act as the Project's EE.

127. The **Ministry of Foreign Trade and Investment (MINCEX)** is the body of the Central State Administration whose mission is to propose, direct and control the application of State and Government policies on foreign trade, foreign investment and international cooperation. Is an important counterpart from the Government for the project. The Ministry doesn't have municipal representation, but they have provincial instances with which close cooperation and exchange will be maintained to establish links that facilitate the good management of the Project in accordance with what is established by the norms,

regulations and laws related to international cooperation. They will be in charge of the governance of the project through the National Project Steering Committee (NSC).

128. The **Cuban Association of Animal Production (ACPA)** is a national organization with vast experience in animal diversification, animal feed and genetics for breed improvement. It's role in the project will be training and extension (specialized knowledge), participating in learning teams and in the FFS. It has grassroots associations in the provinces and municipalities of the country. They will act as advisors to the Project Coordination Committee (PCC).

129. The **Cuban Association of Agricultural and Forestry Technicians (ACTAF)** is a national Association that facilitates ways to build models of sustainable agrarian systems. It has a work structure organized in branches in all the provinces. It is considered a key actor for the proposal due to its experience in working with local actors of agricultural development and the promotion of agro ecological alternatives in Cuban agroforestry systems. They will act as advisors to the Project Coordination Committee (PCC).

130. The **National Association of Small Producers (ANAP)** encompasses local producers' associations and is considered a key ally for the project in project municipalities because it reflects the views and perspectives of local producers. They will contribute to the further development of Cuba's Agroecological Movement through farmer-to-farmer communication and dissemination of project-generated best practice. ANAP also has extensive experience in gender analysis and programming for women's empowerment and will collaborate with the project in delivering the gender action plan. ANAP will facilitate Project implementation in relation to farm planning and management of agroforestry, silvopastoral and forestry systems. ANAP will form part of the PPCC and the MPCC of the project.

131. **Academic and scientific institutions** will provide accompaniment and scientific-technical support and training in the implementation of the project. They will work as part of the agrarian extension system. Some of them are: The Central University of Las Villas and the University of Las Tunas have Municipal University Centers; the Tropical Viandas Research Institute (INIVIT), which is the main extension institution, located in one of the AIP (Villa Clara Province, Santo Domingo municipality); the Agricultural Engineering Research Institute (IAgric), that has branches in the provinces where the project will be implemented; The Tropical Fruit Research Institute (IIFT) and the Research Center for Animal Improvement and Tropical Livestock (CIMAGT) do not have offices at the municipal level, but their researchers and technicians will join the extension work in the AIP. Researchers, professors, specialists and technicians from other institutions may participate in the implementation of the Project at the local level, integrating with the teams in each municipality.

Flow of Funds

132. At the request of the Government of Cuba, FAO will be the financial and operational executor of GCF resources, including financial management, procurement of goods and contracting of services (through OSFMU). Each year, FAO will present an annual work plan and budget that will include a procurement plan. The PCC together with the NEC will validate and approve the annual work plan, procurement plan, and budget. FAO will be responsible for the disbursement of funds according to established conventions, norms and standards.

B.5. Justification for GCF funding request

133. Cuba is unable to cover the incremental costs of adapting to climate change in light of the serious barriers it has historically faced in accessing international financing and the necessary technologies and equipment to build the climate resilience of its productive sectors. External financial support to meet the incremental costs of managing climate risks and impacts is absolutely essential, particularly as Cuba's climate vulnerability continues to increase in high priority sectors such as agriculture. The Government of Cuba requests maximum concessionality to support vulnerable farmers to adapt to increasing rainfall variability – including greater numbers and intensities of hurricanes and tropical storms - and drought attributed to climate change. Cuba is currently unable to access loans from multilateral lending institutions, making concessional grants the only option for financing to overcome barriers related to water security undermined by climate change. Fiscal limitations currently hinder the potential for investments to meet the additional costs of building resilience of agricultural production systems. Costs of effective adaptation to climate change will only rise with delay in action and investment.

134. Cuba has coped with these ongoing impediments to investment in equipment and technology by building its capacities for knowledge generation, institutional expertise, and innovation as much as possible under intense economic pressure. Nevertheless, additional investment is urgently needed to cover the costs of building the capacities of farmers and producers'

organizations and their support institutions. This would allow them to understand and act on climate change adaptation in the production landscape, optimize ecosystem services, develop and refine resilience-enhancing agricultural production models, and enhance farm and business planning to generate the revenue required for continued investment in adaptive responses to climate change. This additional investment in institutional and producer capacities is, in and of itself, insufficient to fully meet the challenges posed by increasing climate vulnerability. The primary limiting factor in adapting to climate change in Cuba is the lack of the necessary technologies and equipment that, when applied appropriately, will release Cuba's adaptive potential and well-known capacity for innovation in agriculture.

135. Farmers and producers' organizations in the two provinces are unable access sufficient financial resources required to invest in the resilience of their agricultural production systems. Government financial support, while steady, is insufficient to meet investment needs, particularly in relation to the activities required for enhancement of ecosystem services and landscape resilience. The climate-driven pace of infestation by marabu, an aggressive invasive species which has taken over thousands of hectares of once productive farm land, easily overwhelms the ability of the Government to provide the technologies and equipment needed to eradicate it in a timely, cost effective manner. Water security is a fundamental need in agricultural adaptation to climate-induced drought – water storage and irrigation systems are urgently needed to enable establishment of resilience-enhancing agricultural systems.

136. While annual government investment places a heavy emphasis on developing and maintaining human capital, institutional staff and farmers lack a state-of-the-art understanding of climate change and production landscape vulnerability in Cuba, the scientific basis for emerging climate risk, and needed climate adaptation and mitigation options regarding agroecosystems, including livestock systems. With increasing climate change-driven rainfall variability, institutional staff and farmers need to understand the fundamental relationship between ecosystem services – particularly water regulation – climate change, and land degradation, disaster risk and loss of productivity. As such, GCF resources will be used in the project to build the technical and farm management capacities of farmers and producers' organizations, as well as build the capacities of institutional and technical staff to plan for climate risk mitigation and manage landscape resources accordingly.

137. This project represents a second phase of a three-phased program to ensure the climate resilience of the agricultural sector in Cuba. Through investment in the first phase, the Ministry of Agriculture (MINAG) analyzed the current cropping systems and their agronomic vulnerability to climate hazards related to increasing rainfall variability. MINAG further analyzed the relationship to ecosystem services in this context and opted for a strategy of stabilizing and increasing productivity while simultaneously reducing climate risk, primarily through the development of more climate-resilient agro-ecosystems. With increasing variability of rainfall, including drought and torrential rains, MINAG concluded that resilient agroecosystems should be based on agroforestry and silvopastoral systems, in which trees provide long-term if not quasi permanent ground cover, improve soil porosity, protect the soil against raindrop impact, and act to recycle nutrients back to the soil surface through leaf fall – these benefits affect water regulation by increasing the ability of soils to allow penetration of water by slowing its flow across the soil surface, reducing rainfall impact on the soil surface, and improving organic matter content and coverage of the soil's top layer. Different agroforestry and silvopastoral options were developed, tested and evaluated, with the six listed in this proposal selected for up-scaling to the two project areas of the country, broadly representative of climatic conditions in key areas of the main island of Cuba (see Appendix 6 of the Feasibility Study).

138. GCF investment in this second phase – up-scaling of six tested agroforestry and silvopastoral systems in vulnerable farms and production enterprises – will provide direct resilience benefits to 30,912 farmer families in the two regions. At the same time, the knowledge generated and institutional capacities built during this phase, including the transformation of the Forestry Development and Soil Conservation Funds into a single Landscape Resilience Fund to finance landscape resilience policy, will provide a solid foundation for the third phase of countrywide up-scaling of the agroforestry and silvopastoral systems, as well as water use efficiency measures. In this sense, investment in phase two can also be considered a pre-investment in phase three leading to national scale benefits.

139. Investing in up-scaling of tested, innovative agroforestry systems will generate a number of other benefits impacting the current baseline of climate vulnerability by allowing for the production and sale of marketable climate-resilient crops. This will result in improved food security through the state system of food distribution, as well as increased farmer income from sales in local farmers' markets or through contracts with tourism entities. Investing in water storage and irrigation will enable farmers to produce climate-resilient crops using highly efficient technologies that maximize water productivity. Access to water resources is a critical factor in scenarios of increasing drought and dry periods. By enhancing water storage and ensuring the adoption and implementation of climate-resilient agroforestry and silvopastoral systems, GCF investment will play a critical role in assisting vulnerable farmers to strengthen their adaptive capacity.

140. At the same time, by investing in agroforestry, silvopastoral and forestry systems, this project will generate significant carbon benefits. Trees and bushes integrated into agricultural production, together with the corresponding effects on soil organic matter of reduced tillage, increased organic inputs from leaf litter, roots, will store increasing amounts of carbon (see section D.1. Impact Potential, below and Appendix 2.3 of FS).

141. This project will use incremental finance in the form of GCF grant resources to deliver direct resilience benefits to farmers and producers' organizations, increasing the effectiveness of and maximizing returns on government investments in knowledge generation, capacity development and innovation, and setting the stage for cost-effective countrywide up-scaling of climate-resilient agroforestry, silvopastoral and forestry systems. Women and youth are expected to benefit significantly from a specific emphasis on their inclusion and building their capacities to manage climate-resilient agricultural production. In the absence of GCF resources these farmers would be unable to benefit from water security measures or establishment of resilient agro-ecosystems.

142. In shifting the prevailing agricultural paradigm from yield maximization to agro-ecosystem resilience, sustainability and productivity to mitigate increasing climate vulnerability, the project will combine investments in water supply and irrigation, agroforestry, silvopastoral and forestry systems, and farmer and institutional capacity strengthening for climate risk management. Other funding sources are unavailable, in part because the project goes beyond the scope of their eligibility criteria and in part given the volume of resources needed to adequately address the problem. However, lessons learned from the previous GEF-funded initiative on invasive species have been incorporated into the design of this proposal, particularly with regard to marabú, and coordination with current and new GEF initiatives has been planned and agreed. The funding requested from the GCF is therefore crucial to address existing resource and technology gaps and to achieve the necessary paradigm shift to increase resilience of production landscapes and ecosystem services.

B.6. Exit strategy and sustainability

Government commitment and institutional capacities

143. This project enjoys strong government commitment as it is originated directly from government policies for climate change adaptation and mitigation. It is also fully aligned with Ministry of Agriculture strategies for agricultural development through extension and technical assistance, infrastructure development, and provision of equipment, inputs and other goods and services. This project will train the Ministry's agricultural extensionists to support farmers in establishing and operating agroforestry, silvopastoral and forestry systems, application of water efficient technologies, climate-resilient agricultural practices and cropping systems, and farm business planning. The project will build the capacities of producers' organizations to support extension activities related to agroforestry and silvopastoral systems and ecosystem services, particularly through Farmer-to-Farmer extension of climate-resilient agricultural and agroforestry practices.

144. The government has committed to the establishment of a Landscape Resilience Fund (LRF)[57] to directly support farmers with financial resources to implement business plans that produce products from resilience-enhancing cropping systems. The project will train LRF staff in analysis and support to the development of farm enterprise business plans. Funding will be provided for specific farmer initiatives originating in and supporting these plans. This project will identify economic instruments for use in generating the financial resources required to capitalize the LRF on a continuous basis, particularly within the context of phase three (countrywide up-scaling of agroforestry, silvopastoral and forestry systems).

145. The Cuban government will be responsible for Operations and Maintenance after project termination of equipment and machinery required for land preparation and crop and livestock protection. The GoC's Base Enterprise Units for Integrated Technical Services will be the entities charged with O&M. O&M will be subsidized by fiscal resources supplied through standard budgetary processes. Technical, planning, management and other capacities of key institutions like the Ministry of Agriculture are highly regarded and are the result of government prioritization of the agricultural sector for decades, resulting in highly competent and skilled extensionists and other support staff.

Capacity building of farmers to sustain climate resilient cropping systems

146. Farmers will receive training within the Ministry's formal capacity building structure of Farmer Field Schools, demonstration plots, research stations, comprehensive training-and-visit extension system, and links to academic and other experts. The project's capacity building program will ensure that farmers receive in-depth training and support on and off-site, including Farmer-to-Farmer exchanges and through training-and-visit approaches. Farmers will be motivated to participate in training by the prospect of acquiring new skills that will enable them to increase yields, secure and implement institutional contracts

[57] Note that no GCF funds will be used to capitalize the Landscape Resilience Fund.

for agricultural products, and successfully market surpluses in the growing variety of supply-and-demand markets, particularly the tourism market.

Access to financing and markets

147. Effective value chains provide a fundamental incentive to drive and support the adoption of climate-resilient agroforestry and silvopastoral systems, crops and practices. Producer participation in these value chains requires access to funding as well as markets. With co-financing from GoC, this project will support producers to access state markets through production contracts, as well as the increasing number of other markets, including supply-and-demand markets and direct sales to tourism entities. In particular, the GoC will establish a Landscape Resilience Fund by combining the National Forestry Development Fund (FONADEF) and Soil Conservation Fund (SCF) to finance value chain enhancement and coordination, including production improvements, value addition and commercialization to specific markets (e.g. tourism enterprises).

148. GCF will finance the sub-activities and inputs focused on the development of climate-resilient agroforestry systems. GCF will also support institutional coordination and planning processes that bring together the different value chain actors – producers, input providers, buyers, – to more efficiently coordinate their activities in support of climate-resilient value chain development.

149. The project will build the capacities of farmers by providing them with the knowledge, information, and access to critical equipment and technologies to reduce their climate risk and enable them to generate revenue for continual re-investment in resilience-enhancing production practices and systems. The project will train farmers to plan and manage their production assets with a value chain approach to climate-resilient crop production in agroforestry systems.

Operations and Maintenance and post-project O&M[58]

150. The O&M of the project for established infrastructure and technologies will be carried out through a hub-centered system managed by the Government of Cuba involving the UEBIST (Base Enterprise Units for Integrated Technical Services). The UEBIST offer services of mechanization to the agricultural entities in their resident municipality as well as repair and maintenance of agricultural machinery, irrigation equipment and vehicles. O&M of equipment and technologies will be managed in these hubs for a specific set of farm enterprises to achieve economies of scale and maximum efficiency in their use.

151. O&M will be focused on Output 1 of the Logical Framework: *Increased CC-resilient production landscapes through investment in innovative agroforestry systems, reforestation with close-to-nature planted forests (CTNPFs) and assisted natural forest regeneration* and specifically activities 1.1 – 1.2 involving establishment of agroforestry systems and planted forests. O&M for each of these activities is focused on specific technologies and equipment for land clearance, marabu eradication, soil preparation, and irrigation and comprises maintenance protocols, operational procedures and scheduled monitoring of use and repairs (please see Annex 20 for description of O&M).

152. The operation and maintenance (O&M) costs for the life of the project implementation (7 years) is US$9,189,682.9. Of this, US$7,972,374 represent Operation costs that will be entirely financed by the Cuban Government. Maintenance costs represents US$1,217,308.68 of which FVC will finance US$1,095,102, and the Government of Cuba finances US$122,206. During project implementation, the FVC contributes with 13% and the Government of Cuba with 87% of O&M total cost. The Operational (O) and Maintenance (M) Costs for the post-implementation project phase (13 years) is US$12,690,334 (US$11,040,590- Operational Costs (O) and US$1,649,744 de Maintenance. The O&P costs will be entirely financed by the Government of Cuba. Further details about O&M are provided in Annex 20.

153. Farmers and producers' organizations will be fully responsible for maintaining farm-level tools and equipment provided by the project, with technical guidance, assistance and training from MINAG staff. Future farmer investments in O&M will be enabled through small farm business planning, resulting in enhanced income generation from sales of surplus yields to institutions and supply-and-demand markets.

[58] Please see Annex 20 for more detail.

C. FINANCING INFORMATION

C.1. Total financing

(a) Requested GCF funding (i + ii + iii + iv + v + vi + vii)		Total amount		Currency	
		38.207		million USD ($)	
GCF financial instrument		**Amount**	**Tenor**	**Grace period**	**Pricing**
(i)	Senior loans	NA	Enter years	Enter years	Enter %
(ii)	Subordinated loans	NA	Enter years	Enter years	Enter %
(iii)	Equity	NA			Enter % equity return
(iv)	Guarantees	NA	Enter years		
(v)	Reimbursable grants	NA			
(vi)	Grants	38.207			
(vii)	Result-based payments	NA			

(b) Co-financing information[59]	Total amount		Currency			
	81.707		million USD ($)			
Name of institution	**Financial instrument**	**Amount**	**Currency**	**Tenor & grace**	**Pricing**	**Seniority**
MINAG	Grant	23,220,250	million USD ($)	Enter years Enter years	Enter%	Options
MINAG	In kind	58,487,143	Options	Enter years Enter years	Enter%	Options
Click here to enter text.	Options	Enter amount	Options	Enter years Enter years	Enter%	Options
Click here to enter text.	Options	Enter amount	Options	Enter years Enter years	Enter%	Options

(c) Total financing (c) = (a)+(b)	Amount	Currency
	119.914	million USD ($)

(d) Other financing arrangements and contributions (max 0.5 page)	.

[59] MINAG contribution will be in the form of a cash grant and in-kind support. FAO applies the official UN exchange rate set on a monthly basis by the UN Treasury – this exchange rate is currently set at $1 USD to $1 Cuban Peso.

C

C.2. Financing by Component

Components	Output	Activity	Indicative cost million USD ($)	GCF financing		Co-financing		
				Amount million USD ($)	Financial Instrument	Amount million USD ($)	Financial Instrument	Name of Institutions
Component 1: Climate reslient agricultural systems	**Output 1:** Increased CC-resilient production landscapes through investment in innovative agroforestry and silvopastoral systems, reforestation with close-to-nature planted forests (CTNPFs) and assisted natural forest regeneration	1.1 Restore approximately 15,544 ha of farmland from marabu, and increase CC-resilience through sustainable agroforestry (AF), CTNPFs and assisted natural regeneration (mitigation co-benefit 833,950.60 million tCO2-eq. in 7 years of implementation)	59.354	20.513	Grants	38.841	Grants	MINAG
		1.2 Restore approximately 20,189 ha of rangeland with compacted soils and increase CC-resilience through improved silvopastoral systems (mitigation net co-benefit 381,311.51 million t CO2eq in 7 years of implementation).	51.604	14.151	Grants	37.453	Grants	MINAG
Component 2: Strengthened institutional and technical capacities	**Output 2:** Strengthened institutional and farmer capacities to improve ecosystem services through agroforestry and forestry systems and enhance the climate-resilience of production landscapes	2.1 Increase institutional capacities to support farmers and producers' organizations to establish and maintain agroforestry, silvopastoral and forestry systems for improved ecosystem services	0.108	0.108	Grants	00.00	Choose an item.	n/a
		2.2 Train agricultural producers to collectively revitalize and manage landscape resources through climate resilience-enhancing agroforestry, silvopastoral and forestry systems for gender-equitable agricultural production and ecosystem services	0.719	0.719	Grants	00.00	Choose an item.	n/a
Component 3: Strengthened governance, legal	**Output 3**: Effective governance to support climate resilience-enhancing production	3.1 Develop, discuss and analyze options for policy reforms to support implementation of agroforestry, silvopastoral and forestry systems for	0.261	0.261	Grants	00.00	Choose an item.	n/a

and regulatory framework	systems and ecosystem services	landscape resilience through improved ecosystem services			C			
		3.2 Establish a Landscape Resilience Fund to support adoption and implementation of agroforestry, silvopastoral and forestry systems in support of landscape resilience through ecosystem service enhancement	0.643	0.092	Grants	0.551	Grants	MINAG
		3.3 Strengthen planning, governance and coordination at the landscape level in support of landscape resilience through enhancement of ecosystem services	0.042	0.042	Grants	00.00	Choose an item.	MINAG
	Project Management Costs		6.372	1.760	Grants	4.612	Grants	MINAG
	Evaluation (includes cost of an impact evaluation)		0.812	0.562	Grants	0.250	Grants	MINAG
	Indicative total cost (USD)		**119.914**	**38.207**		**81.707**		

C.3 Capacity building and technology development/transfer	
C.3.1 Does GCF financing fund capacity building activities?	Yes ☒ No ☐
C.3.2. Does GCF financing fund technology development/transfer?	Yes ☒ No ☐

154. Over past decades, Cuba has strengthened the generation of knowledge, capacity building of institutions, production enterprises and technical staff, and innovation in the agricultural sector to mitigate the difficulties in accessing international finance and in obtaining the requisite equipment and technology to effectively adapt to climate change. While institutional and technical capacities are considered by FAO to be relatively high, farmers and producers' organizations, as well as institutional staff, will benefit from training to acquire a state-of-the-art understanding of climate change and vulnerability in relation to Cuban agroecosystems, including livestock systems, and the scientific basis for emerging climate risk management and climate adaptation/mitigation options. With increasing climate-driven rainfall variability, institutional staff and farmers need to understand the fundamental relationship between climate change, ecosystem services – particularly water regulation – and land degradation, disaster risk and progressive loss of productivity.

155. As such, GCF resources will be used in the project to train farmers and producers' organizations as well as institutional and technical staff to plan for climate risk mitigation and adaptation and manage landscape resources, specifically operations and maintenance of agroforestry and silvopastoral systems. To establish agroforestry, silvopastoral and forestry systems effectively under Outcome 1, particular land preparation is required: land must be cleared of invasive marabu, conservation tillage effected, sub-soiling to ensure root as well as water penetration, saplings planted, etc. While agroforestry and silvopastoral systems, once established, are reasonably low technology systems to operate, land preparation requires technology and equipment that can be used efficiently to prepare land without augmenting carbon emissions or land degradation. Minimal logistical and other equipment is required to ensure adequate and timely institutional support to farmers and producers' organizations. Since marabu removal and land preparation machinery are to be centrally managed by the UEBs (Base Enterprise Units) in the project areas, their staff will receive intensive training in machinery operations and maintenance.

156. While the bulk of GCF funding is requested for technology and equipment, given historical obstacles to accessing international funding sources, a portion is solicited for capacity development under Output 2. Given the already considerable capacities of the Ministry of Agriculture (MINAG) and other institutions, the technology and equipment requested here will allow the project to unlock and galvanize MINAG's existing potential for innovation and adaptation to climate change. Farmers and producers' organizations will receive training through their participation in 17 Farmer Field Schools located in the project areas. The project will build their capacities to understand and implement no-till cultivation, inter-cropping, cut-and-carry forage feeding, sub-soiling, soil conservation with gabions, gully plugs, bunds, and contour farming, marabu eradication and management, agroforestry and silvopastoral system design and maintenance, application of efficient irrigation technologies, and water harvesting and storage systems among others.

157. Under Output 3, the project will ensure that government officials from key Ministries and Provincial and Municipal authorities build their capacities through their participation in analysis and discussion on climate change vulnerability, adaptation measures, ecosystem services, agricultural ecosystems and productivity, and land use regulations, legislation and policies. A subset of these officials will build their capacities through the analysis and discussion of economic instruments and financial mechanisms in general and their potential application in Cuba to capitalization and operations of the Landscape Resilience Fund.

D. EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA

D.1. Impact potential

158. The project directly contributes to **GCF Fund Level impact areas** of (A1.0) *increased resilience and enhanced livelihoods of the most vulnerable people, communities, and regions;* (A4.0) *Improved resilience of ecosystems and ecosystem services;* and *(M4.0) Reduced emissions from land use, reforestation, reduced deforestation, and through sustainable forest management and conservation and enhancement of forest carbon stocks* of approximately 2,675,727 t CO2 eq over twenty years.

159. The project will reduce climate change vulnerability for farmers and producers' organizations by improving ecosystem services, primarily water regulation, in two vulnerable regions of Cuba through integration of trees and bushes into agricultural production landscapes. The project will take a three-pronged approach: 1) removal of invasive marabu from farmland, where needed, sub-soiling of compacted soils to break up hardpans, and establishment of agroforestry, silvopastoral and forestry systems (close-to-nature planted forests and assisted natural regeneration) based on a previous phase of research and development carried out by the Ministry of Agriculture and related institutes; 2) training of institutional staff and lead farmers to plan, manage and operate agroforestry, silvopastoral and forestry systems, including learning how to access Cuba's diversity of markets; and 3) improving governance to support climate resilience-enhancing production systems and ecosystem services by transforming policy instruments and incentive mechanisms to motivate adoption and implementation of agroforestry, silvopastoral and forestry systems for climate change adaptation and mitigation, as well as strengthening local planning, governance and coordination in support of climate resilient production systems and restoration of ecosystem services.

160. By strengthening the capacity of farmers to adopt and apply these innovations and access markets, vulnerable farmers, including women farmers and youth will not only increase their food security but also their incomes. Increased incomes will provide farmers with the means to re-invest in resilience-enhancing agricultural practices and systems and keep pace with ongoing climate change. The project will directly benefit women farmers and men through equal opportunities for training in resilience-enhancing agricultural practices and cropping systems as well as agroecosystem planning and management in response to rainfall variability and drought.

161. Overall, 51,713 people or approximately 30% of the total population in climate-vulnerable areas of Las Tunas and Villa Clara/Matanzas provinces will benefit directly from project interventions that build resilience through restoration of ecosystem services. The project will provide indirect benefits to 240,117 people in communities around the target areas through strengthened institutional capacities for training and technical assistance, enhanced agro-ecosystem management, and widespread dissemination of lessons and best practices in climate-resilient agriculture. These figures also include institutional staff at local, municipal and provincial levels who will benefit indirectly from improved information, institutional capacities and knowledge management. For more detail on how beneficiary numbers were calculated, please see Section 1.4 of the Feasibility Study titled *Description of profiles of target beneficiaries*.

162. Specifically:

- 15,549 farmers (3,123 women heads of household)[60] on areas averaging 2.3 ha per farmer will have the capacity to manage agroforestry, silvopastoral and forestry systems to cope with rainfall variability and drought (direct beneficiaries represent 51,098 people as the average number of people per household is 3.2).
- 443 agricultural extension workers and staff of the Ministry of Agriculture, including extension-service technicians, agricultural technicians, and cooperative leaders/administrators, as well as 142 machinery operators will benefit from increased skills in training and technical assistance and improved capacities for agro-ecosystem planning and implementation of resilience-enhancing solutions.

163. The project will invest in risk reduction strategies for the targeted stakeholders by increasing their productivity and stabilizing their agricultural production by mitigating the climate vulnerability of agroecosystems and broader ecosystem services.

[60] See FS Annex 2, Table 25a, p.64.

Innovative agroecological practices and agroforestry and silvopastoral systems will increase, stabilize and sustain yields while enhancing the climate-resilience of their agroecosystems. Yield surpluses will be sold on contract to institutions or in the supply-and-demand market, and with the profits, farmers will re-invest in reducing or managing their climate vulnerability by improving, maintaining and sustaining the climate resilience of their production assets.

164. The project, through Activity 2.1, builds the technical capacities of MINAG to assess climate risks and vulnerabilities, identify options to build resilience of agroecosystems and identify innovations for climate-risk informed agricultural development. The project will also integrate gender and climate change concerns across policies and programs for resilience-enhancing agricultural development.

165. Impact potential beyond the project lifetime will be catalysed through investments in knowledge codification and dissemination; development and strengthening of FFS to build adaptive farmer capacities; and development of policies, regulatory frameworks and financial mechanisms that enable further dissemination and replication of agroforestry, silvopastoral and forestry systems countrywide in a third phase.

166. The project will also produce significant mitigation benefits through the integration of trees and bushes into production systems. With implementation of this project, approximately 2,675,727t CO^2_{eq} tonnes of CO^2_{eq} will be sequestered over a 20-year period (please see Section 5.5 of the Feasibility Study for details).

D.2. Paradigm shift potential

167. This project will shift the prevailing paradigm of production maximization to one of production systems that enhance climate resilience of production landscapes through the promotion of agroforestry, silvopastoral and forestry systems as climate-resilient production systems, supported by stronger institutions and a purpose-built financial mechanism. The current paradigm does not consider climate vulnerability or evolving and projected climate risk, nor does it consider the importance of optimizing ecosystem services for climate resilience of vulnerable households at landscape level. As a result, institutional staff and producers are not equipped to address climate risk in planning and managing crop and livestock production. Financing and other incentives to adopt resilience-enhancing practices and systems are also weak. Women, in particular, generally receive less attention and support although they make up an increasing share of the producers in vulnerable areas, for example, of the 18,614 members of agricultural cooperatives in the project areas, 15% are women, and of the 4,000 employees of the 40 state companies in these areas, 25 % are women.

168. The project will enable farmers individually and collectively to plan and manage production systems that enhance ecosystem services and reduce vulnerability and climate risk. Farmers will receive concerted technical support and training from institutional staff to strengthen their understanding of ecosystem function/services in production landscapes, the relation of these to climate risk management, and practical application of this knowledge and development of the required skills to establish and manage agroforestry, silvopastoral and forestry systems to enhance landscape climate resilience. A specific funding mechanism – a Landscape Resilience Fund - will be established to support farmers and producers' organizations with the resources required to invest in and implement resilience-enhancing approaches, light irrigation and storage infrastructure, productivity-enhancing equipment and technologies, and value-addition enterprises and activities. Women will receive targeted training, access to subsidies and grants, and value-addition and marketing support. This Fund will result from the transformation of the current Forestry Development and Soil Conservation Funds of the Ministry of Agriculture and potentially include new fiscal and economic instruments and other sources of finance.

Potential for scaling up and replication

169. Cuba has chosen to improve ecosystem services in production landscapes aimed primarily at water regulation to enhance and sustain diversified agricultural production without land degradation to adapt to CC. ***In a first phase***, the Ministry of Agriculture supported research into optimal agroforestry and forestry systems for wetter and drier areas of Cuba, including coastal zones and upland watershed areas, and identified and tested a number of options. The six modules designed and tested in this first phase are proposed for initial up-scaling in this project ***– the second phase*** - in two regions in the provinces of Las Tunas and Villa Clara/Matanzas, which are representative of prevailing climatic conditions across the island and of increasingly vulnerable populations. By implementing these modules at the selected project locations with selected

stakeholders[61] in this second phase, the project will reduce climate risk for vulnerable producers, enhance production landscape resilience, increase producers' and institutional capacity to manage climate risk, and generate further knowledge of the performance of these agroforestry systems at scale, as well as the corresponding institutional and producer requirements for a program of countrywide up-scaling i.e. ***the third phase.*** This third phase will be designed based on the experience and lessons learned from the implementation of the second-phase (this Project).

Potential for knowledge sharing and learning

170. The project builds on the lessons learned and best practices identified by the Ministry of Agriculture from research and analysis of the performance of a variety of agroforestry systems piloted and tested in the field during the first phase (see Appendix 2 of the FS, Section 5.1). Implementation of the second phase (the project proposed here) will yield, aside from the results pursued, a further wealth of knowledge based on this up-scaling of best practice. The project will monitor and assess the performance of each module under the conditions at each site, including agro-ecological, climate mitigation/adaptation, socio-economic, institutional and capacity factors. Case studies, cross-site and cross-module analyses, and thematic studies will be carried out to be used as a basis for effective up-scaling. Knowledge generated by this project will be made freely available on the project website by the Ministry of Agriculture, through FAO's knowledge network and in relevant international and regional forums.

Contribution to the creation of an enabling environment

171. The Project, through its activity 3.2, will improve the accessibility of incentives from the National Forestry Development Fund and the Soil Conservation Fund by transforming these funds into a single Landscape Resilience Fund aimed at farmer cooperatives and especially vulnerable small landholders. Through this activity, FAO will provide the Government with assistance in legal, normative and policy matters, and facilitate the inter-institutional dialogue needed to implement the clear political mandate contained in the NDP 2030, Tarea Vida and the NDCs, and to overcome the barriers that still hinder their implementation. Furthermore, in activity 3.3, the project will train key organizations in the seven target municipalities to participate effectively and collaboratively in planning and decision-making processes that determine the management outcomes, outputs and activities in the target landscapes to enhance their climate resilience. Strengthening of governance mechanisms will also include development of norms, agreements and organizational capacities for the collaborative management of areas targeted for restoration with the aim of augmenting the stability and sustainability of water flows into, across and/or out of the landscape as a key element in enhancing its climate resilience.

Contribution to the regulatory framework and policies

172. Knowledge generated by this project in case studies, analyses or other forms will be presented to government authorities for their review and consideration as inputs to policy discussions and debate, as relevant. Useful information and lessons of value will be available to policy makers and other stakeholders, including farmers, who might further refine the expansion of climate resilience-enhancing agroforestry in Cuba, including aspects relating to the increased involvement and participation of women, integration with biodiversity conservation programs and strategies (biological corridors), links to the tourism industry, input supply, commercialization, value addition, product certification an capacity development at both institutional and producer levels. The Project will contribute to regulatory framework adjustments by inclusion of relevant climate adaptation criteria into agricultural extension programs and policies at the national level, including in relation to revising and implementing Cuba´s NDC under the Paris Agreement.

173. Output 3 of this project is aimed squarely at transforming policy and financial mechanisms to motivate adoption and implementation of agroforestry, silvopastoral and forestry systems for climate change adaptation and mitigation, and strengthening local planning, governance and coordination in support of climate resilient production systems and restoration of ecosystem services. The resulting reforms to policy and regulatory frameworks will provide a robust enabling environment for replication of and support to agroforestry, silvopastoral and forestry systems by vulnerable farmers and producers' organizations. In fact, the results of Output 3 will be vital to the follow-on phase – phase three – of countrywide up-scaling of this project's results.

[61] See Section 1.3, ***Criteria for selecting beneficiaries***, in Annex 2- Feasibility Study.

Overall contribution to climate-resilient development pathways consistent with relevant national climate change adaptation strategies and plans

174. This strategy builds on Cuban national policies, programs and legislation encompassing climate adaptation and mitigation priorities, particularly *Tarea Vida*[62] (the national climate change plan, strategic actions 3 and 4, and Tasks 1, 4, 5, 8, and 11), and Cuba's Nationally Determined Contribution, ensuring alignment with the project proposed and GCF objectives. This project contributes directly to Cuba's national adaptation strategies and plans, particularly priority 3 of the NDC: *Incorporating the adaptation dimension into programs, plans and projects related to food production, integrated water management, land management, forestry, fisheries, tourism and health.* This project will also produce mitigation co-benefits aligned with measures proposed in the Second National Communication[63]: (i) CH_4 emission reduction from enteric fermentation (by improvement of pastures); (ii) transition from traditional, high-input agriculture to conservation agriculture to reach 220,000 ha by 2050[64]; and (iii) afforestation and forest protection with the objective of reaching a national forest cover of 35% by 2050. By establishing and operationalizing a Landscape Resilience Fund, the project will enable funding to be made available to farmers and producers' associations countrywide for adoption of resilience-enhancing practices and systems.

D.3. Sustainable development

175. ***Environmental co-benefits*** will be produced by this project as a result of agricultural diversification and the extension of agroecological practices for climate adaptation and risk mitigation. The project will promote multi-cropping systems with the aim of maintaining soil cover throughout the year, enhancing soil organic matter and carbon content, reducing soil erosion, increasing groundwater recharge, reducing vulnerability to insect pests and enhancing their diversity, including pollinators and increasing water absorption capacity and soil biodiversity. More efficient irrigation will allow for the growth of green manure crops, improving nutrient cycling at farm and landscape level and providing continuous vegetative cover on farmland. The use of leguminous trees in agroforestry systems will permit reduction or elimination of the use of nitrogen fertilizers, reducing greenhouse gas emissions from this source. Use of trees and shrubs in silvopastoral systems will assist in avoiding soil compaction and provide shade for soil, thereby reducing soil temperatures, erosion and the speed of physical, chemical and micro-biological processes. Agricultural diversification through integration of trees and shrubs into crop production will produce significant climate change mitigation and resilience benefits.

176. ***Social co-benefits*** will result from implementation by farmers and producers' organizations of agroforestry systems, resilience-enhancing agricultural practices and more efficient water use. Farmers will learn to plan and implement their operations while managing climate risk. Capacity building through the established system of Farmer Field Schools and its proposed expansion, training-and-visit extension, and farmer-to-farmer exchanges will build a broader culture of climate resilient agriculture and livestock raising in which knowledge and experience are freely exchanged, contributing to social cohesion and resilience. It is expected that increased and more stable yields will permit farmers and producers' organizations to achieve a level of food and livelihoods security based on contractual agreements with buyers, as well as sales to supply-and-demand markets. Women, in particular, will receive strong support given the increasing percentage of women in rural areas owing to rural-to-urban migration of male family members. Women will receive gender-sensitive training and skill building, including for farm management, business development, use of weather and climate information, and marketing of farm products.

177. This project will aim at equal gender participation in all activities as well as promote increased opportunities for women through specific activities. Increased incomes from climate-resilient agroforestry and silvopastoral production will empower women farmers to participate more fully in decision making and economic activity. With increases in income, women farmers will be encouraged to allocate a larger portion of household resources to the education and health of their household members. By demonstrating an increase in autonomous decision making, participating women farmers will provide positive role models for adolescent girls. At the same time, as women and girls become more empowered members of their communities, they may more effectively advocate community improvements to better serve their needs, which can increase the adaptive capacity of their communities.

[62] https://www.ecured.cu/Tarea_Vida#Acciones_estrat.C3.A9gicas

[63] Second National Communication to the UNFCCC. Cuba 2015.

[64] An inter-ministerial working group on Conservation Agriculture conveyed by the MINAG with FAO support formulated a Roadmap for Conservation Agriculture, which this project will help to implement.

178. ***Economic co-benefits*** will accrue to producers overall through sale of farm surpluses to farmer markets, the tourism industry, and other formal and informal markets. Sales of farm products to annually contracting institutions will provide a basic level of economic security to producers, while sales of surpluses to these markets will increase farm revenues and income. More diversified agricultural production systems will provide greater opportunities for on-farm employment throughout the year. Improvements in access to and the efficiency of water use will result in labor saving, permitting farmers to achieve higher degrees of economic efficiency.

179. Under *Tarea Vida,* the Cuban government is investing institutional, financial and technical resources to support the diversification of production as a strategy to build the climate-resilience of landscapes and rural communities. The government's three-phase approach guarantees incremental investments in agricultural and livestock systems based on scaling up of lessons and knowledge from their implementation. The project scales up proven modules developed under actual farm level conditions in response to climate change models and assessments that predict increasing climate variability; this science-based approach to climate-resilient agriculture enhances economic efficiency. With the implementation of this project, evidence will become available for further development and refinement of the country's climate adaptation and mitigation policies.

180. Benefits expected from strengthening the climate resilience of farmers and producers' organizations in *Villa Clara/Matanzas* and *Las Tunas* provinces include enhanced crop yields and income due to increased and more reliable water during the dry season. With this project, loss of income from drought will be avoided. With the project, farm households will benefit from application of agroforestry and silvopastoral modules on formerly marabu-infested or degraded land. Through this project farm households will have access to 35,734 has of reclaimed farmland for production of subsistence and commercial crops.

D.4. Needs of recipient

181. According to the Climate Change Vulnerability Index, Cuba is classified as "high risk"[65] and, as a Small Island Developing State (SIDS), faces serious impacts from climate change (CC)[66]. These include a rise in average temperatures and increasing rainfall variability, as well as higher hurricane frequency and increasing sea level rise. The consequences of these changes include diminishing availability of water for agricultural production and increasing drought, accelerating land degradation, decreasing productivity, growing infestation of agricultural lands by an invasive non-native species (marabu - *Dichrostachys cinereal*), and increasing saltwater intrusion. These impacts are increasingly affecting rural livelihoods and food security. The vulnerability of the population in the rural agricultural sector is mitigated to a great degree by Cuba's social protection policy, which establishes a comprehensive system of risk mitigation in regard to natural disasters, including extreme weather events linked to climate change e.g. hurricanes and torrential rainfall, and drought. However, in prioritizing areas of the country for immediate action, the plan acknowledges the necessity of a phased approach to implementing solutions to adaptation challenges in the agricultural sector.

Economic and social development

182. Household and productive landscapes in the regions targeted by the Project are vulnerable to climate change effects (see also the FS, Sections 1.3 and 1.4 and Appendices 2.1 and 2.2 to FS). This project will provide farmers with the capacities, technology and machinery they require to establish and operate sustainable agroforestry and silvopastoral systems that will improve the climate resilience of agricultural production, as well as its productivity. The project will stimulate resilience-enhancing agricultural production by farmers and producers' organizations by providing them with the information, knowledge, skills and technologies they require to successfully manage their climate risk and produce the necessary revenues to re-invest in climate resilient production systems as the impacts of climate change continue to evolve. GCF resources will finance capacity building of farmers to plan and manage their agroecosystem and technological assets. Farmers and producer organizations will take a business approach to climate-resilient crop production with the aim of building their capacities to access the variety of existing markets. Application of efficient irrigation technologies and resilience-enhancing agricultural practices will ensure sustainability and productivity of innovative agroforestry and silvopastoral systems, stabilizing and sustaining yields while decreasing vulnerability to climate change impacts.

[65] Corporación Andina de Fomento, 2014. Índice de vulnerabilidad y adaptación al cambio climático en la región de América Latina y el Caribe.

[66] Segunda Comunicación Nacional a la Convención Marco de las Naciones Unidas sobre Cambio Climático. La Habana 2015.

Financial needs

183. Every year Cuba is affected by a variety of climate change impacts that are increasing in strength and frequency: droughts, torrential rainfall, including from hurricanes; saltwater intrusion, flooding; landslides and extreme temperatures. Increased exposure of farmers and agricultural assets to climate change impacts has been a significant source of economic losses.

184. Severe recurring droughts (years 2004, 2008, 2009) and a diminishing water balance is one of the most concerning changes observed in Cuba´s Eastern Region (including Las Tunas) during the last decades, along with significant reductions in relative humidity (FS, section 1.2.3.2.1 Water Resources). This, combined with a lack of climate change-adapted agriculture, has led to a steady reduction of the area covered with agricultural crops and pastureland, making them more prone to invasion by marabú.

185. Future climate scenarios predict a temperature rise of 4°C and a decline in rainfall between 15 and 63% for years 2050-2100[67]. This would result in a decline in rainfall of 975-481 mm in Villa Clara/Matanzas, and 750-370 mm in Las Tunas, with devastating impacts on agricultural productivity: yield would be reduced by 6-9% for sugarcane, 10-22% for beans, rice, manioc and maize, and up to 48% for potatoes (Appendix 2.2. Tables 2-a, 2-b). Rice and maize constitute more than 70% of cereals consumed by Cubans, while beans are the second most consumed food in Cuba (only preceded by rice) and the main source of vegetable protein in the diet of Cubans[68]. Projected cattle birth rate reduction could reach 15-25%, while livestock mortality could reach 27% and up to 70% respectively by 2050 and 2100[69]. The business-as-usual (BAU) scenario for livestock production in the project's two target regions (i.e. continuing with the traditional grazing practices) will result in a reduction of total grassland biomass of 18% and a growing dominance of C4 grasses, with increasing C/N ratios that would produce higher methane emissions from enteric fermentation of ruminants (Please see Appendix 2.4 of the FS).

186. Cuba has limited access to international financial institutions and faces significant obstacles in importing the machinery and technology that could support adaptation of agricultural production to the evolving impacts of climate change. While the Ministry of Agriculture's organizational and technical capacities are some of the highest in the LAC region, its ability to transform the current production-maximizing paradigm to one of stable, sustainable and climate-resilient production is obstructed by the lack of the necessary machinery and technology. Cuba's ability to generate sufficient fiscal resources is hindered by the account deficit of the balance of payments, bank deductions on foreign transfers and the high degree of debt maturity, all of which reduce its ability to obtain necessary loans.

Institutional needs

187. The Ministry of Agriculture has successfully concluded the research and development required to identify and test models of agro-ecosystems that are more resilient to climate change. While the ministry is widely regarded by outside experts as having a high level of technical and organizational capacity, the Ministry staff at all levels have insufficient awareness, understanding and knowledge of climate change and its effects on ecosystem services and agroecosystem productivity to lead or facilitate agricultural adaptation by farmers and producers' organizations. Farmers and producers' organizations lack technical knowledge and understanding, along with the skills and capacities to mitigate climate risk and reform maladaptive agricultural practices. Farmers require state-of-the-art knowledge of the agroecology of agroforestry and silvopastoral systems, projected climate change impacts, as well as the management and planning skills to enhance climate resilience at farm and landscape levels. MINAG has the technical and institutional capacities to facilitate adoption of resilience-enhancing agricultural practices and technologies, however, they lack the access to technology and machinery that would galvanize widespread adoption both individually and collectively.

D.5. Country ownership

Existing national climate strategy

188. The **First National Programme to Combat Climate Change (*Programa de Enfrentamiento al Cambio Climático – PECC, 2017*)** outlines Cuba's adaptation strategy regarding, in particular, the sustainable use and protection of water and soil resources; the upgrading of Cuban agriculture; the conservation and protection of forest resources; land use planning with emphasis on

[67] PRECIS modelling (Centella et al 2008) in Cuba, SNC to the UNFCCC (2015); and Somoza J. de la Colina (2018)
[68] Rivero et al 2010, Rivero and Vega 2004. Rodriguez Vega et al 2003. In Somoza J. De la Colina (2018)
[69] Rivero et al 2010, Rivero and Vega 2004. Rodriguez Vega et al 2003. In Somoza J. De la Colina (2018)

human settlements; and the protection of biodiversity. The PECC, coordinated by CITMA and its Executive Environmental Agency (AMA), is mandated to ensure that the science-based environmental dimension is included in the development and implementation of all climate change adaptation actions.

189. In April 2017, the Council of Ministers approved the **National Plan to Confront Climate Change (*Tarea Vida: Plan de Estado para el enfrentamiento al cambio climático***). This comprehensive plan establishes national priorities for the short (2020), medium (2030) and long-term (2050 and 2100), which includes assessing and updating policies such as the Environmental Law (Law 81) and the National Decree on Coastal Areas. Tarea Vida includes five priority actions, two of which directly address adaptation in the agricultural sector[70], with 11 activities focused specifically on coastal and agricultural areas.

Alignment with existing policies such as NDCs, NAMAs, and NAPs

190. In November 2015, Cuba presented its **Nationally Determined Contribution (NDC)** to the UNFCCC, listing six priority actions for climate change adaptation. One of these priority actions is directly related to this proposed project: "Incorporating the adaptation dimension into programs, plans and projects related to food production, integrated water management, land management, forestry, fisheries, tourism and health."

191. The NDC also identifies two priority sectors for reducing GHG emissions: agriculture and energy, which account, respectively for 76% and 15% of the country's emissions. The forestry sector has shown sustained growth – forest coverage increased from 14% of the country's surface area in 1959 to 29% in 2013. Currently, it is estimated that Cuban forests have a sequestration capacity of approximately 14.3 million tonnes of CO_2 per year, according to data from the latest GHG inventory. Cuba has not yet developed either a NAP or a NAMA. However, a NAMA in the pork production sector is currently under development.

Capacity of Accredited Entities or Executing Entities to deliver

192. The Ministry of Agriculture is the body of the Cuban Government (central administration of the state (OACE)) responsible for proposing and implementing the policy on the use, tenure and sustainable exploitation of the agricultural area of the country, agricultural and forestry production, to meet the needs of population, industry and export. As such, it has as responsibility to direct, execute and control the policy of the Cuban government and administration in the following areas: use, conservation and improvement of soil; ownership and possession of agricultural and forestry land; plant health; veterinary Medicine; conservation, management and rational use and sustainable development of the country's livestock forest resources; mechanization and irrigation of the production programs that it is responsible for; livestock and forestry agricultural production activities; profit activities and industry of rice, tobacco, citrus, coffee, apiculture products, feed, forestry, poultry and activities of collection and benefit of agricultural and forestry products. Linked to the forestry sector, the following must be fulfilled: Specific function No. 9: Manage the use and use of agroforestry heritage, including fruit trees and the administration of the National Fund for Forest Development (FONADEF). At the municipal level, specific function No. 8: Execute and control the use and exploitation of agroforestry heritage, including fruit trees and the administration of FONADEF; for which several functions must be fulfilled. (more details on capacities to deliver is available in Appendix 2.7 to the FS).

193. The Food and Agriculture Organization of the United Nations (FAO) is a GCF-accredited entity. It is an international organization whose main goals are the eradication of hunger, food insecurity and malnutrition; the elimination of poverty and the driving forward of economic and social progress for all; and the sustainable management and utilization of natural resources, including forest, land, water, air, climate and genetic resources for the benefit of present and future generations. In line with the vision for sustainable food and agriculture to "Make agriculture, forestry and fisheries more productive and more sustainable", FAO promotes conservation and climate resilient, sustainable agriculture as a way to increase productivity, adapt and build resilience of food systems and, wherever possible, reduce GHG emissions. FAO has supported projects for climate adaptation and mitigation worldwide and has led and managed numerous climate change related projects.

[70] Adapt agricultural and livestock activities, particularly those with the greatest impact on the country's food security, to changes in land use as a result of sea level rise and drought; and reduce cropping areas of the coastal area affected by saline intrusion and diversifying crops, improve soil conditions, introduce and develop varieties resistant to the new temperature scenario".

Engagement with civil society organizations and other relevant stakeholders, including indigenous peoples, women and other vulnerable groups

194. Several consultation meetings and stakeholder engagement workshops were held during the Project preparation (2017-2018). Government entities and representations of the project's beneficiaries have been continuously consulted, who have provided information and inputs for the elaboration of the project, in support to the work of the technical design team. The consultations focused on meetings with authorities, civil society organizations, cooperatives, producers and communities`representatives to provide information on: a) the purposes of the project; b) general information on potential impacts; and c) preliminary ideas of the way the project would be implemented. These meetings were used to exchange on aspects of gender, attention to young people and possible less favored groups, assess the interests and priorities of people and entities, as well as assess support for the Project. For further information, please see Annex 7, Summary of Consultations and Stakeholder Engagement Plan, Section 1.2).

195. Long-term institutional ownership and sustainability of this project has been established via the efforts of the Ministry of Agriculture (MINAG) in leading a broad consultation process, including two national consultation workshops during the development of this proposal. This process involved the technical advisory team of the NDA (CITMA), the Environment Agency; the provincial delegations of MINAG, the technical advisory group of the agricultural and forestry sector to support local provincial development; the Agroforestry Institute; the Institute for Research on Grasses and Forages; the Livestock Department of the Ministry of Agriculture; the Department of Science and Technology, Innovation and Environment of the Ministry of Agriculture; the Institute for Fundamental Research on Tropical Agriculture (INIFAT); Institute of Soils; Center for Research on Animal Improvement (CIMINAGT); Institute of Agricultural Engineering (IAGRIC); Institute of Plant Health (INISAV); and Universities as well as farmers, including women farmers and farmer cooperatives.

Role of National Designated Authority

196. MINAG and CITMA, Cuba's NDA, have thoroughly participated in the development of this Proposal. FAO has facilitated dialogue between the Ministry of Agriculture and the NDA, who have confirmed both the relevance of the proposal and its priority. In particular, the following was addressed:
    - Coherence and alignment with the country's national climate strategy and priorities in mitigation or adaptation: as described above, the project is fully aligned with Cuba's development and climate change adaptation policies, strategies and proposed actions. Cuba's NDA granted full support to the first draft of this concept note through the "no-objection" letter that was submitted to the GCF in November 2019.
    - Integration of lessons learned: past and ongoing initiatives that have generated substantial knowledge and experience regarding revitalization of productive ecosystems under changing climatic conditions have been analyzed and lessons integrated into the design of this proposal.

197. This proposal was prepared in response to the expression of interest by Cuba's NDA for assistance in building the climate resilience of the agricultural sector in light of increasing vulnerability. Meetings began with the NDA and the Ministry of Agriculture in late 2017, when FAO, the Ministry of Agriculture (MINAG) and NDA staff identified potential technical solutions to the problem of diminishing water security in central and eastern Cuba due to increasing rainfall variability. Key stakeholders were identified within the Ministry of Agriculture and in the municipalities and provinces targeted by *Tarea Vida,* the state plan to combat climate change.

198. FAO assisted the government to gather technical inputs and institutional information on the mandates, roles, capacities and programs of these institutions and worked with the NDA in coordinating work among them. Once the targeting and scope of the proposed project were outlined in meetings, and following the identification of the target areas based on their vulnerability, as outlined above, with officials from the Ministry of Agriculture, individual interviews took place with officials in Las Tunas, Santa Clara and Matanzas provinces and in the municipalities of Corralillo, Quemado de Güines, Santo Domingo, and Los Arabos (Central Region); and Amancio Rodríguez, Colombia and Jobabo (Eastern Region).

199. Following initial scoping and information gathering, FAO and MINAG provided their preliminary findings and suggestions to the NDA. Based on feedback, an expanded FAO team was put together, drawing on in-country and international technical expertise to explore selected issues in more detail. This team carried out field missions in 2018 and early 2019, and its in-depth engagement has been on-going in the form of data collection and analysis as well as through on-site visits, focus group meetings and field level consultations with farmers (with special attention to women), producer groups, suppliers, and others in the proposed project area.

200. The provincial and national governments contributed to the formulation of the project by allocating experts to provide specific technical information as well as data necessary for formulation of the project. Additionally, the Project formulation process involved several consultations meetings with authorities, civil society organizations, cooperatives, producers and communities`representatives in order to ensure the Project activities would be responsive to the beneficiaries`needs. FAO also closely engaged with development partners in Cuba working in agriculture and water management in order to benefit from their insights and to determine how GCF financing for climate change adaptation could help increase the returns to investments that the country is making with the external financing they are providing. Amongst these partners, FAO has conferred most closely with UNDP.

D.6. Efficiency and effectiveness

201. As presented in Section 1, climate change is already affecting agricultural areas in Cuba, including forests and pastures, and this is expected to worsen according to climate change projections. Increased temperatures and variations on precipitation patterns due to climate change will lead to the expansion of Marabú, the invasive species that has a high capacity for adaptation and growth. Rehabilitating areas after Marabú infestation is a high cost endevour and farmers who own land under these conditions do not have the economic capacity to make investments needed for their recovery. This leads to lands abandonment, limiting the development of production systems that conserve soil and water resources, build resilience to CC and generate income to improve livelihoods. Economic and financial analyses were therefore carried out to estimate the costs and benefits of the project, vis-a-vis a no-project basline.

202. For the financial analysis the revenues accruing from the agroforestry modules in Output 1 of the project were considered, as well as the production costs incurred. Taking into consideration that the agroforestry modules proposed in Output 1 of this project will be implemented in areas that would remain unused without the project, all the investments, costs and revenues would be incremental. Over the project lifespan of 20 years, the proposed modules proved to be financially viable (please see Table 1 in Annex 3 for the financial evaluation indicators of the agroforestry and silvopastoral modules of the IRES project, specifically, the net present value, the internal income rate and the equivalent annual NPV for planning horizons of 10 years and 20 years), except for the natural regeneration model. The incremental net present value and the internal rate of return ranged between - US$1,998 (IRR of 2.45%) and US$82,430 (IRR of 29.52%). The Annual Incremental Equivalent NPV, which is equivalent to the yearly incremental net present value, ranges from - US$268 to US$11,036. The results show that the models generate benefits for farmer families that are higher than the investment costs. Sensitivity analyses results are presented in Annex 3 table 2.

203. An economic analysis was carried out for the entire project, considering the costs of implementing the full project (US$ 38.20 million contributed by the Green Climate Fund and US$ 81.70 million of national matching contribution) and project generated benefits in terms of generated income (from financial analyses results), as well as improvement and restoration of ecosystem services (avoided soil erosion and carbon capture) in the biomes where interventions will be carried out (Woodlands and Grasslands). The economic benefit for the entire project is estimated in US $22.469 million, with an internal rate of return of 15.4%. In other words, with an investment of US$119.9 million, it is expected to create economic benefits in excess to the opportunity cost of capital (12%) and produce a bonus of US$22.469 million. This means an economic net present value per benefited hectare of US$628.81, an economic net present value per household of US$1,407.15 and an economic net present value per beneficiary of $439.73, considering 3.2 family members per household. Results of the sensitivity analyses are presented in Annex 3 Table 6.

204. Cost-effectiveness of this project was determined by evaluation of previous in-country experiences with rehabilitation of Marabú infested areas as well as agroforestry, silvopastoral systems and natural regeneration. The design of project investments was based on lessons learned from multiple sources, including FAO with its global and decades-long experience in promoting climate resilient land use. The recommendations offered as part of the Feasibility Study informed the process of analysis and design of this proposal and provide a high degree of confidence that the project's predicted impacts will be achieved cost-effectively.

E. LOGICAL FRAMEWORK

E.1. Paradigm shift objectives

☒ Shift to low-emission sustainable development pathways
☒ Increased climate resilient sustainable development

E.2. Core indicator targets

E.2.1. Expected tonnes of carbon dioxide equivalent (t CO_2 eq) to be reduced or avoided (mitigation only)	Annual	133,786 t CO_2 eq
	Lifetime	2,675,727 t CO_2 eq
E.2.2. Estimated cost per t CO_2 eq, defined as total investment cost / expected lifetime emission reductions (mitigation only)	(a) Total project financing	119.914 **million** USD
	(b) Requested GCF amount	**38.207** million USD
	(c) Expected lifetime emission reductions	2,675,727 t CO_2eq
	(d) Estimated cost per t CO_2eq (d = a / c)	44.82 USD **/ t CO_2eq**
	(e) Estimated GCF cost per t CO_2eq removed (e = b / c)	14.28 USD **/ t CO_2eq**
E.2.3. Expected volume of finance to be leveraged by the proposed project as a result of the Fund's financing, disaggregated by public and private sources (mitigation only)	(f) Total finance leveraged	**81.707** million USD
	(g) Public source co-financed	**81.707** million USD
	(h) Private source finance leveraged	n/a USD
	(i) Total Leverage ratio (i = f / b)	2.139
	(j) Public source co-financing ratio (j = g / b)	2.139
	(k) Private source leverage ratio (k = h / b)	n/a
E.2.4. Expected total number of direct and indirect beneficiaries, (disaggregated by sex)	Direct	51,713 25,136 (46%) female
	Indirect	240,117 46% female
E.2.5. Number of beneficiaries relative to total population (disaggregated by sex)	Direct	0.45 % of total population Female direct beneficiaries: 0.2 % of total population
	Indirect	2.1% of total population Female indirect beneficiaries: 0.96 % of total population

E.3. Fund-level impacts

Expected Results	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term	Final	
A1.0 Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions	*A1.2 Number of males and females benefiting from the adoption of diversified, climate resilient livelihood options (including fisheries, agriculture, tourism, etc.)*	Secundary and ancillary Data from other sources, such as national reports and statistics, Baseline, mid-term, final Project reports. Qualitative assessment through questionnaires and surveys	0 farmers Male: 0 Female: 0	25,549 Male: 13796 Female: 11,753	Total: 51,098 Male: 27,593 Female: 23,505	Farmers and agricultural enterprises will be motivated to participate. Both women and men will act to participate when invited.
A4.0 Improved resilience of ecosystems and ecosystem services	*A4.1 Coverage/scale of ecosystems protected and stregnthened in response to climate variability and change*	Progress reports Farm records. Qualitative assessment through questionnaires and surveys	Hectares: 0	Hectares: 17,867	Hectares: 35,734	Implementation of agroforestry and forestry modules will be sufficiently widespread that there will be a measurable impact on ecosystem function/services.
M4.0 Reduced emissions from land use, reforestation, reduced deforestation, and through sustainable forest management and conservation	*M4.1 Tonnes of carbon dioxide equivalent (t CO2 eq) reduced or avoided (including increased removals) - forest and land use*	Progress reports and monitoring of carbon stock by comparison to baseline x C stock (see VCS Project Descriptions)	Tonnes CO2eq: 0	Tonnes CO2eq: 468,252	Tonnes CO2eq: 2,675,727	Stakeholders will readily adopt and implement agroforestry/ forestry practices and systems and be motivated to sustain them over the next seven years at a minimum and over 20, constituting the life of the Project (target is reference to 20 year liftime)

and enhancement of forest carbon stocks		using Ex-Act Methodology				

E.4. Fund-level outcomes

Expected Outcomes	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term	Final	
A5.0 Strengthened institutional and regulatory systems for climate-responsive planning and development	*A5.1 Institutional and regulatory systems that improve incentives for climate resilience and their effective implementation*	Regulatory and normative framework approved by competent authority and published in official media	0	01 specific proposal for policy reforms discussed and drafted;	01 specific proposal for policy reforms approved	No crisis emerges that impedes expeditious analyses and discussions of institutional and regulatory systems. The regulatory and normative framework is expected to be finalized and approved during the second half of the Project implementation.
		Farmers perception survey on improved incentives for Climate resilience	0% of response	50% of the beneficiaries have a good perception about the improved incentives for climate resilence	100% of the beneficiaries have a good understandin g about the improved incentives for climate resilence	
A7.0 Strengthened adaptive capacity and reduced exposure to climate risks	*A7.1 Use by vulnerable households, communities, businesses and public-sector services of Fund-supported tools instruments, strategies and activities to respond to climate change and variability*	Records of stakeholder participation in project activities (training, tasks, etc.) Farmers and producers`organiza tions interest in learning new skills and apply new knowledge will be assessed through questionnaires	0	15,329 (30%) of direct beneficiaries of which 7131 (46%) are female with enhanced knowledge on CC-resilient production landscapes solutions	51,713 (100%) of direct beneficiaries of which 46% are female) with enhanced knowledge on CC-resilient production landscapes solutions. Farmers and producers'	Farmers and producers' organizations continue to be interested in learning new skills and apply new knowledge to production.

		applied at the Project mid-term and final phases. Questionnaires will follow guidances from FAO`s OED Capacity Development Evaluation Framework[71].			organizations continue to be interested in learning new skills and applying new knowledge to production	
M9.0 Improved management of land or forest areas contributing to emissions reductions	*M9.1 Hectares of land or forests under improved and effective management that contributes to CO2 emission reductions*	Satellite monitoring Field inspections of agroforestry, silvopastoral and reforested areas	0 ha	17,867 ha	35,734 ha	Plantations are unaffected by extreme weather events e.g. drought, hurricane

E.5. Project performance indicators

Expected Results	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term	Final	
Output 1: Increased CC-resilient production landscapes through investment in innovative agroforestry and silvopastoral systems, reforestation with close-to-nature planted forests (CTNPFs) and assisted natural forest regeneration	*Hectares of land implementing agroforestry, silvopastoral and forestry modules*	MAG field inspections and reports Farmer surveys and questionnaires	0 hectares	17,867	35,734 ha	Farmers will be motivated to adopt and sustain innovative agroforestry and forestry systems at sufficient scale Correct Implementation of sustainable and innovative agroforestry and silvopastoral systems will lead to improved overall environmental and ecosystem service provision
	% of farmers perception about the advantage of including new methods to improve resilience to CC.		0% of positive response by trained farmers	90% of positive response by trained farmers	100% of positive response by trained farmers	
	Population of target municipalities indicating they preceive improved ecosystem services		0%	10%	35%	

[71] The Office of Evaluation (OED) Capacity Development Evaluation Framework is a document developed in 2019 by FAO to provide guidances on how to assess capacity development at different levels in projects and programmes. Detailed information on the evaluation framework is available on http://www.fao.org/3/ca5668en/ca5668en.pdf .

	% of Resilience of production as perceived by farmers	Random representative survey	Low	Medium	High	
Output 2: Strengthened institutional and farmer capacities to improve ecosystem services through agroforestry and forestry systems and enhance the climate-resilience of production landscapes	*- Numbers of institutional staff trained*	MAG field reports and follow-up surveys of lead farmers participating in FFS Training records The application of the skills from trainings will be assessed through questionnaires applied to the Project beneficiaries participating in tranings at the Project mid-term and final phases. Questionnaires will follow guidances from FAO`s OED Capacity Development Evaluation Framework[72].	0 Institutional staff	300 institutional staff trained	585 Institutional staff trained	Farmers will be motivated to attend and participate fully in Farmer Field Schools
	- Numbers of farmers trained		0 Farmers	9,228 farmers trained (4,614 will be women)	15,549 farmers trained (7,774 will be women)	
	- Percentage of trained farmers who, indicate they have acquired new knowledge on Climate resilience of production landscape		0% of the farmers	90% of the trained farmers identify themselves with new knowledge on CC and resilience.	100% of the trained farmers identify themselves with new knowledge on CC and resilience	
	- number of institutional staff trained who indicate they use or apply information received		0%	100 institutional staff	468 insitutional staff trained	
	% of farmers trained who indicate they use at least one of the practices learned in FFS on their own farms	Follow-up surveys of extension services and lead farmers participating in FFS	Low	30% farmers trained	80% farmers trained	
	Farmers' capacity on agroforestry and forestry systems that includes CC adaptation		Low	Medium	High	
Output 3: Effective governance to support climate resilience-enhancing production systems and ecosystem services	*Proposals for policies, plans, financial incentives to motivate and sustain CC adaptation by farmers formally approved*	Evidence of integration of CC adaptation principles into	Currently no relevant financial incentives exist	Analyses and discussions ongoing	Proposals for policy, planning reforms; Landscape Resilience Fund established and operational	Interinstitutional collaboration can be effectively achieved to establish multi-sectoral resiliency mechanism to provide financial incentives to farmers

[72] The Office of Evaluation (OED) Capacity Development Evaluation Framework is a document developed in 2019 by FAO to provide guidances on how to assess capacity development at different levels in projects and programmes. Detailed information on the evaluation framework is available on http://www.fao.org/3/ca5668en/ca5668en.pdf .

		planning and programming; Existence of Landscape Resilience Fund				
	% of perception of governament authorities that new policies, plans, financial incentives are including CC adaptation elements	Perception survey per year amongst government officials	0% of response	60% of the surveyed individuals have a good perception that new policies, plans, financial incentives are including CC adaptation elements	100% of the surveyed individuals have a good perception that new policies, plans, financial incentives are including CC adaptation elements	NGOs, CSOs participate in training and are invited to and permited to participate in relevant meetings and planning discussions at municipal, local, regional and national level
	Representatives of key organizations in seven target municipalities that indicate they have improved capacity to participate effectively and collaboratively in local, regional and national planning and decision-making processes related to management of the target landscapes	Training reports, surveys of organizations, NGOs and CSOs in target municipalities	Currently limited capacity for participation	10	20	
	Women and youth organizations targeted and involved in trainings	Workshop, training reports	0	2	5	Of minimum 10 organizations to be trained

E.6. Activities

Activity	Description	Sub-activities	Deliverables

1.1 Restore approximately 15,544 ha of farmland from marabu, and increase CC-resilience through sustainable agroforestry (AF), CTNPFs and assisted natural regeneration (*mitigation co-benefit 833,950.60 million tCO2-eq. in 7 years of implementation*)	GCF funds will be used to clear marabú thickets on soils at high risk of desertification and degradation[73]. Low impact technologies will be acquired that have been successfully pilot tested under Cuban or similar conditions and will be applied at scale. Marabú wood and biomass will be ground to wood chips to form a mulch layer that will protect soils from rain and restore soil organic matter. Agroforestry systems, CTNPF and assisted natural regeneration will then be initiated through the application of Modules described in Appendix 6 of the Feasibility Study attached to this proposal to restore ecosystem function and services. GCF funding will provide equipment, training and inputs to producers to establish the agroforestry modules but not pay for their implementation once established. Government and FAO will coordinate the purchase and distribution of technology and equipment, and the government will guarantee application, proper use and maintenance of the technologies, equipment and inputs.	1.1.1: Procure identified technologies and equipment 1.1.2: Develop training materials for operations and maintenance 1.1.3: Train 74 machinery operators 1.1.4: Apply technologies to marabu eradication on 15,544 ha 1.1.5: Construct/install 452 water reservoirs for the agroforestry systems of a capacity of no more than 4900 m3 and 440 irrigation systems 1.1.6: Establish agroforestry, reforestation and assisted natural regeneration modules, including development of farm management plans	a) Training materials developed b) 74 machinery operators trained c) 15,544 hectares of marabu eradicated d) 452 water reservoirs and 440 irrigation systems constructed/installed e) Agroforestry, assisted natural regeneration and reforestation modules, including farm management plans established and under implementation
1.2 Restore approximately 20,189 ha of rangeland with compacted soils and increase CC-resilience through improved silvopastoral systems (*mitigation net co-benefit -381,311.51 million t CO2eq in 7 years of implementation*).	The project will introduce low-disturbance sub-soiling, designed for conservation agriculture,[74] which will improve soil structure so that rainfall can be absorbed and excess moisture can drain away, recharging groundwater tables and allowing roots to more easily reach groundwater during dry periods. Soil structure improvement and stabilization, introduction of trees and improved, more drought resistant, deep-rooting and nutrient-rich pastures, as well as grazing rotation will be achieved through the implementation of the two modules for silvopastoral systems adapted to climate change, described in Annex X of the Feasibility Study attached to this proposal. The average implementation area for each beneficiary is estimated to be 5 ha.	1.2.1: Procure and field identified technologies and equipment 1.2.2: Develop training materials 1.2.3: Train 68 machinery operators 1.2.4: Implement sub-soiling of 20,189 hectares of compacted rangeland 1.2.5: Construct 700 small water reservoirs for livestock (no more than 63m3) 1.2.6: Establish and implement silvopastoral modules, including improved grazing systems	f) Training materials developed for machinery operations g) 68 machinery operators trained h) 20,189 hectares of compacted soils improved i) 700 small water reservoirs constructed j) Silvopastoral modules established and under implementation
2.1 Increase institutional capacities to support farmers and producers' organizations to establish and maintain agroforestry, silvopastoral and forestry systems for improved ecosystem services	The project will train 443 extension-service technicians, agricultural technicians, and cooperative leaders/administrators in integrated landscape rehabilitation and CC adaptation. Local extension service capacities will be strengthened to improve climate risk planning/management and service delivery.	2.1.: Develop training materials for use by trainers of extensionists 2.1.2 Train 443 extension service technicians, agricultural technicians, and cooperative leaders to lead farmers in gender and age-sensitive learning-by-doing regarding the implementation, operations and maintenance of their agroforestry or forestry systems; topics covered may include no-till cultivation; inter-cropping; cut-and-carry forage feeding; sub-soiling; soil conservation with gabions, gully plugs, bunds, and contour farming; agroforestry and silvopastoral system design;	k) Training materials developed for trainers of extensionists l) 443 extension service technicians, agricultural technicians, and cooperative leaders/administrators trained

[73] Due to the extremely aggressive, invasive nature of marabú, total mechanical clearing of these areas is projected.

[74] Livingston and Blade. Texas A&M University System (http://publications.tamu.edu/FORAGE/PUB_forage_Paratill%20Renovations%20of%20Pastures%20and%20Hayfields.pdf).May 5th 2018.

		application of efficient irrigation technologies and water harvesting and storage ; 2.1.3 Development of supplementary learning materials and information on CC impacts, projections, ecosystem function and services, agroecology, agroforestry and forestry systems, and farm business planning and marketing	
2.2 Train agricultural producers to collectively revitalize and manage landscape resources through climate resilience-enhancing agroforestry, silvopastoral and forestry systems for gender-equitable agricultural production and ecosystem services	The project will train 15,549 farmers to plan and manage production landscapes to enhance resilience and productivity of agricultural ecosystems as well as ecosystem services. Training will go beyond technical aspects of agro-ecosystem revitalization and production to include topics vital to landscape resilience such as gender equality of farmers and beneficiaries as well as value chain improvement, market access, rural entrepreneurship and other rural employment opportunity-creating activities. Capacity development, in conjunction with the activities of Output 1, will lead to a number of permanent jobs being created, with a particular emphasis placed on creating opportunities for women and youth. Direct interventions for young people are expected to reduce out-migration of this group to urban areas, thereby decreasing the vulnerability of older populations with regards to climate change and food security	2.2.1 Establish Farmer Field Schools (17) in appropriate locations the seven municipalities based on type of agroforestry, silvopastoral or forestry system to be implemented and logistical and other considerations; 2.2.2 Operation of 17 Farmer Field Schools and training of 15,549 farmers using the participatory research and learning-by-doing approach.	m) 17 Farmer Field Schools established n) 15,549 farmers, of which 50% are female, trained in revitalization and management of production landscapes for climate-resilient agriculture and ecosystem services
3.1 Develop, discuss and analyze options for policy reforms to support implementation of agroforestry, silvopastoral and forestry systems for landscape resilience through improved ecosystem services	The project will facilitate processes of policy review to determine adjustments to or modifications of existing land use, development, environmental or other policy instruments to enhance national scale adoption of agroforestry and forestry systems for climate change adaptation and mitigation. This will be achieved through a combination of expert-led desk reviews of the instruments and their implications and provisions, multi-level and multisectoral forums informed by the desk reviews with the aim of discussing and prioritizing needs for adjusting the policy instruments, and institution-specific analytical, advisory and orientation support. An inter-institutional working group will be established and an operational plan will be developed to adjust public policies and regulatory frameworks as necessary. Corresponding discussion spaces will be established at technical, institutional/ ministerial and legislative levels, as well as at local/municipal levels.	3.1.1 Ten workshops with expert assistance and input (international and national experts) to facilitate inter-institutional analyses and discussions regarding policy objectives, needs and options for the modification or reform of agricultural and land-use policy; 3.1.2 Definition and discussion of institutional modifications or adaptations in support of the different options for policy reforms to support landscape resilience through improved ecosystem services; 3.1.3 Development of specific proposals for policy reforms; 3.1.4 Discussion and subsequent validation of reform proposals at national level.	o) Workshops/expert leading to analyses, discussions, options p) Proposals for reforms of policy, regulatory, planning instruments
3.2 Establish a Landscape Resilience Fund to support adoption and implementation of agroforestry,	MINAG, with project support, will transform its Forestry Development Fund (FONADEF) and Soil Conservation Fund (SCF), as well as any other funds established to support land use for rural development, into a single Landscape Resilience Fund (LRF). The purpose of the LRF will be to support resilience-enhancing land use by farmers and producers' organizations	3.2.1 Expert analyses of existing funds (FONADEF, SCF) and other funds both regionally and globally (current funding scope, organization, financing, management and administration, and identification of strengths and weaknesses, lessons and best practice);	q) Landscape Resilience Fund established and operational r) Communication strategy and materials Workshops/expertise

silvopastoral and forestry systems in support of landscape resilience through ecosystem service enhancement	around the country in support of climate change adaptation and mitigation policies, starting with the most vulnerable geographic areas. Expert analysis will be carried out on the feasibility of a single Landscape Resilience Fund, identifying the necessary modifications, reforms and other steps required to make it a reality. As part of the feasibility study, analysis will be undertaken on options for economic instruments to sustain the fund, criteria for grants and loans, governance arrangements, integration with public policy priorities, and other topics. MINAG and other authorities, as appropriate, will discuss and debate the expert analysis and feasibility study as prelude to decision making regarding establishment and operationalization of a Landscape Resilience Fund.	3.2.2 Ten workshops to analyze and develop options for a Landscape Resilience Fund to support implementation of landscape resilience policies on the ground; 3.2.3 Design of a Landscape Resilience Fund to support resilience-enhancing land use by farmers and producers' organizations; 3.2.4 Formal legal establishment of the Landscape Resilience Fund; 3.2.5 Elaboration of communication strategy and materials, and dissemination.	
3.3 Strengthen planning, governance and coordination at the landscape level in support of landscape resilience through enhancement of ecosystem services	This project will train key organizations in the seven target municipalities to participate effectively and collaboratively in planning and decision-making processes that determine the management of the target landscapes to enhance their climate resilience. These organizations will have access to required modeling and visualization technologies to improve their analytical capacities, as well as the most effective tools and instruments for coordinated planning and management of landscape resources from farm to landscape level. Participating organizations include cooperatives and other producer's associations, entrepreneurship groups, etc., including the *Asociacion Cubana de Tecnicos Agricolas y Forestales (ACTAF), Asociacion Cubana de Produccion Animal (ACPA), Asociacion Nacional de Agricultures Pequeños (ANAP),* and *Federeaciòn de Mujeres Cubanas (FMC)*. Women and youth will receive specific attention to ensure that their interests, concerns and perspectives are represented in these processes both individually as members of organizations, as well as collectively in women and youth organizations. The project will support multi-level review and analyses of existing landscape planning instruments through inter-institutional collaborative teams and provincial discussion and debate forums, with the aim of integrating climate adaptation and mitigation principles and concerns into these instruments, including the prioritization of agroforestry/forestry systems for sustainable production and ecosystem service restoration. The instruments in question will involve Territorial Planning and Urban Development Territorial Water Resources Program, Territorial Reforestation Plan, Watershed Management Plans, Municipal Food Self-sufficiency Plan, Territorial Land Use Planning.	3.3.1: Train 10 local branches of established organizations (*Asociacion Cubana de Tecnicos Agricolas y Forestales* - ACTAF, *Asociacion Cubana de Produccion Animal* - ACPA, *Asociacion Nacional de Agricultures Pequeños* -ANAP, and *Federaciòn de Mujeres Cubanas* - FMC) to participate effectively in local planning and decision-making processes for climate resilient land use; 3.3.2 Multi-level review and analysis of landscape resilience policies and planning instruments as a framework for adaptive landscape management to enhance climate resilience and integration of CC adaptation principles into local plans and programs; 3.3.3 Fifteen workshops to strengthen coordination in local landscape governance structures for climate change adaptation: *Comision de Reforestacion, Grupo de Bahia, Comision de Cuencas Hidrograficas, Comision de Asuntos Agrarios; Grupos Provinciales y Municipales de Tarea Vida.*	s) 10 local branches of established organizations trained to participate in local planning/decision making processes t) Existing landscape planning instruments integrate climate adaptation and mitigation principles and considerations u) Local institutional staff trained to produce and negotiate agreements for governance of landscape resources

E.7. Monitoring, reporting and evaluation arrangements

205. Project-level monitoring and evaluation will be undertaken in compliance with FAO policies. FAO will ensure the implementation of a well-designed, operational and effective impact monitoring and measurement system to measure the causal and attributable change, the contribution and the overall causal results of the project. This will include an implementation of a monitoring system to understand efficacy, targeting and verifying the assumptions that the program is making as well as implementing a learning plan so elements emerging from the monitoring systems can feed back into the project implementation and planning Outcomes (Annex 11).

206. FAO Cuba as Executing Entity will have oversight of monitoring and reporting throughout the reporting period. FAO Cuba will implement tools and methods to facilitate monitoring of the project. The methods will support vertical monitoring, from the beneficiaries to management, and will facilitates comparative and standardized monitoring. The National Project Management Unit (NPMU) will use the tools including workplans platform to monitor activities, and develop reports to the National Project Steering Committee (NEC) that combining financial reporting and progress toward achieving results set out in the Performance Management Framework.

207. Within the monitoring system, the detailed articulation is contemplated between the Project workplan and the action plans for gender, indigenous people, biodiversity and the social and environmental framework to safeguard and ensure a comprehensive and holistic monitoring system.

208. The day-to-day project monitoring and implementation responsibility rests on a national recruited Coordinator that will lead the NPMU. S/he will be supported by a monitoring and evaluation specialist, who will lead the NPMU's Monitoring and Evaluation Unit. The M&E Specialist will coordinate the annual work plans to ensure the efficient implementation of the project. The Coordinator will inform the ESC and FAO Country Office of any delays or difficulties during implementation, including M&E plan, so that appropriate and corrective measures can be adopted. The National Coordinator will ensure that all project staff maintain a high level of transparency, responsibility and accountability in monitoring and reporting project results. FAO will support the National Coordinator as needed, including through annual monitoring missions. Additional M&E and implementation quality assurance and troubleshooting support will be provided by FAO as needed. The Technical and Scientific Committee (TSC), project beneficiaries and stakeholders will be involved as much as possible in project-level M&E.

209. A project inception workshop will be organized in order to aid to: a) orient project stakeholders to the project strategy and discuss any change in the overall context that might influence implementation; b) discuss the roles and responsibilities of the project team and ESC, including reporting and communication lines; c) review the results framework and discussion, reporting, monitoring and evaluation roles and responsibilities, and to finalize the M&E plans; d) review financial reporting requirements; and e) planning and scheduling ESC meetings; and f) finalize the first year work plan. The final Inception Report will be approved by the ESC and FAO.

210. The National Coordinator will provide inputs to the Annual Report for each year of implementation. The National Coordinator and the M&E Specialist will ensure that the indicators in the results framework are monitored annually. The Annual Reports will be shared with the ESC and other stakeholders. The annual performance reports will be submitted to the GCF less than 60 days after the end of each calendar year. The final project annual report and the terminal evaluation report will serve as the final project report package.

211. In accordance with the AMA between FAO and GCF, the FAO Office of Evaluation will be responsible for the independent interim and final evaluations. The evaluations will be conducted using a question-driven approach, and may include assessments against the criteria of relevance, effectiveness and sustainability, among others. The interim evaluation will be instrumental in contributing – through operational and strategic recommendations – to improve implementation, setting out any necessary corrective measures for the remaining period of the project. The final evaluation will assess the relevance of the intervention, its overall performance, as well as sustainability and scalability of results, differential impacts and lessons learned. The evaluation should also assess the extent to which the intervention has contributed to the Fund's higher-level goal of achieving a paradigm shift in adaptation to climate change in Guatemala. The evaluation will draw on mixed-methods, using qualitative methods (e.g. participatory rural appraisal) in combination with counterfactual analysis, depending on the existence of reliable control group data from the project's baseline and endline surveys. In addition to

primary data collected by the evaluators and secondary national data, both interim and final evaluations will draw on the monitoring reports and activities prepared by project staff. Careful attention will be paid to the disaggregation of data, results and outcomes by gender and cultural groups, considering the high percentage of indigenous peoples in the project area and the different level of vulnerability of project beneficiaries. The independent Mid-Term Evaluation will be undertaken when delivery will reach 50% of the initial total budget or mid-point of CGF scheduled as mention before. The MTE will be instrumental for contributing through operational and strategic recommendations to improved implementation for the remaining period of the project's life.

212. The following additional M&E actions will take place to ensure compliance with GCF evaluation requirements:
-Methodologies for monitoring and reporting of the key outcomes of the project.
-An overview of the methodologies for monitoring and reporting of the key outcomes of the project are briefly described below, and will be elaborated in a detailed Monitoring Plan that will be included as part of the Project Inception Report. The first activity will be to verify and update the baseline information included in this proposal (see Annex B Feasibility Study). Monitoring activities will be overseen by the National Project management Unit M&E Specialist. Monitoring of impacts and results will be guided by the Logic Framework, which will be the basis for a Performance Management Framework. Monitoring of results will take place on a quarterly basis, with the Municipal and Project management Units providing input to the M&E Specialist.

213. Monitoring the progress toward expected outcomes will be supported through a series of studies to be undertaken in the third and fifth year of implementation, listed below:
Outcome A5.0: Strengthened institutional and regulatory systems for climate-responsive and low-emission planning and development - institutional strengthening and territorial governance
Outcome A7.0: Strengthened adaptive capacity and reduced exposure to climate risks
Outcome M9.0: Improved management of land or forest areas contributing to emissions reductions
Progress toward Outcome A5.0 will be monitored by tracking the number of policy instruments and incentive mechanisms that enable climate change adaptation that are developed and presented to the national government for discussion and policy dialogue.

214. The farm plans will provide information for monitoring and reporting on Outcome A7.0. Monitoring of the implementation of farm plans by beneficiary farmers (sex-disaggregated) will enable the tracking of uptake of climate resilient agricultural practices within agroforestry and silvopastoral systems. The farm plans will include clear and precise indicators for soil quality, water availability, production quality and quantity, number of trees planted, crop phenology, weather behavior, and the incidence of extreme climate events, such as droughts and floods, among others. MINAG technicians will gather this information once a month with the assistance of community extension agents. In-depth analysis in the third year of the project of the results of demonstration farms will enable tracking of food production, for consumption and for market; increases in or maintenance of crop yields during extreme weather events; improvements in water regulation in production landscapes; uptake of rainwater harvesting activities, use of water purifying filters, improvements in water quality.

215. The methodologies to measure Outcome M9.0 will focus on measurement of the area of degraded land and the expected tCO2-eq sequestered through activities of the project. GIS, such as aerial and satellite imagery, as well as specialized software programs to generate maps, will be used to measure forest areas and trees on farms. MINAG will work with the the NPMU's Monitoring and Evaluation Unit, to show how the project has increased or decreased forest cover. FAO's EX-ACT tool will be used to determine the tCO2-eq sequestered because of project activities. These measurements will be undertaken at the mid-point of the project (third year of implementation) and after Project is completed (sixth or seventh year after the start date of the project).

216. An independent mid-term technical and financial evaluation will be conducted and the independent final evaluation will be initiated within three months prior to the actual completion date (NTE date) of the GCF intervention to be completed within six months from the end of project implementation delivery date. The evaluation will aim at identifying outcomes achieved, their sustainability and actual or potential impacts. It will also have the purpose of indicating future actions needed to assure continuity of the process developed through the project. A self –assessment will also be conducted at the mid-term and final stage of the Project.

217. Also, the following considerations are to be considered as part of the M&E: a) On the first year of the project, during the implementation of the baseline study (during which the baseline values given in the results framework will be completed

and validated), two groups will be defined: a) group of direct beneficiaries, and b) control group; to mark the initial situation of the direct beneficiaries. Subsequently, the monitoring system will be established to record the changes that will arise during the implementation of the project, b) the monitoring and evaluation will focus on the measurement of the results attributable to the project as a consequence of the implementation of measures and practices for adaptation to climate change. As well as, the impact on the harmonization of policies at territorial level, c) Based on farm plans and adaptation practices outside farms; the lines of action for monitoring and evaluation will be established to collect qualitative and quantitative information; and evaluate the effect of actions in the process of adaptation to climate change. In this process, the project will directly involve the beneficiary producers as key actors in the execution, monitoring and evaluation process, and d) The project will have monitoring and evaluation specialists who will be responsible for the preparation of the means of verification (surveys and analysis) and internal and external coordination (stakeholders). The project will be supported by the information management and monitoring system developed and used by MINAG, which will complement FAO´s tools and methods. The results of the monitoring process will serve as a basis for the evaluation processes of the project and the decision making for the incidence in public policy.

F. RISK ASSESSMENT AND MANAGEMENT

F.1. Risk factors and mitigations measures

The Project has been classified as Moderate risk (Category "B") and its activities are expected to activate the following Socio-Environmental Safeguards Policies: ESS2 and ESS5.

The primary reason for the moderate risk categorization is due to the use of herbicides in the control of marabu, a highly invasive species, as well as the risks of controlled use of one specie that may show invasive behavior in conditions without management.

Selected Risk Factor 1

Category	Probability	Impact
Other	Low	High

Description

The project will not introduce any new potential Invasive or Alien Species (IAS). The only potential IAS included in the project (Moringa (Moringa oleifera) which is well known in the country. The specie already exists in the project areas, and technical recommended and promoted in all the Cuban methodological documents and guidelines for livestock management (Manual of Livestock Technology July 28, 2014, Ministry of Agriculture). The technologies designed consider measures evaluated and validated for more than 20 years by Cuban scientific institutions, with the approval of environmental authorities (Ministry of Science Technology and Environment) and ensure that due to the management there are minimal risks for agro-biodiversity and natural biodiversity. See more details in Annex 6- Environmental and Social management framework.

Mitigation Measure(s)

For the Moringa oleiferea, a risk assessment on the use of it in Cuba context, is enclosed in the Appendix 2.6 of the Annex 2: Feasibility study, under the supplementary material 2.6.7. Some management measures are more deeply explained in the technical annex 2.6 of the Feasibility study. Among the measures envisaged for the management of the Moringa oleifera are the following:

- *Periodic monitoring of Moringa's behavior will be carried out.*
- *Management plans of the species will be elaborated for the different areas of the project.*
- *Farmers who manage the species will be informed of the risks of the species and will receive training.*
- *Moringa will be planted away from the boundaries of farms, roads and highways.*
- *The planted areas will be surrounded by tree barriers (Guazuma ulmifolia) to prevent them from being carried by the wind.*
- *Herbaceous barriers (grasses) will be placed to prevent the water from promoting dispersion, especially where runoff is directed.*
- *The landuse planning within the farms of the SILSOM module will consider location for the planted areas of Moringa, including siting which is far away from rivers, where their expansion is known to be greater.*
- *The schedule foreseen for cutting and carrying fodder will be respected, always avoiding periods when the plant produces flowers and fructifies.*

Selected Risk Factor 2

Category	Probability	Impact
Technical and operational	Medium	High

Description

The use of herbicides may cause problems of contamination in soil and water and may affect biodiversity and human health. Herbicides will be used to control marabu regrowth, following integrated management practices (IPM). These will be applied to a limited extent, in specific areas and only in the initial phase of the project. No highly hazardous pesticides will be used in the

project areas. The applications will be carried out in a restricted way, and only in the areas that require it, depending on the degree of infestation and there commendations of the experts. Pesticides will be used only when the mechanical methods of elimination have been exhausted. Pesticides will be dose limited under supervision and technical evaluation (Agriculture Vegetable Health Department and National Project Management Unit). To mitigate this, the project will use IPM and train producers, among other mitigation measures that will be listed later. The use of highly dangerous herbicides will also be avoided.

Mitigation Measure(s)

- *Implement Integrated Pest Management (IPM).*
- *Prepare a Pest Management Plan that will be a part of the Project's Social and Environmental Commitments.*
- *Ensure the acquisition and use of the means of protection necessary to ensure the health of the producers, who will be trained to perform these tasks.*
- *The entities that store and handle pesticides will follow their established management plans.*

Selected Risk Factor 3

Category	Probability	Impact
Technical and operational	Medium	Medium

Description

Limited availability of qualified human resources with the necessary field experience to mainstream climate resilience and adaptation concepts and approaches into agroforestry, silvopastoral and forestry schemes and marabú eradication.

Mitigation Measure(s)

The project will use FAO's experience and contacts in the region to support the identification of highly qualified and motivated candidates with the required experience to introduce and promote the new landscape restoration and multifunctional, sustainable plantation and agroforestry concepts.

Selected Risk Factor 4

Category	Probability	Impact
Other	Medium	High

Description

Farmers, communities and new landholders benefitting from the project show low interest in engaging in project activities and implementation of agroforestry and CTNPF modules.

Mitigation Measure(s)

The project will promote the previous experiences that were successfully implemented and provide the basis for the proposed Modules. The project will engage stakeholders by providing training opportunities, access to new technologies and financial incentives to promote the implementation of the modules with a focus on the areas classified as most vulnerable to climate change. Financial incentives already have a successful history of implementation in Cuba. Producers will be motivated to engage in the project due to the possibility of improving conditions caused by CC in the Project areas. The improvement of living conditions is one of the incentives but not the only one. The idea is to combine the project's models with financial incentives through the National Soil Fund and the Forest Fund, which would combine financial incentives for the farmers in conjunction with the adoption of the modules. Likewise, the material improvements that the project will bring in terms of resources for the implementation of the modules would play a role in the motivation and sustainability of the change, combining it with payments from the aforementioned national funds for the adoption of the modules proposed by the project.

Selected Risk Factor 5

Category	Probability	Impact
Technical and operational	Medium	High

Description

Hurricanes and tropical storms are striking Cuba with increasing frequency and intensity. The intensity and prospective impact on soils and water are unpredictable, with stronger storms doing greater damage overall.
Mitigation Measure(s)
As a country, Cuba has a strong civil defense system which when deployed before storms strike, has resulted in reduced numbers of casualties and property damage. Every effort will be made to limit damage to property and loss of life in the project areas if these are struck by hurricanes or tropical storms. The project itself is oriented to creating and strengthening agroecosystems that are resilient to these extreme events; over time, as the agroforestry, silvopastoral and forestry modules increasingly take root and provide greater ground cover, damages from these storms can be expected to decrease proportionately.

G. GCF POLICIES AND STANDARDS

G.1. Environmental and social risk assessment

218. Overall, the cumulative impacts of the project are expected to be positive. The positive impacts of the project are wide-ranging and include increased resilience of agro-ecosystems to myriad climate change impacts, as well as an increase in carbon capture capacity. Furthermore, the project will also increase connectivity and contribute to recovery of productive capacity of agricultural systems. Project interventions will support regulation of the hydrological cycle by absorbing torrential rains, preventing or reducing soil erosion, and improving the rates of water infiltration in soils across the landscapes to recharge the water table. Extension services will train producers on the integrated rehabilitation of landscapes and on measures to adapt to climate change. Actions will be taken to restore landscapes, which will enrich biodiversity. Positive social impacts will include an improvement in livelihoods with increased sources of employment and the expansion of production. These will lead to greater local food security and accessibility to food. The project will involve women through a Gender Action Plan that ensures the elimination of gender gaps, as well as women's empowerment and equitable incorporation in development processes throughout the Project.

219. The project has been classified as Moderate risk (category B) due to the risks associated with the use of herbicides in the control of marabu (Dichrostachys cinerea), a highly invasive species, and the risks related to the controlled use of non-native species for reforestation that can show invasive behavior in unmanaged conditions. The potential negative impacts of the establishment of the six modules of agroforestry and silvopastoral systems are mitigatable and predictable. Some risk is introduced through the use of machinery, which will be used in agricultural work and for the eradication of marabu. This equipment will be acquired in substitution of existing inefficient equipment, providing a more efficient and appropriate solution for marabu removal, currently done with bulldozers.
220. Limited amounts of environmental waste will be generated due to the application of slow-release chemical fertilizers. These are to be used only in the initial phase of implementation and then progressively replaced by organic fertilizers, as production capabilities increase. As indicated, herbicides will be used to control regrowth of marabu, following integrated management practices (IPM). These will be applied to a limited extent, in certain areas and only in the initial phase of the project. No highly hazardous pesticides will be used in the project areas. Certain tree species that manifest invasive behavior will be managed under controls that limit risks to biodiversity, while favoring native species as appropriate. It should be noted however that all species used are already present in Cuba, have a long history of use with no significant problems, and no new species will be introduced.
221. To mitigate the moderate risks associated with the use of invasive alien species (IAS), several measures will be put in place. Trees will be placed to act as barriers to the expansion of herbaceous IAS, and the behavior of species in and near the implementation areas will be constantly monitored. An Early Warning protocol will be established and included in the management plan to detect, control, and eradicate invasive species. Workers will be trained to identify and manage the IAS. SILLEC and SILSOM module activity calendars will be modified to guarantee adequate planning aimed to minimize risks. The Environmental and Social risk assessment and accompanying mitigation measures are described in the Environmental and Social Management Framework (ESMF) found in Annex 6 to this document.
222. To mitigate the risks associated with the use of pesticides, the Project will implement an Integrated Pest Management (IPM) program. A Pest Management Plan will be part of the Project's Social and Environmental Commitments. Producers' health will be safeguarded with training on how to safely perform tasks related to use of the pesticides. The entities that store and handle pesticides will follow their own established management plans. Both environmental and social risks are considered to be moderate, with a limited spatial footprint, of limited temporal duration, and controllable through protocols outlined in the project's Environmental and Social Management Framework.

G.2. GENDER ASSESSMENT AND ACTION PLAN

223. Despite important advances in women's participation and leadership in the economic, social and political spheres over the past 60 years in Cuba, women still face aspects of structural gender inequality related to cultural norms, household responsibilities and in the face of climate change impacts.

224. In the areas where the project will be implemented, major gender gaps include sexual division of labor and family and social co-responsibility. In general, women are overrepresented in unpaid domestic work (of the total hours worked by women, 63% are unpaid), and there is no reconciliation between work and family life for women. Of the total hours of unpaid work performed by Cuban citizens overall, it is estimated in the project's Gender Assessment and Action Plan that men perform 9% and women 91%. Finally, there is also evidence of gender-based violence occurring in the project's target communities. Furthermore, women may face additional challenges in the context of work, where they are often placed in a position of

subordination to men and may be at a disadvantage due to lack of education, lack of employment, and insufficient transportation to employment.

225. Globally, as well as in the local Cuban context, women are more vulnerable to climate change in the Project regions than men, due to factors related to household responsibility and access to resources. The scarcity and storage of water is a significant problem for women, who are primarily responsible for household water collection. The migration of men for work due to climate change also effectively confines women to remain in communities to care for the elderly, children and the disabled. These vulnerabilities are exacerbated by the impacts of climate change, such as increased pests, drought and hurricanes.

226. The project will contribute significantly to obtaining gender equality goals by increasing community resilience to climate change and directly benefiting 3,783 women who are producers in selected agricultural and livestock production entities, in addition to women throughout the communities.

227. Actions proposed in the comprehensive Gender Assessment and Action Plan (Annex 8 attached to this document), include the acquisition of production technologies for climate resilience, directly helping women adapt to climate change. These technologies include the installation of water pumps that will help ease the burden of collecting water, as well as bio-digestors that will enable more women to cook food using biogas.

228. The Project will create jobs for men and women by establishing six production modules couple to the promotion of new and improved existed business models, for example, six new technologically equipped nurseries will employ more than 30 women. The Project also aims to improve gender equality in the workplace; all project work spaces will have at least one bathroom for men and another for women to ensure the comfort and security of female employees. Significantly, gender-sensitive training will be implemented for men and women involved in the project.

229. Themes of gender-sensitive policies and communication will be incorporated into all administrative and leadership aspects of the Project throughout its lifetime. Actions will include the promotion of women in leadership positions and the creation of gender committees that monitor the actions of the project. Designated GAP focal points will be identified in the communities, and permanent spaces will be created for reflection, debate and review of project actions with a gender approach. Finally, communication and education about gender equality will be disseminated within the Project regions, making visible the contribution of women toward increasing climate resilience. These actions will not only help foster gender equality throughout the project and its communities, they will also help improve livelihoods, access and availability of better-quality water, as well as increasing local production of food, jobs and income.

G.3. FINANCIAL MANAGEMENT AND PROCUREMENT

230. Financial management and procurement under this project will be guided by relevant FAO rules and regulations, as well as relevant provisions in the Accreditation Master Agreement (AMA) signed by FAO and the GCF. These rules and regulations were reviewed and deemed satisfactory by the GCF Secretariat and Accreditation Panel as part of FAO's accreditation to the GCF.

231. In the project execution, GCF resources will be managed directly by FAO in accordance with its rules, regulations, policies and procedures.

232. FAO has deployed an Oracle based Enterprise Resource Planning (ERP) system the 'Global Resources Management System' (GRMS). This system provides all FAO employees around the world with travel, human resources, procurement and finance functionalities. Using GRMS improves the flow of financial information, supports financial monitoring and reporting, increases transparency and visibility, and strengthens internal control. FAO maintains a Chart of Accounts which is used by the whole Organization and that allows for a separation of income and expenditure by donor and project and it provides a standardised coding structure that enables data to be recorded, classified and summarised to facilitate internal management and external reporting requirements.

233. Direct procurement by FAO is done in accordance with the FAO Manual Section 502, "Procurement of Goods, Works and Services". To sub-contract the delivery of specific activities using Letters of Agreement, FAO operates in accordance with its Manual Section 507, "Letters of Agreement". Such services are managed under the FAO Procurement Service, which provides policy and operational support to FAO offices and staff undertaking these activities to ensure the Organization procures

goods, works and services based on "Best Value for Money" principles. To sub-contract delivery for agreed results, FAO operates in accordance with its Manual Section 701, "Operational Partners Implementation Modality".

234. The project will be subject to FAO's audit regime, including the external audit and internal audit function. Please see Annex 10 Procurement Plan for further details.

G.4. Disclosure of funding proposal

☒ **No confidential information:** *FAO confirms that the funding proposal, including its annexes, may be disclosed in full by the GCF, as no information is being provided in confidence.*

235. According to both GCF and FAO policies on access to information, all safeguard instruments under this project, including the ESMF and the Gender Action Plan must be disclosed online in English and Spanish at least 30 days prior to GCF board meeting and approval of the project. Access to the documents must be possible for any local people (i.e. it must be disclosed locally in an accessible place) in a form and language understandable to key stakeholders. Such disclosure of relevant project information helps stakeholders effectively participate. FAO is committed to disclosing information in a timely manner and in a way that is accessible and culturally appropriate, placing due attention on the specific needs of community groups which may be affected by project implementation (e.g. literacy, gender, differences in language or accessibility of technical information or connectivity).

236. This is a moderate risk project, so FAO will release the applicable information as early as possible, and no later than 30 days prior to project approval. The 30-day period will start only when all relevant information requested from the project has been provided and is available to the public. FAO undertakes disclosure for all moderate risk projects, using a disclosure portal to publicly disclose all of the projects' documentation related to environmental and social safeguards (e.g. Environmental and Social Management Frameworks, Gender Action Plans, Indigenous Peoples Plans, and other relevant documents). The website is: http://www.fao.org/environmental-social-standards/disclosure-portal/en/.

237. To ensure the widest dissemination and disclosure of project information, including any details related to applicable environmental and social safeguards, local and accessible disclosure tools including audiovisual materials (e.g. flyers, brochures, community radio broadcasts) will be utilized in addition to the standard portal disclosure tool. Furthermore, particular attention will be paid to farmers, illiterate or technologically illiterate people, people with hearing or visual disabilities, those with limited or no access to internet and other groups with special needs. The dissemination of information among these groups will be carried out with the project counterparts and relevant local actors.

H. ANNEXES

H.1. Mandatory annexes

☒	Annex 1	NDA No-objection letter
☒	Annex 2	Feasibility study, including technical annexes
☒	Annex 3	Economic and/or financial analyses in spreadsheet format
☒	Annex 4	Detailed budget plan
☒	Annex 5	Implementation timetable including key project milestones
☒	Annex 6	E&S document corresponding to the E&S category (A, B or C; or I1, I2 or I3): ☐ Environmental and Social Impact Assessment (ESIA) or ☐ Environmental and Social Management Plan (ESMP) or ☐ Environmental and Social Management System (ESMS) ☐ Others (please specify – e.g. Resettlement Action Plan, Resettlement Policy Framework, Indigenous People's Plan, Land Acquisition Plan, etc.)
☒	Annex 7	Summary of consultations and stakeholder engagement plan
☒	Annex 8	Gender assessment and project-level action plan
☒	Annex 9	Legal due diligence (regulation, taxation and insurance)
☒	Annex 10	Procurement plan
☒	Annex 11	Monitoring and evaluation plans
☒	Annex 12	AE fee request
☒	Annex 13	Co-financing commitment letter, if applicable
☐	Annex 14	Term sheet including a detailed disbursement schedule

H

H.2. Other annexes as applicable		
☒	Annex 15	Evidence of internal approval
☒	Annex 16	Maps indicating the location of proposed interventions
☐	Annex 17	Appraisal, due diligence or evaluation report for proposals based on up-scaling or replicating a pilot project
☒	Annex 18	Procedures for controlling procurement by third parties or executing entities undertaking projects financed by the entity
☐	Annex 19	First level AML/CFT (KYC) assessment
☒	Annex 20	Operations manual (Operations and maintenance)
☐	Annex x	Other references

Food and Agriculture Organization
of the United Nations

FUNDING PROPOSAL TO THE GREEN CLIMATE FUND

-IRES-CUBA-
INCREASED CLIMATE RESILIENCE OF RURAL HOUSEHOLDS AND COMMUNITIES THROUGH THE REHABILITATION OF PRODUCTIVE AGROFORESTRY LANDSCAPES IN SELECTED LOCALITIES OF THE REPUBLIC OF CUBA

ANNEX 1 No Objection Letter from NDA

October 2019

Republic of Cuba

CITMA
MINISTERIO DE CIENCIA TECNOLOGIA Y MEDIO AMBIENTE

FIRST DEPUTY MINISTER

Habana, November 1, 2019

RS: 371/19

Yannick Glemarec
Executive Director. The Green Climate Fund ("GCF")

Re: Funding proposal for the GCF by FAO regarding "***Increased climate resilience of rural households and communities through the rehabilitation of production landscapes in selected localities of the Republic of Cuba***"

Sir,

We refer to the project "Increased climate resilience of rural households and communities through the rehabilitation of production landscapes in selected localities of the Republic of Cuba" in Cuba as included in the funding proposal submitted by FAO to us on 28.10.19 (last submission).

The undersigned is the National Designated Authority of Cuba.

Pursuant to GCF decision B.08/10, the content of which we acknowledge to have reviewed, we hereby communicate our no-objection to the project "Increased climate resilience of rural households and communities through the rehabilitation of production landscapes in selected localities of the Republic of Cuba" as included in the funding proposal.

By communicating our no-objection, it is implied that:

CITMA

FIRST DEPUTY MINISTER

(a) The government of Cuba has no-objection to the project as included in the funding proposal;

(b) The project as included in the funding proposal is in conformity with Cuban's national priorities, strategies and plans;

(c) In accordance with the GCF's environmental and social safeguards, the project as included in the funding proposal is in conformity with relevant national laws and regulations.

We also confirm that our national process for ascertaining no-objection to the project "Increased climate resilience of rural households and communities through the rehabilitation of production landscapes in selected localities of the Republic of Cuba" as included in the funding proposal has been duly followed.
We also confirm that our no-objection applies to all activities to be implemented within the scope of the project.
We acknowledge that this letter will be made publicly available on the GCF website.

Kind regards,

José Fidel Santana Núñez
First Deputy Minister; Ministry of Scince, Technology and Enviroment (CITMA)
NDA of CUBA

Environmental and social safeguards report form pursuant to para. 17 of the IDP

Basic project or programme information	
Project or programme title	Increased climate resilience of rural households and communities through the rehabilitation of production landscapes in selected localities of the Republic of Cuba (IRES)
Existence of subproject(s) to be identified after GCF Board approval	[Yes]
Sector (public or private)	Public
Accredited entity	Food and Agriculture Organization of the United Nations
Environmental and social safeguards (ESS) category	Category B
Location – specific location(s) of project or target country or location(s) of programme	Central Region: - Las Villas Province, Cuba: Corralillo, Quemado de Güines and Santo Domingo - Matanzas Province, Cuba: Los Arabos Eastern Region: - Las Tunas Province, Cuba: Amancio Rodríguez, Colombia and Jobabo.
Environmental and Social Impact Assessment (ESIA) (if applicable)	
Date of disclosure on accredited entity's website	Friday, February 7, 2020
Language(s) of disclosure	English and Spanish
Explanation on language	Spanish is the official language of Cuba. The documents were provided in English and Spanish, so both national and international readers can easily understand the content.
Link to disclosure	English: http://www.fao.org/environmental-social-standards/disclosure-portal/en/ Spanish http://www.fao.org/environmental-social-standards/disclosure-portal/en/
Other link(s)	FAO Disclosure Portal: http://www.fao.org/environmental-social-standards/disclosure-portal/en/ FAO Cuba: http://www.fao.org/cuba/es/ Ministry of Agriculture of the Republic of Cuba: https://www.minag.gob.cu/
Remarks	An environmental and social risk assessment consistent with the requirements for Category B projects is contained in the Environmental and Social Management Framework (ESMF) that is available at the above-mentioned links.

Environmental and Social Management Plan (ESMP) (if applicable)	
Date of disclosure on accredited entity's website	Friday, February 7, 2020
Language(s) of disclosure	English and Spanish
Explanation on language	Spanish is the official language of Cuba. The documents were provided in English and Spanish, so both national and international readers can easily understand the content.
Link to disclosure	English: http://www.fao.org/environmental-social-standards/disclosure-portal/en/ Spanish : http://www.fao.org/environmental-social-standards/disclosure-portal/en/
Other link(s)	FAO Disclosure Portal: http://www.fao.org/environmental-social-standards/disclosure-portal/en/ FAO Cuba: http://www.fao.org/cuba/es/ Ministry of Agriculture of the Republic of Cuba: https://www.minag.gob.cu/
Remarks	Preliminary environmental and social management planning consistent with the requirements for Category B projects is contained in the ESMF that is available at the above-mentioned links. A Site-specific Environmental and Social Management Plans consistent with the requirements for Category B projects will be developed for relevant sub-activities once project sites are identified during project implementation, in line with the process specified in the ESMF that is available at the above-mentioned links.
Environmental and Social Management (ESMS) (if applicable)	
Date of disclosure on accredited entity's website	N/A
Language(s) of disclosure	[__]
Explanation on language	[__]
Link to disclosure	[__]
Other link(s)	[__]
Remarks	
Any other relevant ESS reports, e.g. Resettlement Action Plan (RAP), Resettlement Policy Framework (RPF), Indigenous Peoples Plan (IPP), IPP Framework (if applicable)	
Description of report/disclosure on accredited entity's website	Friday, February 7, 2020
Language(s) of disclosure	English and Spanish

Explanation on language	Spanish is the official language of Cuba. The documents were provided in English and Spanish, so both national and international readers can easily understand the content.
Link to disclosure	English: http://www.fao.org/environmental-social-standards/disclosure-portal/en/ Spanish http://www.fao.org/environmental-social-standards/disclosure-portal/en/
Other link(s)	FAO Disclosure Portal: http://www.fao.org/environmental-social-standards/disclosure-portal/en/ FAO Cuba: http://www.fao.org/cuba/es/ Ministry of Agriculture of the Republic of Cuba: https://www.minag.gob.cu/
Remarks	A Pest Management Plan consistent with the requirements for Category B projects is contained in the ESMF that is available at the above-mentioned links (APPENDIX 6.3)
Disclosure in locations convenient to affected peoples (stakeholders)	
Date	Friday, February 7, 2020
Place	FAO Cuba (country office) website: http://www.fao.org/cuba/es/ Ministry of Agriculture of the Republic of Cuba https://www.minag.gob.cu/
Date of Board meeting in which the FP is intended to be considered	
Date of accredited entity's Board meeting	N/A
Date of GCF's Board meeting	Tuesday, March 10, 2020

Note: This form was prepared by the accredited entity stated above.

Secretariat's assessment of FP126

Proposal name:	Increased climate resilience of rural households and communities through the rehabilitation of production landscapes in selected localities of the Republic of Cuba (IRES)
Accredited entity:	Food and Agriculture Organization of the United Nations (FAO)
Country/(ies):	Cuba
Project/programme size:	Medium

I. Overall assessment of the Secretariat

1. The funding proposal is presented to the Board for consideration with the following remarks:

Strengths	Points of caution
• The project will reduce emissions by 133,786 tonnes of carbon dioxide equivalent annually through improved land use and agroforestry; lifetime emission reductions are estimated at 2.6 million tonnes of carbon dioxide equivalent • The project will pave the way for necessary enabling conditions that will result in significant mitigation and adaptation benefits arising from ecosystem-based adaptation and restoration of ecological functions at the landscape level	• The use of herbicides in marabú control may cause contamination problems in the soil and water and may affect biodiversity and human health; however, the use of herbicides will be limited and used following integrated pest management practices
• The project provides a scalable model approach to tackle the problem of marabú, which poses challenges in many tropical countries in areas that have been overgrazed, creating a future risk. There is very high potential for scaling up the model proposed in Cuba to many other countries to turn the marabú challenge into sustainable economic benefits for smallholders	
• The project will establish a landscape resilience fund to support long term	

agro-forestry activities, which will provide a solid foundation for the third phase of countrywide up-scaling of the agroforestry and silvopastoral systems as well as water use efficiency measures	

2. The Board may wish to consider approving this funding proposal with the terms and conditions listed in the respective term sheet and addendum IX, titled "List of proposed conditions and recommendations".

II. Summary of the Secretariat's assessment

2.1 Project background

2.1.1. Background/history of the project to inform assessment of the funding proposal:

3. this project constitutes the second phase of a three-phase programme to enhance the climate resilience of Cuba's agricultural sector countrywide. During the first phase, implemented by the Ministry of Agriculture (MINAG) of Cuba, research, testing and analysis of potential resilience-enhancing land use systems was conducted and six agroforestry, silvopastoral and forestry modules were identified that are both productive and sustainable. The present proposed GCF project represents the second phase, which will implement the proven modules at the macro level in order to build their performance at scale and enhance institutional capacities for extension and adaptation. It will also establish and operationalize a financial mechanism to support farmers in applying resilience-enhancing technologies and practices to their agro-ecosystems. A third phase, to be funded in the future, will implement the approach and lessons learned from the project nationwide, supported by the financial mechanism established under the proposed GCF project.

2.1.2. Climate objective:

4. Future climate change patterns, such as increased temperature, prolonged droughts and decreased rainfall, will affect agricultural production, particularly of staple crops (rice, beans), negatively impacting the livelihoods of farm households and the availability of agricultural products, and ultimately putting food security at risk. The selected seven municipalities for the two project locations in the provinces of Villa Clara, Matanzas (central region) and Las Tunas (eastern region) are among the municipalities most affected by agricultural drought in Cuba.

5. It is projected that under the business-as-usual scenario, net primary agricultural productivity and biomass density will decline. An estimated reduction in yield under projected current climate scenarios will be as high as 65 per cent for 29 crops studied with reductions ranging from 12 per cent for beans and rice to 16 per cent for manioc and as much as 48 per cent for potatoes.

2.1.3. Financing information, environmental and social safeguards (ESS) category:

6. This project will use incremental finance in the form of GCF grant resources to deliver direct resilience benefits to farmers and producers' organizations, increasing the effectiveness and maximizing returns on government investments in knowledge generation, capacity development, and innovation, and setting the stage for cost-effective countrywide up-scaling of

climate-resilient agroforestry, silvopastoral, and forestry systems. The project is requesting total GCF financing of USD 38.2 million in the form of grants, with co-financing of USD 81.7 million of grant financing, which will be provided in Cuban pesos (CUP) by the executing entity (EE), MINAG, thus bringing the co-financing ratio to 1:2.1. The project ESS Category is B, and the entity has submitted relevant documentation (an environmental and social management framework (ESMF) as part of the funding proposal package.

2.2 Component-by-component analysis

Component 1: Increased climate change resilient production landscapes through investment in innovative agroforestry and silvopastoral systems, reforestation with close-to-nature planted forests and assisted natural forest regeneration (total cost: USD 110.9 million; GCF cost: USD 34.8 million, or 31 per cent).

7. Under component 1, the project aims to restore approximately 15,544 ha of farmland and 20,189 ha of rangeland with planted forests. For this purpose, specific land preparation is required: land must be cleared of the invasive marabú species and subsoiling must be introduced to ensure root as well as water penetration, etc. While agroforestry and silvopastoral systems are reasonably low technology systems to operate, land preparation requires technology and equipment that can be used efficiently to prepare land without augmenting carbon emissions or land degradation.

8. The GCF funds will be used to purchase special modern machinery to clear marabú thickets on soils at high risk of climate-driven desertification and degradation. Marabú wood and biomass will then be grounded to wood chips to form a mulch layer that will support the soils from erosion and sun, and to help restore its organic matter. The land will then be reconditioned through the implementation of agroforestry systems. The GCF funding will be used to provide equipment and training to producers to establish the modules tested during phase 1 and develop resilience-enhancing farm management plans.

9. The GCF funds will also be used to construct water reservoirs for the agroforestry systems (with a capacity of 4,900 m^3), including irrigation systems, and small-sized water storage facilities (ponds) for livestock use as well as purchasing of inputs (seedlings). These structures and facilities will be fed from surface water and conditioned to maximize their efficiency and sustainability through appropriate soil conservation practices.

10. The Government of Cuba will cover the costs of labour and locally available materials for the installation of small water reservoirs as well as the installation of the irrigation systems and their operations and maintenance.

Component 2: Strengthened institutional and farmer capacities to improve ecosystem services through agroforestry and forestry systems and enhance the climate-resilience of production landscapes (total cost: USD 0.8 million; GCF cost: USD 0.8 million, or 100 per cent).

11. While most of the GCF funding is requested for purchasing technology and equipment, a certain amount is allocated for capacity development under components 2 and 3. Through component 2, farmers and producers' organizations will receive training via 17 dedicated farmer field schools (FFS), located in the project areas. FFS have proven to be the most effective and efficient way to carry out farmer trainings. The project will establish an integrated FFS programme to cover the seven municipalities and their different agroforestry, silvopastoral and forestry systems. FFS programmes will work at multiple scales to strengthen producer organizations, contributing to greater organizational capacity along the entire value chain – from financing, post-harvest processing, and marketing to investments. GCF will finance the establishment of FFS: not the actual building of schools, but the identifying of potential

agroforestry, silvopastoral, and/or forestry plots on farmers' fields where irrigation and soil preparation technologies can be demonstrated and where training and experience of new systems and technologies can take place.

12. The project will also build farmers' capacities in sustainable land management, such as no-till cultivation; inter-cropping; cut-and-carry forage feeding; subsoiling; soil conservation with gabions; marabú eradication and management; agroforestry and silvopastoral system design and maintenance; application of efficient irrigation technologies; and water harvesting and storage systems; among others. Finally, under this component, the farmers will receive training on how to effectively access secondary markets as well as analyse and develop value chains for resilient production systems.

Component 3: Effective governance to support climate resilience-enhancing production systems and ecosystem services (total cost: USD 1.7 million; GCF cost: USD 0.93 million, or 55 per cent).

13. Under component 3, the project will analyse stakeholder roles and responsibilities, and potential policy reforms with the aim of defining specific mandates and areas of action; 10 multi-stakeholder and multi-sectoral workshops will formulate the type of reforms necessary, and specific proposals for policy reforms will be developed, followed by a national validation exercise.

14. This project will train key organizations and farmers in the seven target municipalities to participate collaboratively in planning and decision-making processes, which will determine the management outcomes, outputs and activities in the production landscapes to enhance their climate resilience. Strengthening of governance mechanisms will also include development of norms, agreements and organizational capacities for the collaborative management of areas targeted for restoration.

15. The Forestry Development Fund and Soil Conservation Fund will be transformed into one single landscape resilience fund, which will be designed and established by the end of this project for the purpose of providing funding to farmers and producer organizations, in particular, farmer cooperatives and smallholder farmers for activities that would implement the landscape resilience policy, to be developed as part of activity 3.1.

Component 4: Project management (total cost: USD 6.3 million; GCF cost: USD 6.3 million, or 100 per cent)

16. The project management costs will be used for the project operational support and financial management unit (OSFMU), which will be led by the Food and Agriculture Organization of the United Nations (FAO) Representation of Cuba and will have the main function of supporting the national project management unit (NPMU), providing procurement services and financial management services for the GCF proceeds.

III. Assessment of performance against investment criteria

17. The project will combine investments in water supply and irrigation, agroforestry, silvopastoral and forestry systems, and farmer and institutional capacity-building for climate resilience. The project will be implemented in two of the most vulnerable regions to climate change impacts in Cuba, which the Government of Cuba has selected based on climate scenarios and projections of temperature increase and low precipitation levels.

18. As a result of this project, critical ecosystem services will become more climate resilient, in particular, the water flows into the productive landscapes, through landscape rehabilitation and management that enhances agro-ecosystem productivity and sustainability. This will be achieved by improving water infiltration rates and reducing or preventing run-off and soil

erosion. As a result, significant mitigation benefits will result from the integration of trees and bushes into agroforestry and silvopastoral systems as well as through reforestation using close-to-nature planted forests and assisted natural regeneration.

19. Through component 2, technical assistance, capacity-building and knowledge will be provided to farmers to replace current production practices with new resilient production practices, necessary for effective implementation of the landscape rehabilitation modules. Through component 3, the project will support the transformation of the policy and planning frameworks required to shift the paradigm of production maximization and will include analyses of and reforms to the current financial mechanism in order to finance resilience of farmers.

3.1 Impact potential *Scale: High*

20. The project will reduce climate change vulnerability for farmers and producers' organizations by improving ecosystem services, primarily water regulation, in two vulnerable regions of Cuba through integration of trees and bushes into agricultural production landscapes. The project will also produce significant mitigation benefits. With implementation of this project, approximately 2,675,727 tonnes of carbon dioxide equivalent will be sequestered over a 20-year period.

21. A total of approximately 51,713 people, or 30 per cent of the total population in climate-vulnerable areas of the selected provinces, will benefit directly from project interventions through building resilience and restoration of ecosystem services. The project will reduce the climate vulnerability of approximately 7,728 lower income producers, provide direct resilience benefits to 30,912 farmer families in the two regions and enhance climate resilience of approximately 35,734 ha of production landscapes as well increase producers' and institutional capacities to manage climate risk; it will also generate further detailed knowledge of the performance of these agroforestry systems at scale.

22. The project will provide indirect benefits to 240,117 people in communities around the target areas through strengthened institutional capacities for training and technical assistance, enhanced agro-ecosystem management, and widespread dissemination of lessons and best practices in climate-resilient agriculture.

3.2 Paradigm shift potential *Scale: High*

23. The project will pave the way for necessary enabling conditions that will result in significant mitigation and adaptation benefits arising from ecosystem-based adaptation and restoration of ecological functions at the landscape level. For instance, the project will improve the accessibility to finance by merging the National Forestry Development Fund and Soil Conservation Fund and transforming these funds into a single landscape resilience fund aimed at farmers' cooperatives and especially vulnerable small landholders. As a result of this project, FAO will provide the Government of Cuba with assistance in legal, normative and policy matters; facilitate the inter-institutional dialogue needed to implement its national development plan 2030, Tarea Vida and its nationally determined contribution (NDC); and assist in overcoming the barriers to implementation of these plans.

24. Furthermore, the project will train key organizations in the seven targeted municipalities to participate effectively and collaboratively in planning and decision-making processes in the target landscapes in order to enhance their climate resilience. Strengthening of governance mechanisms will also include development of norms, agreements and organizational capacities for the collaborative management of targeted areas.

3.3 Sustainable development potential *Scale: Medium*

25. The project will have significant sustainable development potential, with environmental, social and economic co-benefits. In terms of environmental co-benefits, the project will promote multi-cropping systems with the aim of maintaining soil cover throughout the year; enhancing soil organic matter and carbon content; reducing soil erosion; increasing groundwater recharge; reducing vulnerability to insect pests and enhancing their diversity, including pollinators; and increasing water absorption capacity and soil biodiversity.

26. With this project, loss of income from drought will be avoided, and farmers will gain access to 35,734 ha of reclaimed farmland for production of subsistence and commercial crops. In addition, as a result of increased and more stable yields, the farmers will be able to achieve food and livelihoods security through increased sales to food markets.

27. In particular, women will receive support via gender-sensitive training and skill building, including for farm management, business development, use of weather and climate information, and marketing of farm products.

28. Key economic benefits include a more diversified agricultural production system, which will provide opportunities for on-farm employment throughout the year, and improvements in access to and the efficiency of water use which will result in labour saving, permitting farmers to achieve higher degrees of economic efficiency.

3.4 Needs of the recipient *Scale: High*

29. According to the Climate Change Vulnerability Index, Cuba is classified as “high risk” and is extremely vulnerable to climate change. Additionally, as a small island developing State, Cuba faces serious climate change impacts. These include a rise in average temperatures and increasing rainfall variability as well as higher hurricane frequency and increasing sea level rise. Every year Cuba is affected by a variety of climate change impacts that are increasing in strength and frequency, such as: droughts; torrential rainfall, including from hurricanes; saltwater intrusion; flooding; landslides; and extreme temperatures. Increased exposure of farmers and agricultural assets to climate change impacts has been a significant source of economic losses.

30. Future climate scenarios predict a temperature rise of 4 °C and a decline in rainfall between 15 and 63 per cent for the years 2050-2100. Under the business-as-usual scenario, livestock production in the project’s two target regions (i.e. continuing with the traditional grazing practices) will result in a reduction of total grassland biomass of 18 per cent and a growing dominance of warm season (C4) grasses, with increasing carbon-to-nitrogen ratios that would produce higher methane emissions from enteric fermentation of ruminants.

3.5 Country ownership *Scale: High*

31. The project is part of Tarea Vida, the core government policy on climate change and sustainable development. It also reflects the country’s NDC, submitted to the United Nations Framework Convention on Climate Change in November 2015, which lists six priority actions for climate change adaptation. One of the priority actions is directly related to this project, namely, incorporating the adaptation dimension into programmes, plans and projects related to food production, integrated water management, land management, forestry, fisheries, tourism and health.

32. The NDC also identifies two priority sectors for reducing greenhouse gas (GHG) emissions: agriculture and energy, which account, respectively, for 76 per cent and 15 per cent

of the country's emissions. The forestry sector has shown sustained growth – forest coverage increased from 14 per cent of the country's surface area in 1959 to 29 per cent in 2013. Currently, it is estimated that Cuban forests have a sequestration capacity of approximately 14.3 million tonnes of carbon dioxide equivalent per year, according to data from the latest GHG inventory.

33. Long-term institutional ownership and sustainability of this project has been established via the efforts of MINAG in leading a broad consultation process for development of this proposal, including two national consultation workshops as well as a dedicated commitment from the Government of Cuba to take on the responsibility of the operations and maintenance plan, included in the funding proposal package.

3.6 Efficiency and effectiveness *Scale: High*

34. The accredited entity (AE) requests support in the form of grant in order to support the Government of Cuba's efforts to help vulnerable farmers to adapt to climate change. Cuba is currently unable to access loans from multilateral lending institutions, making concessional grants the only option for financing to overcome barriers related to food and water security. Cuba's ability to generate adequate fiscal resources is hindered by the account deficit of the balance of payments, bank deductions on foreign transfers, and the high degree of debt maturity, all of which reduce its ability to obtain necessary loans. These fiscal limitations do not provide opportunities for private investment and thus the country does not have the additional funds required to build resilience to agricultural production systems.

35. Farmers and producers' organizations in the two provinces are unable to access the financial resources required to invest in the resilience of their agricultural production systems. Government financial support is insufficient to meet investment needs, particularly in relation to the activities required for enhancement of ecosystem services and landscape resilience.

36. Economic and financial analyses were carried out to estimate the costs and benefits of the project vis-à-vis a no-project baseline. The economic benefit for the entire project is estimated at USD 231.2 million, with an internal rate of return of 29.3 per cent. Therefore, with an investment of USD 119.9 million, the project is expected to create economic benefits in excess to the opportunity cost of capital (12 per cent) and produce a bonus of USD 231.2 million.

37. The Government of Cuba has committed to co-financing of USD 81.7 million, which will be used for technical and logistical support, training of farmers, and assistance to farmers for business planning and access to credit and markets.

IV. Assessment of consistency with GCF safeguards and policies

4.1 Environmental and social safeguards

38. The AE has classified the project with moderate risk (category B) due to activities that are expected to trigger the socio-environmental safeguards policies of the AE on: natural resources management ESS 1 (1.1); biodiversity, ecosystems and natural habitats, ESS 2 (2.3, 2.4); plant genetic resources for food and agriculture, ESS 3 (3.2.1); and pest and pesticide control, ESS 5 (5.1). Key reasons identified include the risks and impacts posed by the limited use of herbicides in the control of marabú (*Dichrostachys cinerea*, a non-native invasive tree species) as well as the use of heavy machinery in its control, risks in the selection of seed that might potentially result in the introduction of alien species that may show invasive behaviour in conditions without management, the generation of waste due to the application of slow-release chemical fertilizers that do not completely decompose and limited pesticides use particularly at

the initial stages of the project. Nevertheless, the project will promote integrated pest management (IPM) practices. Water resources from rainwater harvested in small reservoirs to be used mainly for small drip irrigation systems and for livestock raising is also expected.

39. An ESMF was developed to guide the identification and management of environmental and social risks and impacts. It also provided for the selection criteria for sub-activities, the type of safeguards instruments to be developed, the institutional arrangements, and monitoring and reporting procedures to comply with environmental and social safeguards requirements. The ESMF provided an overview of the environmental and social features of the area, including labour and land tenancy, profiles of target beneficiaries and the existing social protection in the country. The ESMF also discussed the current national legal and institutional framework and applicable environmental and social safeguard policies.

40. The ESMF provided an overview of the potential environmental and social impacts of the project as well as the mitigation measures on the identified impacts. An approach to enhance positive impacts is also provided. The ESMF includes defining sub-activities, conducting an environmental and social risk screening, and developing management measures, including monitoring and reporting. The selection of project areas was also done in consultation with environmental authorities and other stakeholders and will avoid those which will affect protected areas or their buffer zones.

41. The ESMF has an exclusion list that indicates the practices and activities that will not be supported by the project. This includes activities that will result from "changes in land tenure or displacement (permanent or temporary) of people from their homes or places of work and subsistence or restrict their access to them". While "activities in areas with cultural, historical or transcendent values for individuals and communities" are also included, a chance find procedure is envisioned to be developed and included in third party agreements with contractors. It also provides for guides to manage invasive alien species and pests (in the form of a pest management plan).

42. The AE undertook screening for indigenous peoples and confirms that there are no indigenous peoples in project area. Nevertheless, the project takes into consideration the specific needs and requirements of all minority ethnic groups present in the targeted communities in order to ensure they are actively involved and their participation is facilitated, in line with national legislation, both the AE and GCF guidelines on indigenous peoples, and following standard practice and experience in Cuba where the AE has been operating for over 40 years.

43. Stakeholder engagement during project preparation and formulation is presented. Various stakeholders have been identified and consultations have been conducted at both the national and at the provincial and local levels with communities, cooperatives, authorities and various organizations. The issues were presented, discussed and adjusted in the consultation workshops with the active participation of the stakeholders. During project implementation, consultation with interested parties is also planned to be conducted at the initial phase, halfway through the project life and almost at the end of the project life to cater for possible adjustments. The AE indicated that it would carry out the disclosure of all moderate risk projects and an outreach portal has been established to publicly disclose documentation related to safeguards.

44. As far as the arrangements for implementing safeguards are concerned, the project will establish an NPMU at the national level, which will include a specialist who is exclusively assigned the task of managing environmental and social safeguards issues and concerns. This arrangement is cascaded down to the provincial and municipal levels where the provincial and municipal coordinators are expected to perform this function. The ESMF is also expected to be cascaded and adopted up to the operational level where contractors, sub-contractors and other entities involved with the project are expected to comply with the indicated protocols. Capacity

building in the form of training will also be undertaken. The ESMF provided for a grievance redress mechanism (GRM) based on the AE's requirements and a community-specific grievance redress mechanism preferred by the local beneficiaries at the project level will be developed.

4.2 Gender policy

45. The AE has submitted a gender assessment and gender action plan; therefore, it complies with the requirements of the GCF Gender Policy.

46. The assessment includes information on the enabling environment that exists in Cuba for promoting gender equality and women's empowerment. Laws and legislation have been amended to ensure these rights are maintained. Cuba has achieved women's equality in the areas of education and the political space, among other development indices. While this is generally true, the assessment also highlights the existence of stereotypes and traditional gender roles and the existence of a patriarchal culture, which have an impact on men and women. The Cuban reality reveals contradictions that demonstrate that, in different social spheres, gender relations are going through processes of change, both in their values and in certain social and cultural behaviours. The predominance of "machista" attitudes and perceptions at community and family levels hinder women's engagement, participation and sustained existence in the labour market in the agricultural sector. The gender assessment identified women, youth and particularly women-headed households as disproportionately affected by climate change. The information provided in the funding proposals also recognizes youth and women as disadvantaged, particularly when it comes to accessing finance, technical resources and training to enable them to address the impacts of climate change on the farm.

47. Men migrate in search of higher incomes due to harvest losses and low yields due to the impact of severe climatic events and increased pests and diseases. Thus, women's working time at home increases and their employability is reduced as women stay at home with care tasks. Access to land and machinery is mostly in the hands of men, which means that access to contractual agreements is restricted to men. In the communities it is thought that women are more affected by drought and lack of water because they have the responsibility for domestic tasks (very dependent on water), which generates stress. Access to agricultural input is either through the government outlets of through cooperatives. Cooperatives provide supply to member producers who should have the ability to pay. Here is where women lose out and men seem to have in most cases the ability to pay and use the services of the cooperatives. Furthermore, most women do not have decision making power over incomes earned and where it is spent, while they also do not have land through inheritance or usufruct rights. In the 7 municipalities where the project will operate only 1000 women are usufruct rights (0.86%) and just over 500 are owners (0.46%) making it difficult to make production decisions. In addition, in the cooperative sector in the 197 co-operatives studied, only seven women are presidents of co-operatives (3.6%) and 15% of the membership of co-operatives.

48. The objective of the assessment is to identify causes inequality in the context of climate change and agro-biodiversity, thus tapping into existing knowledge and capacities thereby ensuring communities including women are more resilient to climate-related risks and impacts. The current assessment will be followed up with in-depth study to identify the specific challenges and needs of women and other vulnerable groups.

49. The project will contribute to overcoming stereotypes through the following: acquiring means of production for production personnel; providing technologies; ensuring training processes; and generating traditionally female jobs to which men could have access, or making traditional male jobs available to women after training processes or affirmative actions aimed at achieving this end. Gender vulnerability will also be considered, and equitable access will be sought, with emphasis on support for women. The project plans to create jobs that are

traditionally considered as women's, such as: seedling management; grafting of forest and fruit species in nurseries; activities in mini industries; management of collected milk; and quality assessment, including in laboratories. These services will be strengthened to ensure essential support to agricultural and livestock production. It is possible that traditionally male jobs may arise for women for which they feel interest and empowerment to assume them or vice versa. The project is also related to the recovery and development of handicrafts that make use of vegetable fibres; women who live in the settlements will be able to count on sufficient raw material to create products, market them and improve their quality of life.

50. Difficulties regarding access to water, which are especially pertinent to women, are identified as one of the fundamental problems for inhabitants of the project areas. To this end, the project will support measures aimed at collecting water and improving access to identified sources, such as installing water pumps for their extraction.

51. The action plan provides a list of activities with baselines, indicators and sex disaggregated targets (as does the Funding proposal and the logical framework). It also provides timelines and illustrates the responsible bodies for the implementation of the activities. A gender specialist will be hired to ensure the implementation and monitoring of the gender action plan. There is no specific budget allocated for the implementation of the gender action plan. According to the accredited entity, the activities linked to the Gender Action Plan (GAP) are cross-cutting for the project and underpin its overall implementation, and that it is difficult to calculate and put timelines for the GAP. This is a concern given there are some activities that could be separately budgeted for, such as the hiring of the gender expert, and specific activities such as the gender diagnosis, and mapping of key actors working on gender in each zone.

4.3 Risks

4.3.1. Overall proposal assessment (medium risk)

52. GCF is requested to provide a grant of USD 38 million, which will be invested in the removal of invasive species for sustainable land use and provision of technical assistance for farmers and institutional staff for climate-resilient agricultural practices in Cuba. This project constitutes the second phase of a three-phase programme to enhance the climate resilience of Cuba's agricultural sector. A first phase of research and analysis has been carried out, and GCF financing will be used to implement and apply resilience-enhancing technologies and practices.

4.3.2. Accredited entity/executing entity capability to execute (medium risk)

53. FAO will serve both as AE and EE for the project. The AE has funded over USD 600 million in projects supporting countries in the field of climate change and disaster risk management. FAO will be the financial and operational executor of GCF resources, including financial management, procurement of goods and contracting of services for this project. The FAO country office has been implementing projects with an annual budget ranging from USD 0.7 million to USD 5 million for the past five years in the country.

54. MINAG is a co-EE for the project. MINAG will lead interventions in the field, such as management units and coordination committees at the provincial and municipal level. MINAG has experience in implementing projects funded by external donors with a total budget ranging from USD 6 million to USD 50 million.

4.3.3. Project-specific risks (medium risk)

55. Power source of pumping units: the project will construct 452 water reservoirs and 896 drip irrigation systems with electric pumping units. According to a response from the AE, the electric pumping units will be powered by solar energy. GCF resources will finance acquisition of small-scale irrigation equipment, solar panels and materials. The funding proposal could provide greater detail of the locations and capacity of solar panels, indicating if this will cover 100 per cent of the energy demands for the irrigation equipment, and if back-up generators or batteries will be required; the status of existing infrastructure in Cuba could also be reviewed.

56. Water use: GCF financing will deploy efficient irrigation technologies and install water harvesting and storage systems. The available water resources from the project via water reservoir and/or irrigation equipment need to be efficiently managed and distributed. According to a response from the AE, the National Institute of Hydraulic Resources is responsible for the protection and management of terrestrial water resources. There will be no water tariff for the use of harvested rainwater and operation and maintenance (O&M) costs will be financed by the Government of Cuba during and beyond the implementation of the project for 20 years. Farmers will also be responsible for the O&M of the water facilities after the project ends. The AE also indicated that there are no specific regulations regarding the use of rainwater. Given the regulatory gap and free provision of water supply, the decision-making process of allocating water resources needs to be carefully monitored, and the government's commitment for O&M will be critical for the sustainable usage of the equipment.

57. Waste management of invasive species: once the invasive species (e.g. marabú) are removed, there are multiple uses for them. The feasibility study recommends that the wood and other components of the plant be put to economic use. The funding proposal states that it will be processed to wood chips to improve the structural quality and water retention of the soil. The AE and EE rely on the economic and eco-friendly use of marabú after its removal to prevent pollution and re-infestation.

58. Financial and economic analysis: the project provides analyses based on the appropriate interventions (e.g. agroforestry and silvopastoral production modules) from previous studies. The financial analyses were conducted over a 10-year and 20-year period, respectively. The incremental net present value and internal rate of return (IRR) ranged between USD 1,998 (IRR of 2.45 per cent) and USD 82,430 (IRR of 29.52 per cent). The economic analysis considers the same assumptions that were included in the financial analysis and additionally includes monetary values for ecosystem service of woodland and grassland and social carbon cost. The economic internal rate of return results ranged between 21.38 per cent and 31.11 per cent. At the time of preparing the assessment, more clarification and English translations are pending from the AE on the financial and economic analysis.

4.3.4. Compliance risk (medium risk)

59. Although the funding proposal does not provide much detail in terms of compliance risk level assessments, it is noted that much of the project is devoted to capacity-building, including financial management. Procurement and many other activities involving the expenditure of funds will be managed by the AE (FAO) directly. No particular activities indicate a uniquely high risk of compliance issues, such as money laundering, terrorist financing, or prohibited practices. Based on the commitment, experience, and close involvement and oversight of the AE in this project, Compliance risk is assessed as medium.

4.3.5. GCF portfolio concentration risk (low risk)

60. In the case of approval, the impact of this proposal on the GCF portfolio concentration in terms of results area and single proposal is not material.

4.3.6. Recommendation

61. It is recommended that the Board consider the above factors in its decision.

Summary risk assessment		Rationale
Overall programme	Medium	The Food and Agriculture Organization of the United Nations as a co-executing entity (EE) will be responsible for procurement and financial management, and the Ministry of Agriculture will lead the interventions in the field. Close coordination between the two EEs to purchase, deploy and carry out groundwork will be imperative for the successful implementation of this project Given the free provision of water services, the Government of Cuba's commitment for operation and maintenance will be critical for the sustainability of the project The accredited entity and EEs are relied upon for the detailed plans for installation and management of solar panels and to ensure the systems would not create additional greenhouse gas emissions
Accredited entity/executing entity capability to implement this programme	Medium	
Project-specific execution	Medium	
GCF portfolio concentration	Low	
Compliance	Medium	

4.4 Fiduciary

62. The AE for the project is FAO, which will be responsible for the overall management of this project, including (i) all aspects of project appraisal; (ii) administrative, financial and technical oversight and supervision throughout project implementation; (iii) ensuring funds are effectively managed to deliver results and achieve objectives; (iv) ensuring the quality of project monitoring as well as the timeliness and quality of reporting to GCF; and (v) project closure and evaluation. To perform the AE functions, FAO will set up a dedicated FAO-GCF project task force comprising relevant staff from the FAO Country Office in Cuba, the FAO Regional Office for Latin America in Chile, and FAO Headquarters in Rome. The project supervision team will remain independent of the EE functions, also performed by FAO.

63. The EEs for the project are the Government of Cuba, represented by MINAG, and FAO, as requested by the national designated authority. In its role as EE, FAO will set up an OSFMU, which will be led by the FAO Representation of Cuba and will have the main function of supporting the NPMU, providing procurement and financial management services for the GCF proceeds. The OSFMU will be financed through the project management budget line of the project's overall budget. MINAG will, on the other hand, in its role as EE, lead the interventions in the field (provincial management units, provincial coordinating committees, municipal

management units, municipal coordinating committees, communication with beneficiaries and local stakeholders, extension work).

64. A project agreement will be signed between FAO and MINAG as EEs, which will be legally binding and detail the roles and responsibilities of FAO; the Ministry of Science, Technology and Environment; the Ministry of Foreign Trade; and MINAG, and contain the relevant provisions for compliance by FAO with the requirements from the accreditation master agreement and funded activity agreement.

65. The government-funded NPMU will be established with the primary function of ensuring project coordination and execution through the effective implementation of annual workplans, following the guidelines of the National Project Steering Committee (NEC) and Project Coordination Committee (PCC). Separately, the main function of the NEC is to coordinate, guide and provide political and strategic guidance for implementation of the project as well as to ensure strong inter-institutional coordination. It will also: ensure that planned co-financing from government entities is delivered in a timely manner; verify and approve annual workplans; and approve financial and technical reports. The PCC, on the other hand, will serve as a key communication channel between the NPMU and key local stakeholders and will assist in the implementation of the stakeholder participation plan. The NPMU reports to the PCC, and will be led by the National Project Coordinator. The National Project Coordinator in turn is selected by MINAG, in consultation with FAO.

66. The financial management and procurement function under this project will be guided by relevant FAO rules and regulations, as well as relevant provisions in the AMA signed by FAO and GCF. In the project execution, GCF resources will be managed directly by FAO in accordance with its rules, regulations, policies and procedures. At the request of the Government of Cuba, FAO will be the financial and operational executor of GCF resources, including financial management, procurement of goods and contracting of services (through OSFMU). Each year, FAO will present an annual work plan and budget that will include a procurement plan. The PCC together with the NEC will validate and approve the annual work plan, procurement plan, and budget. FAO will be responsible for the disbursement of funds according to established conventions, norms and standards.

67. FAO has deployed an Oracle-based enterprise resource planning system called the Global Resources Management System. Using this system improves the flow of financial information, supports financial monitoring and reporting, increases transparency and visibility, and strengthens internal control. FAO maintains a chart of accounts that allows for a separation of income and expenditure by donor and project to facilitate internal management and external reporting requirements. The project will be subject to FAO's audit regime, including the external audit and internal audit function.

4.5 Results monitoring and reporting

68. The project is a cross-cutting project with mitigation and adaptation benefits related to increased climate resilience of rural households and communities through the rehabilitation of production landscapes. The project is the second phase of a three-phase project and aims at the implementation of agroforestry, silvopastoral and forestry modules that were tested during the first phase on a mesoscale. Through this, the project will support the replication of the modules in the field and at scale, enhance institutional capacities for extension and adaptation of the modules, and establish and operationalize a financial mechanism to support farmers in applying resilience-enhancing technologies and practices to their agro-ecosystems. The logical framework is aligned with the GCF performance measurement framework at the fund-level impact and outcomes. The project output includes both qualitative and quantitative results indicators.

The GHG emission calculations have been reviewed and are considered to represent in a transparent manner the baseline assessment and project emission calculations. The approach is in line with the Intergovernmental Panel on Climate Change guidelines (2006) and established GHG methodologies.

4.6 Legal assessment

69. The accreditation master agreement was signed with the AE on 8 June 2018, and it became effective on 4 October 2018.

70. The Accredited Entity has provided a legal opinion/certificate confirming that it has obtained all internal approvals and it has the capacity and authority to implement the project.

71. The proposed project will be implemented in Cuba, a country in which GCF is not provided with privileges and immunities. This means that, among other things, GCF is not protected against litigation or expropriation in this country, which risks need to be further assessed. There are no ongoing negotiations with the Government of Cuba.

72. The Heads of the Independent Redress Mechanism and Independent Integrity Unit have both expressed that it would not be legally feasible to undertake their redress activities and/or investigations, as appropriate, in countries where GCF is not provided with relevant privileges and immunities. Therefore, it is recommended that disbursements by GCF are made only after GCF has obtained satisfactory protection against litigation and expropriation in the country, or has been provided with appropriate privileges and immunities.

73. In order to mitigate risk, it is recommended that any recommendation of the funding proposal by the Secretariat for approval by the Board is made subject to the following conditions:

(a) Signature of the funded activity agreement in a form and substance satisfactory to the Secretariat within 180 days from the date of Board approval, or the date on which the AE has provided a certificate or legal opinion confirming that it has obtained all internal approvals, whichever is later; and

(b) Completion of all due diligence to the satisfaction of the Secretariat.

Independent Technical Advisory Panel's assessment of FP126

Proposal name:	Increased climate resilience of rural households and communities through the rehabilitation of production landscapes in selected localities of the Republic of Cuba (IRES)
Accredited entity:	Food and Agriculture Organization of the United Nations (FAO)
Project/programme size:	Medium

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential *Scale: Medium-High*

1. The primary objective of the project is to increase climate resilience of the agricultural production of seven vulnerable municipalities ensuring food security through improved ecosystem services including agroforestry, silvopastoral systems, reforestation and assisted natural forest regeneration. The project aims to decrease vulnerability and enhance resilience of farmers to climate-driven impacts such as drought and rainfall variability (including torrential downpours) by strengthening ecosystem functionality and ensuring water regulation to maintain and enhance agricultural production.

2. The project consists of three interdependent outputs. Output 1 will rehabilitate production landscapes through tested and approved agroforestry, silvopastoral, reforestation and assisted natural regeneration modules and techniques. The rehabilitation will involve removal of marabu, a non-native invasive tree, in order to allow regeneration of native species. It will also involve the installation of resilience-enhancing water storage and irrigation systems to ensure water supply to maintain the agroforestry and silvopastoral cropping systems.

3. Output 2 will provide technical assistance and capacity-building to ensure that farmers acquire the know-how to replace current production practices with new resilience-enhancing production practices necessary for effective implementation of the landscape rehabilitation modules under output 1. Output 3 will target policy and planning frameworks aiming to adopt laws and regulations to allow effective institutional coordination and support to farmers to build the productivity and sustainability of their agroecosystems and the resilience of their shared production landscapes. This will involve the creation of a national landscape resilience fund to finance farmers' resilience efforts.

4. The project will target members of agricultural cooperatives and individual landholders with the purchase of essential machinery, equipment and inputs (e.g. seedlings), and it will invest in training modules as well as in providing assistance to farmers in business planning, financing and marketing.

5. The project will directly benefit 50,331[1] people, or approximately 30 per cent of the total population of the North Zone of Villa Clara/Matanzas, including Corralillo, Quemado de Güines, Santo Domingo and Los Arabos municipalites, and the South Zone of Las Tunas formed by the municipalities of Amancio Rodríguez, Colombia and Jobabo. This includes 15,549 farmers (3,123 women heads of household)[2] on areas averaging 2.3 ha per farmer that will have the

[1] The project proposal has a different number of 51,098 direct beneficiaries; thus the calculation appears incorrect.
[2] See Feasibility Study annex 2, table 25a, p. 64.

capacity to manage agroforestry, silvopastoral and forestry systems to cope with rainfall variability and drought (direct beneficiaries represent 51,098 people as the average number of people per household is 3.2). These figures also include 433 institutional staff at local, municipal and provincial levels who will benefit indirectly from improved information, institutional capacities and knowledge management, and 142 machinery operators.

6. The project expects to provide indirect benefits to 232,815 people in communities around the target areas through technical assistance and widespread dissemination of lessons learned and best practices in climate-resilient agriculture.

7. Even though the project is an adaptation project, the proponents have estimated emission reductions of the agroforestry and forestry systems, assuming that farmers will be motivated to sustain them over the next 7 years at a minimum and over the next 20 years, constituting the life of the project. Activities include crop production, land rehabilitation, forest management, livestock and grassland production systems among others. The proponents used the Ex-ante Carbon-balance Tool, (Ex-ACT[3]), developed by the Food and Agriculture Organization of the United Nations (FAO) in collaboration with the World Bank to assess how the impact of a planned intervention compares to the business-as-usual scenario. In this context the estimated reduced emissions from land use, reforestation, reduced deforestation, and through sustainable forest management and conservation is of the order of 2,675,727 tonnes of carbon dioxide equivalent (tCO_2eq).

8. While the Ex-ante Carbon-balance Tool accounts tractors and agricultural inputs (fertilizers and herbicides), the independent Technical Advisory Panel (TAP) recommends making an analysis of the best options to reduce the carbon footprint, including a possible shift towards using bio-inputs.

9. The GCF budget includes USD 4.9 million to purchase food supplements for livestock. While this could be a reasonable request under a livestock management programme, it is not providing a clear climate rational. The independent TAP asked the proponents for the climate rational and they explained that the food supplements will be produced at the national level and made from a mixture of locally produced protein crops with vitamins and minerals and will be used as strategic supplements to ensure animal health (including reducing the incidence and impact of diseases and parasites), as well as higher productivity and efficiency, thereby contributing to reduced greenhouse gas (GHG) intensity. The statement remains unclear and needs to be better justified and accounted in the GHG emissions analysis.

10. The project number of direct beneficiaries is relatively small for the amount of investment in the project of USD 119 million. The project is seen as a second phase of a project that will be scaled to other Cuban municipalities in a third phase. However, as stated in the effectiveness and efficiency potential, it will be difficult to scale this model at the present estimated cost.

1.2 Paradigm shift potential *Scale: Medium-high*

1.2.1. Innovation

11. The project is expecting to support vulnerable communities in shifting their production system to ensure climate resilience and more sustainable productive systems through agroforestry and silvopastoral systems with common practices that do not present a paradigm shift. The project expects to ensure food security as one of the main strategies of the country and to create financial and market mechanisms to ensure that farmers and communities are able to sustain their farms and livelihoods. If policy reforms eventually drive the country's food

[3] See http://www.fao.org/fileadmin/templates/ex_act/pdf/Technical_guidelines/EX-ACT_technicaldescription_EN_v7.pdf>.

systems towards a more integral approach involving conservation and regeneration efforts, increased sustainable production while at the same time promoting healthy diets and reducing food loss and waste through effective market and financial mechanisms, there could be a potential paradigm shift in the Cuban context.

12. Cuba has good institutions, and it has the knowledge and capacity to strengthen the agricultural sector, but, due to the difficulties in accessing international finance to acquire modern equipment and technology, the country is lagging behind in ensuring climate compatible agriculture. The technology and equipment requested (40 per cent of the budget) will allow the country to unlock and galvanize the Ministry of Agriculture's (MINAG) existing potential for innovation and adaptation to climate change. However, most of the equipment and technology appears to be conventional and fossil fuel dependent. Therefore, and as stated above, the independent TAP recommends revising the acquisition of tractors and agricultural inputs (fertilizers and herbicides) to ensure a lower carbon food print, including a possible shift towards using bio-inputs.

13. On the other hand, the project is also tackling increasing climate-driven rainfall variability, connecting climate change, ecosystem services – particularly water regulation – and land degradation. The project is proposing to use efficient irrigation technologies and water harvesting and storage systems to ensure access to water by farmers throughout the year. Since Cuba depends on harvesting water, the independent TAP requested an assessment of the potential of the rainwater harvesting schemes for increasing drought resiliency, including values for average monthly precipitation and tank volumes, to ensure water for the proposed irrigation schemes. The proponents provided a clear estimate to the request but will need to ensure a proper design with concrete water balance for each of the municipalities during project implementation.

14. The construction of reservoirs and water security systems are common practices around the world and do not represent an innovation. However, since the project depends on the availability of water to achieve an effective and truly climate resilient agriculture (CRA) system, the ability to ensure water for the selected landscapes and communities is crucial and the reservoirs and tanks are effective measures. However, the system will be effective only if on the demand side there are measures to ensure that the available water will be sufficient to compensate for the crop-specific evapotranspiration loss and growing deficit for each of the target crops in each growing season. Therefore, in each of the landscapes the selection of crops that are less water dependent will be a key factor to ensure a paradigm shift.

15. Moreover, the water will also be used by livestock that could potentially require higher volumes of water. Therefore, the project needs to develop a more comprehensive water analysis in order to ensure an accurate water balance scheme for the climate resilient agriculture systems.

16. Under output 3, the project will promote better policy measurements to mainstream climate change in land use and agricultural policies and legislation. At the same time, the project will promote economic instruments and financial mechanisms including the capitalization of a landscape resilience fund.

17. As stated in the answers to the independent TAP questions, an underlying incentive for farmers to apply resilience-enhancing practices and systems is the sale under contract of agricultural products to government programmes and the possibility of accessing expanding supply-and-demand markets while reducing crop losses and food insecurity. The Government of Cuba will ensure that production contracts are provided to producers' organizations for the sale of harvests and will provide technical assistance to producers to access supply-and-demand markets.

18. This could potentially represent a paradigm shift in the Cuban context, as providing financial schemes and market opportunities would allow farmers and cooperatives to sustain their agricultural systems without depending on governmental assistance.

1.2.2. Potential for knowledge and learning

19. The project is starting by scaling the research done by the Ministry of Agriculture to optimize agroforestry and forestry systems for wetter and dryer areas of Cuba. Capacity development under component 2 will allow producers and farmers to benefit from training and use scientific knowledge to manage climate risks and decide suitable climate adaptation/mitigation options. The trainings will include technical and analytical skills to better understand the links between landscape resilience, ecosystem services and farming sustainability and productivity. Institutional staff from the Ministry of Agriculture and selected non-governmental organizations will have the pedagogic skills to provide extension services on climate-resilience farming practices. This will be enhanced with accurate information systems to monitor and evaluate performance.

20. Component 3.3 will build the capacities of the different institutional and organizational stakeholders in the project areas to coordinate their support to farmers and producers' organizations for the implementation of the landscape resilience policy as well as localized multi-stakeholder governance. Participating organizations include cooperatives and other producer's associations, entrepreneurship groups, youth groups and women's groups. The project will coordinate stakeholders at the municipality level to ensure better coordination and to provide direct technical assistance to ensure learning and knowledge-sharing. Moreover, it will train key organizations and farmers in the seven target municipalities to participate collaboratively in planning and decision-making processes that determine the management outcomes, outputs and activities in the production landscapes to enhance their climate resilience.

1.2.3. Contribution to the creation of an enabling environment

21. The Government of Cuba has the commitment to implement the political mandate of the national development plan 2030, namely "Tarea Vida", as well as to ensure the commitments to the Paris Agreement and its nationally determined contribution. To do so, the government will create a single landscape resilience fund, that will need to coordinate and integrate different policies at the country level and to be effective at the municipal level to reach farmers' cooperatives and especially vulnerable smallholders. The implementation of Tarea Vida will contribute to create an enabling environment to mainstream climate change in the agricultural sector

22. On the other hand, the Cuban agricultural sector is currently immersed in major reforms and transformations with the objective to implement new economic measures aimed at facilitating the development of sectoral production, while ensuring climate resilience and incentives for sustainable production. This includes redistribution and change in land ownership including more responsibility by cooperatives and producers, expansion of market options, devolution of decision-making authority to the municipal level for planning and management of production, initiating the creation of municipal agricultural companies, and ensuring efficient value chains to support markets.

1.2.4. Contribution to the regulatory framework and policies

23. The project will contribute to adjusting the existing agricultural policies and regulatory framework to allow the inclusion of relevant climate adaptation criteria at the national and municipal levels. Output 3 of the project is aiming to adjust policy and financial mechanisms to

allow better planning, information systems and governance mechanisms to ensure an integral vision of restoration and increased agricultural productivity.

24. The governance mechanisms will allow for the implementation of agroforestry, silvopastoral and forestry systems. There is a need to enable a better understanding of the water regimes in combination with selection of the most resilient crops to be able to ensure productivity under the rising climate change regime.

25. The transformation of the Forestry Development and Soil Conservation Funds into a single landscape resilience fund will provide an opportunity to create a governmental programme focusing on climate change resilience. However, there is a need to understand the sustainability of the fund in order to scale the model to the country at large.

1.2.5. Scalability and replicability

26. The project represents the second phase of a three-phase programme to ensure the climate resilience of the agricultural sector in Cuba. The first phase proved the model in six municipalities in two regions in Cuba through an investment of MINAG in different agroforestry and silvopastoral models. The programme expects to scale the project countrywide in phase 3, based on these foundations including institutional capacities, lessons learned, and financial mechanisms and markets promoted in phase 2.

27. The technical side of the proposal is proven, and the institutional capacity is in place to scale the model to other municipalities in Cuba. However, the scalability depends on the resources given by the Government of Cuba and other possible funding sources to the climate adaptation fund. Therefore, scalability depends on the ability of the Government of Cuba to ensure more resources to reach more farmers, cooperatives and, especially, vulnerable communities in other municipalities.

1.3 Sustainable development potential *Scale: High*

1.3.1. Environmental co-benefits

28. The programme could have several potential environmental benefits, including the recovery of natural habitats, which will enable biodiversity conservation in line with the Aichi targets and the biodiversity convention. Forest cover will also ensure water retention and support soil conservation in the selected landscapes.

29. The project will also ensure that the marabu invasive species is controlled, allowing other species to grow to sustain healthy forest and agroforestry systems. The project will further promote multi-cropping systems, reducing soil erosion and enhancing soil organic matter and carbon content.

30. The project will also ensure sustainable forest management. According to the proponents, forests in Cuba are nationally owned and managed through the state forest service. The state forest service establishes signed usufruct lease agreements for 25 years or longer with farmers who work and live in the forests. Farmers thus become perpetual beneficiaries entitled to use the forests and their lands and ensure their maintenance and management. The agreements are negotiated between the State Forest Service, the Local Forestry Company of the territory that manages forestlands, and farmers and local communities to whom the State grants the land in usufruct. It is the farmer who, with his/her signature on the agreement, will develop forest management actions and will be responsible for execution of the tasks.

31. The project is ensuring the provision of environmental services, including the diversity of species and pollinators able to sustain nature. Furthermore, the project is ensuring more efficient water harvest and irrigation systems to allow agricultural production.

32. However, the project could potentially have some harmful effects on the environment from using tractors that could potentially compact and degrade soils and also through the use of herbicides and fertilizers that could potentially contaminate soils and water resources.

1.3.2. Economic co-benefits

33. The benefit of ensuring water provision will in turn secure the sustainability of the agriculture systems, providing benefits to the national economy at large and to the selected vulnerable communities. Through this project farm households will have access to 35,734 ha of reclaimed farmland for production of subsistence and commercial crops through agroforestry and silvopastoral schemes. Promoting agroforestry systems will increase the yields of forest and agricultural production, favouring the local economy and impacting the agricultural gross domestic product.

34. Improved and diversified agricultural production systems will ensure food security and will provide opportunities to connect to markets, generating revenues to achieve a better quality of life for the communities. There are also new possibilities for creating on-farm employment throughout the year, and to generate better cooperatives able to support local economies.

35. Having access to water and irrigation will imply that agricultural production could be maintained throughout the years, improving yields and avoiding economic losses during drought periods.

1.3.3. Social co-benefits

36. The communities will strengthen their capacities to manage their lands and their agroforestry, silvopastoral and forestry systems and will be able to ensure long term benefits for conserving the ecosystems. They will benefit from improved agricultural systems, ensuring revenues for their livelihoods.

37. Communities will potentially also improve their diets, through diversified food production and the opportunity to have more proteins from silvopastoral systems, which could bring potential health benefits. However, the project does not mention any connections to the Cuban programmes aimed at ensuring healthy and nutritious diets. More specific connections should be made not only to ensure healthy diets but to reduce food loss and waste in the country.

38. Farmer Field Schools and the opportunity given to farmers and cooperatives to plan their own landscapes could improve social cohesion. Moreover, improving the water availability as well as the market options will ensure more permanent and reliable income to communities.

1.3.4. Gender-sensitive development

39. The project developed an assessment of the role of women in Cuba showing high levels of education and a strong representation in government, technical and administrative areas. It also promotes the inclusion of strong constituencies like the Federation of Cuban Women, which is open to all Cuban women aged 15 and over, including representation from the national level and the National Association of Cuban Peasants, which has contributed to progress by developing a strategy for justice and gender equity in the community of peasants. According to the proposal, despite the achievements, there are still numerous gaps and inequities, especially at the level of collective and individual practices, traditional gender conceptions and stereotypes typical of a patriarchal culture.

40. The Northern Zone of Villa Clara/Matanzas together with the Southern Zone of Las Tunas, have 197 agricultural cooperative entities that are dedicated to agriculture as their

fundamental activity in each of the territories where the project will be implemented. These cooperatives have altogether 18,614 members of which 15 per cent are women.

41. The project provides an action plan that stipulates the main roles of women and men in the context of the project, aspiring to have equal participation of both genders in the different activities including jobs and economic opportunities offered by the project.

42. The project will also ensure equal access to information and to education, technical knowledge and services and technologies. Equal opportunities to participate in governance mechanisms will be promoted. Moreover, the project will guarantee the political participation of the Federation of Cuban Women as an ally to propose agendas that position women's rights in at least four key dimensions: economic and labour rights, access and control of resources, prevention of gender-based violence and social co-responsibility of care.

1.4 Needs of the recipient *Scale: High*

1.4.1. Vulnerability of the country and vulnerable groups

43. Cuba is a small island developing State with a population of more than 11 million people. The Cuban archipelago consists of the island of Cuba, Isla de la Juventud and more than 1,600 islands, islets and cays, which altogether cover a surface area of 110,922 square kilometres. Since 1965, the State has been governed by the Communist Party of Cuba. The economy is dominated by the tourism industry and the exports of skilled labour, sugar, tobacco and coffee. The country is divided into 16 provinces and 168 municipalities, including the special municipality of Isla de la Juventud.

44. According to the Climate Change Vulnerability Index, Cuba is classified as "high risk",[4] facing serious impacts from climate change.[5] In addition to the rise in temperature and increasing rainfall variability, Cuba is also being affected by higher frequency of hurricanes. Farmers have been exposed to droughts, torrential rainfall, flooding and landslides, saltwater intrusion, and extreme temperatures that have impacted their agricultural production and caused significant economic losses. The country has suffered from severe recurring droughts (in the years 2004, 2008 and 2009) and the water balance and relative humidity has been affected. The project has selected seven municipalities that have been most affected and are therefore more vulnerable to climate change, mostly in the eastern region. This has resulted in the decrease in agricultural productivity and the reduction of agricultural and pastoral areas, making them more prone to the invasion of marabu.

45. The project document presents future climate scenarios predicting a temperature rise of 4 °C and a decline in rainfall between 15 and 63 per cent for years 2050-2100[6] with a consequent decrease in the country's main crops like sugarcane, beans, rice, manioc and maize. Moreover, according to appendix 2.4 of the feasibility study, livestock will be also affected and if continuing with its current business-as-usual model, the dominance of C4 grasses would produce higher methane emissions from enteric fermentation of ruminants.

46. Cuba has limited access to global markets and international financial institutions, limiting the acquisition of machinery and technology to support climate resilient agriculture. Cuba has faced severe obstacles to generating sufficient fiscal resources or to obtain international loans. While Cuba has good technical capacity to ensure the transformation of the

[4] Corporación Andina de Fomento, 2014. Índice de vulnerabilidad y adaptación al cambio climático en la región de América Latina y el Caribe.
[5] Segunda Comunicación Nacional a la Convención Marco de las Naciones Unidas sobre Cambio Climático. La Habana 2015.
[6] PRECIS modelling (Centella et al 2008) in Cuba, SNC to the United Nations Framework Convention on Climate Change (2015); and Somoza J. de la Colina (2018)

island into a more resilient agricultural model, the limiting factor is the availability of financial resources to transform its current agricultural model into a more climate-resilient model.

47. Cuba is also one of the countries with the highest level of overweight and obese persons in Latin America and the Caribbean; as a result of the lack of healthy and diversified food, 42 per cent of the Cuban population is overweight: of these, 47 per cent are female, 37.6 per cent are male and 13 per cent are children. At the same time, the population of Cuba is one of the oldest in the region with 20.4 per cent aged 60 years or older.

48. The independent TAP inquired about the relation of this project to the promotion of healthy diets and food loss and waste. FAO answered that, with their support and that of the World Health Organization, the Government of Cuba is implementing several programmes to improve people's nutrition through national food production and by reducing food loss and waste and dependence on imported food. There is a National Committee for the Reduction of Food Loss and Waste, (CNPDAC) with FAO acting as the secretariat. The programme supports the Integrated Productive Programme for Urban, Peri-urban and Family Farming, the Municipal Self-supply Food Plan and a programme for the development of small-scale agro-industry.

49. There is an urgent need to link the proposed project with the Municipal Self-supply Food Plan, which aims to diversify healthy and nutritious food and the programmes on food loss and waste. The food systems in Cuba will need to involve all the relevant projects to ensure better livelihoods under a climate change lens.

1.4.2. The need for strengthening institutions and implementation capacity

50. Despite the resource limitations of the Government of Cuba, it is willing to put resources into the project as co-financing and to continue funding the adaptation fund in the future. The Government of Cuba is known to have an excellent educational system and therefore to have adequate research and implementation capacities within its institutions, in this case, the MINAG. However, due to the need to ensure food security within the island and have some additional revenues from the agricultural sector, especially in terms of sugar and tobacco, the aim has been mostly to increase production rather than promote climate-resilient agriculture. Therefore, the project is aiming to ensure that a climate focus is given to rural agriculture and to mainstream climate change within its institutions.

51. Moreover, a new approach to markets and financing is needed to ensure that producers, cooperatives and small holders will have additional revenues after their food security is assured from the selling of surplus production, to improve their quality of life.

52. The project is therefore dedicating one component to strengthening the capacities of institutions and farmers to improve ecosystem services through agroforestry, silvopastoral and forestry systems and enhance the climate resilience of production landscapes with significant capacity-building. Relevant stakeholders need to understand climate change and its effects on agroecosystems and production landscapes. MINAG will strengthen and intensify its training-and-visit system, through farmer field schools with farm visits to provide technical assistance training of trainers and farmer-to-farmer exchanges.

53. The project also proposes devoting resources to strengthen planning, coordination and governance at the national and landscape level as a framework for climate-resilient agriculture that could be scaled up to other municipalities in the country.

1.4.3. Absence of alternative sources of financing

54. According to the Economic Commission for Latin America and the Caribbean,[7] economic growth in Cuba slowed to 1.1 per cent in 2018, following the already meagre 1.8 per cent growth recorded in 2017. This slower pace of activity reflected reduced visitor flows owing to the impact of Hurricane Irma on tourism infrastructure in late 2017. This was compounded by travel restrictions imposed by the Government of the United States of America on its own nationals and by a moderate fiscal adjustment. As a result, the fiscal deficit edged up to 8.8 per cent of gross domestic product from 8.6 per cent in 2017.

55. Cuba has limited access to international financial institutions and faces significant obstacles in importing the machinery and technology that could support adaptation of agricultural production to the evolving impacts of climate change. Cuba's ability to generate sufficient fiscal resources is hindered by the account deficit of the balance of payments, bank deductions on foreign transfers and the high degree of debt maturity, all of which reduce its ability to obtain financial resources to mainstream climate change in its agricultural strategy.

1.5 Country ownership *Scale: High*

1.5.1. Alignment with national climate strategy

56. In April 2017, the Government of Cuba approved the National Plan to Confront Climate Change, namely "Tarea Vida: Plan de Estado para el Enfrentamiento al Cambio Climatico – PECC". The plan establishes national priorities for the short (2020), medium (2030) and long term (2050 and 2100). Tarea Vida includes five priority actions, including the need to address adaptation in the agricultural sector. The plan also prioritizes the sustainable use and protection of water and soil resources; the upgrading of Cuban agriculture; the conservation and protection of forest resources; land use planning with emphasis on human settlements; and the protection of biodiversity.

57. The Tarea Vida is coordinated by the Ministry of Science, Technology and Environment (CITMA) and its Executive Environmental Agency (AMA), ensuring that science-based climate change solutions will be mainstreamed in the Cuban development agenda.

58. In November 2015, Cuba presented its nationally determined contribution to the United Nations Framework Convention on Climate Change, listing six priority actions, including "incorporating the adaptation dimension into programs, plans and projects related to food production, integrated water management, land management, forestry, fisheries, tourism and health". Cuba's emissions are mainly concentrated in the agriculture and energy sectors, accounting for 76 per cent and 15 per cent of the country's emissions. The forestry sector has shown sustained growth with forest coverage increased from 14 per cent of the country's surface area in 1959 to 29 per cent in 2013. Currently, it is estimated that Cuban forests have a sequestration capacity of approximately 14.3 million tonnes of CO_2 per year, according to data from the latest GHG inventory.

1.5.2. Capacity of accredited entities and executing entities to deliver

59. FAO, the accredited entity, is a specialized agency of the United Nations that leads international efforts to defeat hunger. The goal of FAO is to achieve food security for all and make sure that people have regular access to enough high-quality food to lead active, healthy lives. FAO has been supporting Cuba since 1978, when they officially opened a representation on the island. FAO has a recognized capacity to support food and land use activities promoting conservation and climate resilient, sustainable agriculture as a way to increase productivity, adapt and build resilience of food systems and, wherever possible, reduce GHG emissions. FAO

[7] Economic survey for Latin America and the Caribbean – 2019. Economic commission for Latin America and the Caribbean- ECLAC.

has supported projects for climate adaptation and mitigation worldwide and has led and managed numerous projects in Cuba in coordination with the government.

60. MINAG is responsible for proposing and implementing policy on the use, tenure and sustainable exploitation of the agricultural areas of the country, and for agricultural and forestry production, to meet the needs of the population, industry and for export. MINAG is responsible for the policies relating to use, conservation and improvement of soil; ownership and possession of agricultural and forestry land; plant health; veterinary medicine; conservation, management and rational use and sustainable development of the country's livestock and forest resources; mechanization and irrigation of the production programmes for which it is responsible; livestock and forestry agricultural production activities; the industries and profit activities related to rice, tobacco, citrus fruits, coffee, apiculture products, animal feed, forestry and poultry; and the activities of collection usage of agricultural and forestry products. Therefore, MINAG is responsible for all the activities relating to this project.

61. For the governance and strategic decisions of the project, a national project steering committee will be established, composed of ministers from the Ministry of Foreign Trade and Investment, CITMA, MINAG and the FAO representative in Cuba. The National Project Steering Committee will be chaired by MINAG.

62. The project will have a project coordination committee composed of the National Project Director, technical representatives from MINAG and FAO, and the National Project Coordinator. The project coordination committee will serve as a key communication channel between the National Project Management Unit and key local stakeholders, and it will assist in the implementation of the stakeholder participation plan. The project coordination committee will be accompanied by national technical and scientific institutions (extensionists, academia) and provincial coordinators.

63. The National Project Management Unit will establish three provincial project management units (in Las Tunas, Villa Clara and Matanzas/Los Arabos) to ensure sound implementation at the provincial level. These units will be advised by the provincial delegations of MINAG, CITMA, National Association of Small Farmers, Council of the Provincial Administration, Council of the Municipal Administration, and academic and scientific institutions.

1.5.3. Engagement with civil society organizations and other relevant stakeholders

64. The project presents evidence of several consultation meetings and stakeholder workshops that took place between 2017 and 2018. The consultations involved national and regional authorities, civil society organizations, cooperative producers and representatives from the communities. The meetings involved sharing ideas on the project purpose and expected impacts and exchange aspects on gender, attention to young and more vulnerable people.

65. The project consultation plan proposes to continue the consultation with the interested parties during the first months of implementation, mainly to conclude the identification of risks and guarantee the compliance commitments of the socio-environmental safeguards. In general, the design process will need to further define the activities and sub-activities, the implementation areas and the specific details of the interventions.

66. In this context the consultations will need to further involve critical institutions like the Agroforestry Institute; the Institute for Research on Grasses and Forages; the Livestock Department of the Ministry of Agriculture; the Department of Science and Technology, Innovation and Environment of the Ministry of Agriculture; the Institute for Fundamental Research on Tropical Agriculture; Institute of Soils; Center for Research on Animal Improvement; Institute of Agricultural Engineering; Institute of Plant Health; and universities as well as farmers, including women farmers and farmer cooperatives.

67. Moreover, consultations will need to be developed to ensure better coordination across the proposed programme and the Cuban and FAO programmes on healthy and nutritious diets and food loss and waste.

1.6 Efficiency and effectiveness *Scale: Medium-high*

1.6.1. Cost-effectiveness and efficiency

68. The project is requesting a total GCF financing of USD 38.2 million in the form of grants, with co-financing of USD 81.7 million, which will be provided in Cuban pesos by the executing entity (MINAG). It is worth noting that the accepted conversion rate is USD 1 per one Cuban peso. The project will only reach seven municipalities and a limited number of beneficiaries, implying a high ratio of investment per number of beneficiaries.

69. The project has a well-developed economic and financial cost-benefit analysis that was carried out for the four agroforestry production modules and the two proposed silvopastoral modules. The flows of costs and benefits for the situation with and without the project were forecast for a 20-year period, which includes the 7-year project implementation period.

70. Market prices of inputs and outputs were considered for the projection of costs and benefits, as well as reference values for ecosystem goods and services obtained from peer-reviewed sources. A 20-year horizon was considered given the type of investments, as this reflects the full income flow and the project lifespan. The analysis was completed with a financial discount rate of 12 per cent and the following percentages of project area incorporation were considered: 10 per cent of the area was incorporated into the project in year one, 20 per cent in year 2, 30 per cent in year three, and 30 per cent in year four, which means that the full incorporation is completed in year five with the remaining 10 per cent.

71. The proposed models proved to be financially viable except for the natural regeneration model that is focused on the conversion of marabuzales into forests through assisted natural regeneration. The incremental net present value and the internal rate of return (IRR) ranged between USD 1,998 (IRR of 2.45 per cent) and USD 82,430 (IRR of 29.52 per cent). The Annual Incremental Equivalent net present value, which is equivalent to the yearly incremental net present value, ranges from USD 268 to USD 11,036. The results show that the models generate benefits for farmer families that are higher than the investment costs.

72. On the other hand, an economic analysis was performed to evaluate the incremental benefits of the project for society. The analysis considered two types of benefits: (i) commercial benefits derived from increases in the production of climate-resilient agroforestry and silvopastoral systems; and (ii) the non-commercial benefits associated with the provision of ecosystem services as a result of the activities of landscape restoration, considering indicative monetary values for the provision of these services (per hectare/year). This analysis separated the benefits of carbon sequestration and storage from other climate benefits.

73. The two indicated sources of benefits (agricultural production and climate) were aggregated to obtain the overall estimation of the economic value of the project, considering the total investment cost of USD 119.9 million. The economic benefit for the entire project is estimated in USD 22.469 million, with an internal rate of return of 15.4 per cent. From this economic benefit the project estimates that 23.53 per cent are global in nature, relating to the provision of ecosystem services in the form of carbon sequestration, and the remaining benefit is in the form of increased resilience of agriculture.

74. It is worth mentioning that 40 per cent of GCF funds will be used to purchase essential machinery, equipment, and inputs, including tractors, retrovators and several additional items including chainsaws, manual tillage equipment, soil laboratory equipment and office equipment, as well as cars and motorcycles.

75. Thirty-three per cent of GCF funds will be used for the construction of 11,362 small-scale water systems and 452 excavated reservoirs and 896 drip irrigation units with electric pumping units. As mentioned above, the independent TAP asked questions on the water balance to ensure water provision during the year, receiving accurate estimates.

76. The Cuban co-financing resources are paying primarily for the labour costs of workers and technicians employed by MINAG and the National Forest Development Fund.

77. Given the lack of other sources of finance, GCF funds will provide a genuine opportunity for the Cuban government to acquire machinery and equipment. The machinery and equipment to be acquired with GCF co-financing will be distributed and managed by the integrated basic technical services business units, located in each of the seven municipalities of the project intervention area; the fee to be charged for the service provided will be defined by the UEBIST/municipalities according to the existing cost sheets. Each integrated basic technical services business unit must have an operations and maintenance plan to ensure the provision of services efficiently, focusing on sustainability.

78. According to the general operations and maintenance plan, the Cuban Government will finance 100 per cent of the operations and maintenance costs of the project results beyond seven years, estimated at USD 12,690,33.

79. However, the project is not clear on how the Government of Cuba will ensure that the areas that have been cleared of marabou will be maintained, as the idea is to scale the model to other areas using the marabou brush cutter, rotavator and trailers. Moreover, the project will need to maintain silvopastoral and agroforestry systems, including harvesting, replacement and planting, cultural work, fertilization, pest control, pasture renewal, as well as implementing environmental measures and safeguards for sustainable development and strengthening of climate resilience.

80. In the view of the independent TAP, the third phase of the project will demand large amounts of resources, including the maintenance of the water facilities and irrigation systems as well as the silvopastoral and agroforestry systems. This will add to the ambition of the Government of Cuba to scale the model to other municipalities, with equipment that will have deteriorated but still has a useful lifespan. Therefore, there is a need to have a more robust plan to ensure the sustainability of the project interventions after project completion.

81. According to the answers given to the questions from the independent TAP, at the beginning of the 1990s, the Cuban administration owned 80 per cent of agricultural land with the remainder in the hands of cooperatives and the private sector. This ratio has changed over the past years and today cooperatives have been granted 80 per cent of the lands, with an agreement to freely use them for a 20-year period extendable to another 20 years; the Cuban administration owns the remainder. The more recent market-driven policies are allowing farmers and cooperatives to sell their agricultural products under their own pricing agreements directly to hotels and tourist companies in general, including restaurants.

82. If cooperatives and farmers are able to have revenues from increased agricultural productivity, they might be able to pay for agricultural services and equipment to ensure sustainability of the interventions. However, the proposal also states that the Government of Cuba will offer direct government contracts to incentivize farmers who opt to practice more climate-resilient production. This implies that even though there is a willingness to have a more open, market-driven economy for farmers, they will, however, continue to depend on governmental decisions in terms of markets and prices.

83. Therefore, to allow for greater financial and economic sustainability, the project will depend on government policies and market-driven reforms.

II. Overall remarks from the independent Technical Advisory Panel

84. The independent TAP recommends that the Board approve the project, subject to the following condition:

(a) Prior to the second disbursement in respect of the project, the accredited entity shall submit to the Secretariat a report, in a form and substance satisfactory to the Secretariat, which contains:

(i) A detailed report with improved water balance estimates and projections, calculated on the basis of well-established methodologies, in order to support the implementation of the project, including in respect of: (i) the construction of the reservoirs and drip irrigation systems as well as the water security systems; and (ii) the selection of more diversified crops that are less water-dependent based on a crop-specific evapotranspiration analysis; and

(ii) An analysis of GHG emission reductions resulting from the food supplements provided to livestock under sub-activity 1.2.1.

85. The independent TAP further recommends that the project coordinate actions with the country programmes aiming to ensure healthy diets and tackle food loss and waste, incorporating pilots in each of the municipalities.

Response from the accredited entity to the independent Technical Advisory Panel's assessment (FP126)

Proposal name:	Increased climate resilience of rural households and communities through the rehabilitation of production landscapes in selected localities of the Republic of Cuba (IRES)
Accredited entity:	Food and Agriculture Organization of the United Nations (FAO)

Impact potential
FAO takes note of the assessment. FAO confirms its intention to follow the recommendation by the independent Technical Advisory Panel (iTAP) and carry out an analysis of viable options to reduce the carbon footprint of tractors and agricultural inputs, including a possible shift towards using bio-inputs. This will be carried out during the inception phase of the project and take into account local conditions. FAO will share the results with the Secretariat. Concerning the provision of food supplements for livestock, FAO confirms it will comply with the condition provided by iTAP and will provide additional details and calculations of GHG emissions prior to the second disbursement. FAO would like to confirm that the number of direct beneficiaries is 51,713, including 23,788 women. This will be adjusted in the respective documents.
Paradigm shift potential
FAO takes note of the assessment. FAO confirms its intention to follow the recommendation by the independent Technical Advisory Panel (iTAP) and carry out an analysis of viable options to reduce the carbon footprint of tractors and agricultural inputs, including a possible shift towards using bio-inputs. This will be carried out during the inception phase of the project and take into account local conditions. FAO will share the results with the Secretariat. As specified in the project feasibility study and implementation plan, FAO will ensure a proper design with concrete water balances for the proposed irrigation technologies and water harvesting and storage systems for each of the municipalities. The studies and water analyses will take into account crop-specific evapotranspiration to develop site-specific water balances. This will form the basis to determine the climate resilient crops and livestock water needs of the different modules. The project sustainability is ensured through strong government commitment. This GCF proposal is part of a broader program initiated by the Government of Cuba (GoC), which has directly originated in government policies for climate change adaptation and mitigation and is aligned with the Ministry of Agriculture's strategies for agricultural development.
Sustainable development potential
FAO takes note of the assessment. As part of its engagement in Cuba for the past 40 years and its mandate, FAO will continue to work alongside government counterparts and in cooperation with relevant stakeholders and farmers to ensure that the project contributes to ensuring healthy and nutritious diets. In addition, it will take into consideration the increased

need and opportunities offered by tackling food loss and waste directly in relevant project activities, particularly those focused on farmer training in Farmer Field Schools, which will be established or supported through the project.

Needs of the recipient

FAO takes note of the assessment.

FAO commits to ensuring appropriate linkage of the proposed project with the Municipal Self-supply Food Plan, which aims to diversify healthy and nutritious food and the programmes on food loss and waste. In addition, FAO will seek relevant coordination with other projects focusing on food systems, agriculture and related sectors to foster an exchange of lessons learned and take advantage of synergies to build resilience and facilitate adaptation to climate change while contributing to reducing emissions.

Country ownership

FAO takes note of the assessment.

As per the proposed implementation plan of the project, FAO will further define the activities, sub-activities, implementation areas and specific details of the intervention, involving relevant stakeholders and in consultations with critical research institutions, government departments, ministries and centres as well as universities, farmers, including women farmers, farmer cooperatives.

As for all its projects and programmes, FAO will ensure that this GCF Funding Proposal is implemented in coordination with any other relevant programmes (Government or resource partner funded). All necessary consultations will take place to incorporate other work being implemented on healthy and nutritious diets and on food loss and waste.

Efficiency and effectiveness

FAO takes note of the assessment.

It is expected that, in areas where the Marabu will be removed, improved practices promoted by the GCF Funding Proposal, will contribute to ensuring the continued control of Marabu.

FAO will work closely with the government of the Republic of Cuba and the Ministry of Agriculture to mobilize necessary support and resources to ensure project scalability. This GCF proposal is part of a broader program initiated by the Government of Cuba (GoC), which has directly originated in government policies for climate change adaptation and mitigation and is aligned with the Ministry of Agriculture's strategies for agricultural development.

Overall remarks from the independent Technical Advisory Panel:

FAO thanks the independent Technical Advisory Panel for its review of the proposal and its recommendation to be approved by the Board. In addition, FAO acknowledges the condition put forward and confirms that prior to the second disbursement in respect of the project, it will submit to the Secretariat a report which contains:

a) A detailed report with improved water balance estimates and projections, calculated on the basis of well-established methodologies in order to support the implementation of the project, including in respect of: (i) the construction of the reservoirs and drip irrigation systems as well as the water security systems and (ii)the selection of more diversified

crops that are less water-dependent based on a crop-specific evapotranspiration analysis; and

b) An analysis of GHG emission reductions resulting from the food supplements provided to the livestock under sub-activity 1.2.1.

In addition, FAO, in collaboration with relevant governmental and other stakeholders will ensure the project coordinates actions with country programmes contributing to healthy diets and tackling food loss and waste, incorporating, where relevant and feasible, pilot activities in target municipalities.

Food and Agriculture Organization
of the United Nations

FUNDING PROPOSAL TO THE GREEN CLIMATE FUND

-IRES-CUBA-
INCREASED CLIMATE RESILIENCE OF RURAL HOUSEHOLDS AND COMMUNITIES THROUGH THE REHABILITATION OF PRODUCTIVE AGROFORESTRY LANDSCAPES IN SELECTED LOCALITIES OF THE REPUBLIC OF CUBA

ANNEX 8. GENDER ANALYSIS

November 2019

Republic of Cuba

Contents

Part I: Gender Analysis/Evaluation

Cuban society has made important advances in terms of women's participation and protagonism in the economic, social and political spheres, because women have been given the necessary conditions and opportunities to improve their social status. This is largely due to the political will of the Government, the unconditional support of the Federation of Cuban Women and women's activism, which have been expressed in the Constitution of the Republic, labour legislation, the Family Code and other legal norms and policy documents that protect and enhance women's rights on an equal footing with men.

During the project preparation stage, a preliminary gender evaluation was carried out, which was summarized in a document that shows the characterization and gender analysis in the areas defined to implement the project, based on the perception and information handled by the people contacted in the territories and the analysis of various documents and data offered by local actors.

The aforementioned document included:

- Characterization of the Gender Context in Cuba.
- Cuba's achievements in the area of gender equity.
- Gaps and stereotypes that reproduce gender inequalities
- Characterization of territories from different dimensions.
- Proposal for a gender action plan

The inputs gathered from this analysis have served to complete most of this annex. Cuban women have space to insert themselves and participate in the country's development process as both protagonists and beneficiaries of policies and programmes that have taken place over the past 60 years. This is expressed in the following successes:

- Female population with high levels of education. They represent 65.7% of the technical staff in the country and 80.8% of the administrative staff.
- Female composition of Parliament: 53.2%[1].
- 49 women deputy ministers; 8 ministers (out of 21 possible ministries in 2017).
- Women represent 40% of the State Council.
- Female composition of the Provincial Assemblies of People's Power: 40.6%.
- Percentage of Presidents of Municipal Assemblies: 33.4%.
- Percentage of Vice-Presidents of Municipal Assemblies: 55.95%.
- The Federation of Cuban Women (FMC), made up of all Cuban women over the age of 14, from a structural point of view, with representation from each constituency to the national level.
- Existence of a National Association of Cuban Peasants, ANAP, which has made progress on the basis of a strategy for justice and gender equity in the peasant sector.
- Existence of a National Action Plan to comply with the Beijing agreements.
- Achievements in sexual and reproductive health (specific programmes for women's health).
- Cuba's participation in international mechanisms and agreements (CEDAW, World March of Women, etc.).
- Right to abortion.

[1]This figure corresponds to the current legislature and the remaining data on women in territorial government structures from the previous legislature (2018).

- Visibility of the problem of violence, sexual and gender diversity.
- Visibility of a new family model with recognition of paternity rights.
- Women make up 60.5% of university graduates, and they are the ones who enter Higher Education the most. The panorama of university graduates by branches of science has varied, with a greater presence in careers that were previously masculinized, such as Natural Sciences and Mathematics (53.7%), Agricultural Sciences (51.7%) and Technical Sciences (41.8%). The branch of knowledge with the least female presence is Physical Culture (20.8%). 56.2% of university women participate in postgraduate education. In technical and vocational education, boys are in the majority, which guarantees them the most immediate insertion into the labor market and the acquisition of income, but not the highest level of specialization. Every year, women make up more than 60% of pre-university graduates, which is the main source of higher education[2].

However, they face challenges in reconciling their productive work and political participation with caregiving tasks, given that obstacles persist to the full scope of their rights by male employers, and that women have traditionally been considered in the role of caring for the family, or linked to domestic work. Processes such as population ageing and internal and external migration limit women's social and labor participation, since they traditionally dedicate more of their time to caring for children, the elderly and the disabled. In other words, women have been incorporated into agricultural work, without this having implied a revision or redistribution of care work within households.

At the same time, the most common family structure in the country has a tendency for most domestic and care work to be carried out by women. This phenomenon is accentuated in rural regions.

According to the Statistical Yearbook of Cuba of 2016, of the total number of people employed in agricultural cooperatives, women represent 15.7%. They also account for 15.9 per cent of the total number of persons engaged in agricultural, livestock and forestry activities. In rural areas, women are the majority in services such as education and public health, which together account for more than half of the State's public employment[3].

In the Cuban context from a gender perspective, while significant achievements have been made, there are still numerous gaps and inequities, especially at the level of collective and individual subjectivities and practices, traditional gender conceptions and stereotypes typical of patriarchal culture. On the other hand, some of the social changes experienced by women and men fail to completely counteract the beliefs and myths of this hegemonic culture, manifesting themselves then in different spaces, where asymmetrical power relations are still perpetuated, which have an impact on the ills experienced by men and women. In this sense, Cuban reality reveals contradictions that demonstrate that gender relations in different social spheres are undergoing processes of change, both in their values and in certain social and cultural behaviours.

The objective of this analysis is to help identify multiple causes of vulnerability, including gender inequality in the context of climate change and agro-biodiversity, and to take advantage of the diverse knowledge and capacities within communities/households that can be used to make them more resilient to climate-related risks and impacts.

[2]The information referred to in this paragraph was taken from the National Survey of Gender Equality in Cuba, 2016.

[3]Analysis carried out according to the crossing of information from the tables of the Statistical Yearbook of Cuba 2016, edition 2017. Specifically, the tables referring to Employment and Population.

1.1 Basic Statistics at country level[4]

Although women in Cuba are recognized and taken into account at the social level and have reached the public space, inequalities still persist in the opportunities and conditions in which they access public positions and positions of greater recognition and remuneration. It is necessary to emphasize that the conditions of women in Cuba still reflect a social structure conditioned by a macho and discriminatory culture; this is especially evident in rural areas. of the country where cultural and social stereotypes are less heterogeneous and more conservative with respect to cities.

At the same time, the most common family structure in the country has a tendency for the majority of the work in the home to be carried out by women; added to the fact that the social welfare and health structures (existing and insufficient) make women more responsible than men for the care of children, the sick and the disabled.

According to the Statistical Yearbook of Cuba of 2016, of the total number of people employed in agricultural cooperatives, women represent 15.7%, two percentage points less than that reported in the same report of 2015 (17.05%). They also account for 15.9 per cent of the total number of persons engaged in agricultural, livestock and forestry activities. Between 2010 and 2013, more than 50,000 women lost their formal link with the state agricultural system in Cuba. In addition, in 30 years, more than 400,000 people will have emigrated from rural areas to the cities.

The largest percentage of emigration from the countryside is concentrated in men; and those who remain still concentrate representation in paid agricultural jobs. By 2030, more than half of all households in Cuba will be headed by women, including households in rural areas. The Cuban context from a gender perspective while showing some achievements, these survive and are confronted with countless gaps and inequities.

Maternal Mortality Rate

Maternal mortality ratio (per 100,000 live births)			
	Indirect	Direct	Total
Villa Clara(central zone)	13.6	13.6	27.2
Matanzas (central zone)	27.6	27.6	55.1
Las Tunas(2015) (Eastern Zone)	45.3	30.2	75.5
National	14.5	27.4	41.9

Infant mortality rate (per 1000 live births) [5]

Municipalities of the project. Source 2015		
Zone	Municipio	Tasa
Eastern Zone	Amancio	4.0
	Colombia	2.4
	Jobabo	1.7
Central Zone	Los Arabos	2.6
	Corralillo	4.3

[4]The tables referred to below were prepared by the author of the document, based on information taken from the Statistical Yearbook of Cuba 2016, chapter Health and Social Assistance.

[5]The available sources consulted do not show these figures broken down by sex. Data source: Chapter on Health and Social Assistance of Statistical Yearbook 2016, edition 2017 and Statistical Yearbook 2017, edition 2018.

	Quemado de Güines	5.7
	Santo Domingo	4.0

Infant mortality		Mortality in children under 5 years of age [6]			
Año	At national level	Total National	Total in Villa Clara province	Total in Tunas province	Total in Matanzas province
2015	4.3	5.7	4.8	6.5	6.4
2016	4.3	5.5	3.5	4.7	5.8
2017	4.0	5.5	5.6	4.9	7.5

The official statistics consulted are not disaggregated by sex.

Educational level of girls and boys

Female enrolment by 2015:

- Primary education 48.7 per cent
- Secondary education 50.0%.
- University education 59.6%

The difference in percentages with respect to 100% corresponds to male enrolment, which is evidence that fewer girls than boys were enrolled in primary education (from pre-school at age 5 to grade 6 at age 11) and more young women than men were enrolled in university (between the ages of 18 and 24). This is due to the difference of sexes in births.

Graduation from the 2014-15 academic year:

- Women graduating from technical and vocational education 33.5 per cent of the total of people graduated in that category.
- Women graduating from higher education 55.4 per cent of the total of people graduated in that category.

The above data show that in that course there were more women graduates at the higher level and less in vocational technical education with respects to men, which could be read as a higher educational level in women than in men (highlighting some careers that were traditionally male) and a lower level in professional technical education. At this level, men are the majority, and therefore have a more immediate insertion into the labor market and the acquisition of income, but not the highest level of specialization. This could highlight a gap in terms of incorporation into employment, since men generally prefer to start working earlier, in order to obtain more income, and women prefer to dedicate themselves to greater educational improvement before starting their employment (as paid work).

Apparently there is no gender gap in higher education and technical studies, however, although women achieve higher levels of education they are not necessarily inserted in better paid jobs, or linked to decision making.

Educational level of the economically active population by sex

[6] Data taken from the Territorial Panorama of Cuba 2016.

	Of 1 090700 people with a higher level, 622300 are women, 57.5% and 468400 are men, 42.5%. Here there may be a gender gap for women because not necessarily more study means better employment and more earnings. School enrolment is 99.8% in primary school, with no data disaggregated by sex.
Adult literacy rate (disaggregated by sex)	100% women (UNESCO) 100% men (UNESCO) This denotes that apparently there are no educational gaps in terms of literacy rate. However, although women have the same conditions and opportunities as men for study and insertion into the labour market, there may be a gap in the type of employment to which men and women have access.
Labour force participation rate (disaggregated by sex)[7]	Of the 4,713 thousand workers in 2015, 37% were women. The largest percentage of the population is located in the category of technicians and operators, where women occupy less than 50%. (33%) being different (with a greater presence), In categories such as Administrative (63.7%) and Technical (62.7%) with respect to the total number of employees in each category. In the Services women represent 42.7%; of Directors women represent 36.5 %; and among Operators 15.8 %. In 2015 Women working as professionals and technicians of the total civil state sector 67.2%[8].
Employment rate (disaggregated by sex)[9]	In general, at the country level, the total number of women employed in the economy has remained in the order of 37%, with differences between the State Sector (45.3%) and the Non-State Sector (17.4%). In both cases, these percentages are with respect to the total persons employed in each sector (state 3262.1 thousand workers and non-state 1329). These figures are below 100%, given that a large part of men are the ones with the greatest occupation in the recognized paid work in both sectors. The presence of women, according to the different types of economic activity ranges from sectors with a high female presence such as Health and Social Assistance (68.5%) and Education (66.3%) to those with a lower presence such as: Mining and quarrying (17.7%), Agriculture, livestock, forestry (15.9% of the total persons employed in this sector, 820.9 thousand), Fishing (14.4% of the total persons employed in this sector, 27.0 thousand) and finally, Construction (11.3%). A gender gap may be considered the smaller number of women employed in the above-mentioned sectors, since it may generally refer to the persistence of gender stereotypes and traditionally masculinized jobs. Occupation Cuba. Statistical Yearbook 2016 (in thousands of working personnel) In the categories of occupation, whether state or non-state, the data in the table below, evidence that there are more men employed than women; which may be the reason for several direct or indirect causes.

[7] Data taken from the Reports generated by the National Statistics and Information Office (ONEI), 2016.
[8]Statistics in the military sector are not public, only civil sector figures are issued.
[9]Data taken from the results of the 2016 National Survey on Gender Equality and Statistical Yearbook 2017.

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<tr><td></td><td>total</td><td>Women</td><td>Men</td><td>% Women</td><td>% Men</td></tr>
<tr><td>Total employed</td><td>4 591.1</td><td>1 709.6</td><td>2881.5</td><td>37.2</td><td>62.8</td></tr>
<tr><td>State</td><td>3 262.0</td><td>1 478. 8</td><td>1783.2</td><td>45.3</td><td>54.7</td></tr>
<tr><td>Non State</td><td>1329.1</td><td>230.7</td><td>1098.4</td><td>17.4</td><td>82.6</td></tr>
<tr><td>Cooperatives</td><td>189.9</td><td>29.8</td><td>160.1</td><td>15.7</td><td>84.3</td></tr>
<tr><td>• Agricultural</td><td>178.5</td><td>27.6</td><td>150.9</td><td>15.4</td><td>84.6</td></tr>
<tr><td>• Non-Agricultural
• Private</td><td>11.3</td><td>2.2</td><td>9.1</td><td>19.4</td><td>80.6</td></tr>
<tr><td>Private</td><td>1 139. 2</td><td>200.9</td><td>938.3</td><td>17.6</td><td>83.4</td></tr>
<tr><td>• Of it: on its own</td><td>540.8</td><td>174.8</td><td>366.0</td><td>32.3</td><td>67.7</td></tr>
</table>
</td></tr>
<tr><td>Unemployment rate</td><td>According to Statistical Yearbook 2017
• Women 16%
• Men 1.7%</td></tr>
<tr><td>Land tenure</td><td>Although progress is being made in the process of handing over land in usufruct and the Cuban peasant organization (ANAP) has had a Gender Strategy since 2005, women's land tenure in the sector has not exceeded 17.4 per cent. Likewise, they represent 10.9% of the total number of applications granted to obtain land in usufruct. In the national statistics consulted, there is no breakdown by sex of this indicator.</td></tr>
<tr><td>Access to tangible and intangible assets</td><td>There are no national statistics disaggregated by sex on access to and holding of tangible and intangible assets. Women have equal rights of access, but their participation is commensurate with the low level of presence in the agricultural sector. There is no known specific policy for women's access.</td></tr>
<tr><td>Life expectancy (disaggregated by sex)</td><td>Women: 81.8 (2016, world bank)
Men: 77.7 (2016, world bank)</td></tr>
</table>

1.2 General information at country level

Legal Status of Women

Cuban women are protected within the framework of laws and public policies, in which their rights are recognized. Some of them have specific articles in favor of women's rights (whether they are subjects of the law and with rights recognized according to roles) such as they are:

- The Constitution of the Republic (2019), which, among other elements, declares the State's protection of the family, maternity and marriage and explicitly enshrines the rights and equality between women and men in articles 43, 205 and 207.

- The Family Code, which came into force in 1975, establishes the absolute legal equality of women and men in marriage (art. 24), abolishes the distinction between natural and legitimate children

and defines equal rights (art. 65) and duties of spouses towards children and in the development of the home (art. 26).

- The Civil Status Registration Act and the Civil Code Act: Articles 517 and 518: widows, like male widowers, inherit by will the property rights over their hereditary portion. In the absence of a will, he enjoys a privileged position to access the inheritance, corresponding to a portion equal to that of the descendants or ascendants of the deceased and, if these do not exist, receives the entire inheritance.

- The National Plan of Action for Follow-up to the Beijing Conference, an important document promulgated with the force of law, for the development of policies that favour the development and advancement of women in all spheres of work and in their working and family life, as well as the continuity and development of gender equality. It includes measures or actions under the responsibility of each state agency to promote women's empowerment and equal opportunities.

- The General Law on Housing, which contains regulations on the legal status of personally-owned housing; multifamily buildings; rural housing; housing located in areas of high significance for tourism; the Land Registry of Housing and procedures for resolving claims, declarations of rights and disputes concerning such property. In the case of divorced women who are co-owners of the matrimonial dwelling, they have full rights over it. In the absence of an agreement with the ex-spouse, the dwelling will remain the property of both. In the absence of an agreement with the ex-spouse, the dwelling will continue to be the property of both parties.

- The Public Prosecutor's Office Act and the Criminal Code Act, which address the issue of gender-based violence and its criminalization.

- The Labour Code: which establishes the labour discipline of workers, strengthens the role of administrations, provides for acts of injustice in employee-employer relations and consolidates the role of trade unions in productive efficiency, women workers in the non-State sector have the right to demand from those who employ them an 8-hour working day that, in accordance with current legislation, on certain days of the week may include an additional hour, provided it does not exceed the limit of 44 hours per week , the rights of work and social security that are conferred on the worker, to protect her maternity and facilitate her medical care, the pre and postnatal rest and care of minor children, also includes the right to men in the latter points

- Worker's Maternity Law Decree, Paternity Law, Social Security Law: (protects working women or working men from their rights in the care of infants).

It is officially recognized that fathers can take paternity leave for the care of their children, and that this role does not fall solely on the responsibility of women. Since 2003, according to Decree Law 234 on the maternity of working women, not only the mother can take leave for the care of her children, but also the father after the first 3 months of breastfeeding. This legal norm allows the mother and father to mutually

agree which of them will take care of the child until the first year of life. Men are given the same right to enjoy the same advantages as working mothers.

At the same time, there is the Federation of Cuban Women (FMC), made up of all Cuban women over the age of 14, from a structural point of view, with representation from each constituency to the national level, which, since its foundation in 1960, has been and continues to be the main defender of women's rights and promoter of public policies in favour of their advancement and more equitable gender relations. This organization is recognized as the National Mechanism for the Advancement of Women and, as such, has fostered positive changes in different social spheres, encouraging greater participation in the country's development as protagonists and beneficiaries.

The system of the Ministry of Agriculture has a gender strategy, which is merely a management tool for working towards a priority for the agricultural, forestry and tobacco sectors: the full realization and enjoyment of the rights, won by the Cuban revolutionary process, for women and men. It has 6 strategic lines[10], some of which are progressing less quickly than others. For example: the issue of masculinities and follow-up, monitoring and evaluation.

Cuban women have free access to all services that protect their general health. They are the ones who decide the number of children and their spacing, due to a wide knowledge and access to contraceptive methods and the right to interrupt their pregnancy, elements that grant them autonomy and allow them to make decisions regarding their personal development. Special attention is currently being paid to reducing indicators of teenage pregnancy and maternal mortality[11].

Educational and health policies have ensured important achievements in sexual and reproductive health (specific programmes for women's health). Cuban women are guaranteed the right to abortion.

Common beliefs, perceptions and stereotypes linked to gender[12]

There is a persistence of gender stereotypes: reproduction of machista sociocultural patterns and pre-established gender roles (greater responsibility of women in domestic work and care of infants and older adults); double and triple paid and unpaid workdays for women.

In characterizing the position and condition of women and men in rural areas of Cuba, research conducted by various specialists has shown that, in addition to the gaps and stereotypes mentioned above, there are some modes of functioning in the relations between them.

[10] 1 Creation and strengthening of capacities, 2 Communication, knowledge management, innovation, 3 Articulation, cultural incidence in communities, 4 Working conditions, health and family/work conciliation, 5 Incidence in institutional management policies, 6 Follow-up, monitoring, evaluation and recognition, 7 Women, participation, leadership and empowerment and 8 Masculinities for gender equality.

[11] Taken from the 2016 National Gender Equality Survey.

[12] The response elements to this question were taken from the 2016 National Gender Equality Survey and the Preliminary Gender Study conducted in the intervention area.

Subjectivities and collective and individual practices, traditional gender conceptions and stereotypes, characteristic of the patriarchal culture, are maintained in society, and in some cases asymmetric power relations are perpetuated, which have an impact on discomforts experienced by men and women. In this sense, the Cuban reality reveals contradictions that demonstrate that gender relations, in different social spheres, are going through processes of change, both in their values and in certain social and cultural behaviors.

For men, "gender equality" is promoted through courtesy actions towards women, the celebration of dates such as International Women's Day or Mother's Day, the existence of flexible schedules and understanding of the "situations" presented by women associated with the care of children and the elderly.

Division of labour between men and women

Overburdened with domestic roles limits the adequate insertion of women in the labour market, access to more recognized positions, better paid and/or managerial positions. The predominance of “machista” attitudes and precepts at the labor, community, and family levels hinder women's insertion, participation, and permanence in the labor market in the agricultural sector. All of this reproduces gender gaps in the territories analyzed.

The majority of women do not receive remuneration for their work in support of food production. Their participation in agricultural work is sometimes undervalued, as it is related to a part of the productive process, determined in accordance with the sexual division of labour and qualified as: less effort. This allows them to place their work in a condition of "help", thus determining limits on their participation, decision-making and income generation. Women are recognized as those who control inputs, buy food and collaborate in productive activities (raising backyard animals, cleaning milking utensils, making food for workers, in addition to domestic work). Sometimes they are in a subordinate relationship, which implies the situation referred to above as a gender gap.

The division of labour is considered a gender gap, since women do not insert themselves equally with men and are overburdened with household tasks. For example, women are over-represented in unpaid domestic work (27.7% women and 0.9% men).

The highest levels of participation in the unpaid activities of men and women are concentrated, firstly, in the activities that integrate domestic work, which represents 63.21% (52.37% declared by men and 74.07% declared by women according to data in the results of the 2016 National Survey on Gender Equality) followed by care for dependent persons with 19.02 % for the total number of persons interviewed.

There are inequalities in the use of time, as women are more overburdened in domestic and care work, which could be an obstacle to equal access to paid work. There are also gaps (expressed in hours) between men and women within unpaid work, in terms of caring activities. There is a difference in income between women and men: horizontal and vertical occupational segregation. In this sense, female participation (25.78%) prevails over male participation (12.26%) in all activities related to the care and accompaniment of people who require it, whether children, older adults, or people with temporary or permanent disabilities. Women employed in relation to men have a difference of almost 10 hours in the time allotted to unpaid work, which means that even in conditions of participation in economic activity, they maintain

the domestic burden, which shows the double workday they face. This difference between men and women with respect to unpaid work time is intensified in the unemployed population, since women spend around 18 hours per week more than men on this type of work. Within unpaid work, the gap between men and women, expressed in hours, is also wide in terms of caring activities. Women devote 8:29 hours per week to the care of children, adults and older adults, the sick or persons with some type of disability and other members of the family. Their male peers devote 3:38 hours per week to this same type of activity. In households, women spend more time caring for household members under the age of 14 (5:41 hours per week) . Within these tasks, it is precisely the school support to which they dedicate the most time. This could be evidencing a greater female burden due to the still widespread consideration that women are ultimately responsible for the education and care of minor children.

1.3 General information at the Zone of influence of the Project

Situation of men and women in the zone of influence of the Project [13]

The information gathered showed, first of all, that in the areas where the project will be implemented, most of which are rural (47% of women in Villa Clara/Matanzas and 45% in Las Tunas of the rural population), all the gaps and inequities that were previously presented as characteristics of the current Cuban reality in terms of gender are present.

At the psychological level, women in rural areas show limitations in the way they express themselves; some show withdrawal and signs of damaged self-esteem. In the dialogue between men and women who work together, it is appreciated that they include them when they say we, while they speak of women placed in a position of subordination.

In both areas of the project there are a total of 29,458 housewives[14], who sometimes perform invisible productive work. Territorial diagnoses carried out in these zones show as causes the high number of housewives, the lack of preparation, that is to say the lack of completion of secondary or professional studies; the motivation and the subordination to the demands of their spouses. It also refers to the lack of employment in the communities, insufficient transportation to move to other areas that offer the possibility of employment outside the home.

With respect to violence against women, the people interviewed in the preliminary evaluations recognize that in these areas and with greater incidence in the rural areas of the municipality, there are expressions of gender-based violence (either by husbands or children). Within the main gender gaps identified in these territories are found:

Analysis dimension	Identified gap
Sexual division of labour	Women are over-represented in unpaid domestic work. Of the total hours worked by women, 63% are unpaid.

[13] Information taken from the gender characterization carried out in the intervention zone of project 2018.
[14] Data taken from the field study: Report on gender characterization and action plan in the project implementation zones.

Family and social co-responsibility	There is no reconciliation between work and family life. Of the total hours of unpaid work, men dedicate 9% and women 91%.
Use of time	Women, on average, spend less time recreating than men, and when they do so within the home and simultaneously with other activities (e.g., listening to the radio and feeding animals), men recreate outside the home.

Anticipated differences between men's and women's vulnerability and adaptive capacity to climate change

There are unanimous perceptions in these territories that women are in greater conditions of vulnerability than men due to the persistence of machista practices that perpetuate stereotypes and traditional roles of women that put them at a disadvantage.

The scarce availability of water and its storage capacity is the main problem of rural women in these territories; for this reason it is an explicit basic need.

Although there is no explicit differentiation of vulnerability and risk in the people interviewed, during the meetings they recognize that women are more vulnerable to drought and the effects of hurricanes.

People do not directly recognize the relationship between gender and Climate Change, that is to say, there is no differentiated recognition between men and women in these territories, in terms of their vulnerability and capacity to adapt to climate change, nor which are the affects or impacts for one sex or the other.

Gender inequalities that may be exacerbated by the impacts of climate change[15]

Climate change can increase migration processes that involve men more (see footnote) but confine women to remain in communities cared for by the elderly, children and the disabled, but address aggravated environmental problems such as drought and lack of water.
In the implementation municipalities, a ratio of masculinity (men per thousand women) is reported of 1,002 in the Central zone (Villa Clara and Matanzas) and 1,033 in the Eastern zone (Tunas).

Harvest losses and low yields due to the impact of severe climatic events and increased expression of pests and diseases, accentuated by climate change, reduce household incomes and living standards, thereby worsening the situation and increasing women's working time at home and reducing their employability; as women stay at home with care tasks and men migrate in search of higher incomes[16].

[15] According to information taken from ENIG, 2016; for all those surveyed, the 3 main problems for women today are: low income (72.8%), housing shortage (35.2%) and transport problems (31.8%). Fourthly, domestic overload is recognised by the population as a problem for women (30 % of the population). The three main problems most frequently identified for men are: low income (80.4%), difficulties in obtaining food (38%) and housing shortage (36%), followed by employment and transport problems, both with 35.1%.
[16]According to the Statistical Yearbook of the National Information Office 2017, internal migration behaves as follows in the provinces of implementation: in Matanzas 1,882 men and women migrate, in Villa Clara 1,977 women and 2,030 men and in Tunas 2,308 women and 2,340 men.

In the life projects the women in the intervention area, their aspirations reflect, for the most part, an improvement in living conditions (construction of houses, reinforcement of transportation, sufficient water supply, others), and in the rural communities few reflect joining the work activity outside the home, prefer to work from home. They also refer to the need for seeds, the feet of young animals, credits, instruments to incorporate into production because there are lands. Productive planning (and management in general) operates vertically, without taking into account differentiated criteria of women and men, nor the possible limitations of infrastructure and technology required to achieve a specific productive goal. This does not favor the real participation of producers and their entities. The mechanisms of contractual agreement with MINAG (at different levels) are unsafe for both women and men, but the majority of those who manage to contract their productions for sale are male producers (they are the owners of the land and machinery).

However, it was not found that there is a differentiated perception of impact for men and women of the effects of climate change risks and vulnerabilities. Nevertheless, they recognize that when there is a climatic event such as hurricanes, women are recharged because they are in charge of picking up the family's things and preparing the conditions for shelter. In the communities it is thought that women are more affected by drought and lack of water because they have the responsibility for domestic tasks (very dependent on water), which generates stress, while the responsibility for men ends with carrying. Inequalities with respect to the basic needs differentiated between men and women, as well as the improvement of living conditions, are some of the elements that can be increased by the impacts of climate change.

Although there are no formal restrictions on women's leadership, there are sometimes inequalities. Many women do not assume it because of limitations imposed by their personal relationships (marriage), or because of the overload of work in the home that demands a lot of time.
From the interviews and data collected, in all the municipalities there is a greater vulnerability among women in the most rural areas of each territory and in those more vulnerable settlements located in areas affected by the CC or with imminent risks of affectations. In the diagnostic stage, no inequalities referring to other social groups other than those involving women were detected. However, in addition to the above-mentioned inequalities, gender-based violence could also affect people's ability to adapt to climate change.

1.4 Expected roles of women and men in the context of the project

Equal participation of women and men in the project is aspired to. The specific tasks will be determined by the will, aptitudes and aspiration of each person. The project plans to create jobs that traditionally result from women's preference such as seedling management and grafting in nurseries of forest and fruit species, activities in mini-industries, management of collected milk and quality assessment, as well as in laboratories that will be strengthened to ensure essential services to support agricultural and livestock production, among others. It is possible that jobs may also arise for women who are traditionally male, and that they feel interest and empowerment to assume them or vice versa.
Some elements that can be valued as roles to be played by women in the project can be linked to the recovery of the reproduction of vegetable fibers, and the women who live in the settlements can count on sufficient raw material to develop the handicraft, be able to market it and thus improve their quality of life. There would also be potential in improving the capacity and working conditions in a CREE (Entomophagous and Entomopathogenic Reproduction Center), in linking them to the breeding of rams, chickens and rabbits, condiment plants, as well as medicinal plants to be distributed to pharmacies in forest areas or in small mini-industries to favor their use in the processing and conservation of different

productions such as tomato, cucumber and some fruits such as guava and mango that develop well in these municipalities.

The individual commitments of participation of the producers in terms of time and activities to be carried out have not yet been determined, but it is expected that a high percentage of them will work full time, in correspondence with the established working day (8 hours per day) during the entire duration of the project. Some people will surely commit their time partially in proportion to the number of areas involved in the project in relation to the total land they manage. However, in the detailed planning, the conciliation between paid and unpaid work will be taken into account, in order to avoid overburdening women.

The project will contemplate a gender-sensitive communication strategy and will act in the restorative transformation of the same agro-ecosystems where the producers work, including the idle areas invaded by species such as marabou, therefore, they are not expected to have to move to other places outside their current work space. So they will not have to spend additional time on mobility.

Both the work time and the time destined to reach the work site cannot constitute impediments or limitations for the participation of people in the project. This element will be taken into account in the planning of activities with a gender perspective, in order to facilitate the incorporation of women.

Resources available for women and men (economic, financial, physical, natural)

Inputs and some implements and means of work can be purchased freely in a network of state stores of the Ministry of Agriculture, but in limited lines and quantities, usually at high prices. Another way is through cooperatives, which establish supply contracts with marketing companies and then distribute them to member producers. Direct access is determined by ability to pay (men generally have greater capacity) and by their role in land management (mostly men).

The cooperatives manage the common funds, but the producers also have their own funds for investment and payment of inputs and services for the crops. Credits are managed through the Banco de Crédito y Comercio (BANDEC), which has an equal granting policy, but in dependence on the payment and support capacity, which is more favorable for men.

As for liquid money, women who are not salaried receive what their husbands allocate to household expenses and may or may not receive a smaller percentage for personal expenses. Some women have a share in the destination of income, but most do not decide what is done with the economic results of production. In some cases, women are the ones without decision-making power.

Land is accessed by inheritance or is granted in usufruct for up to 20 years, by personal request, in legal processes determined by territorial governments and the representations of the Ministry of Agriculture. However, in the 7 municipalities of the project, only about 1000 women are usufructuaries (0.86%) and just over 500 are owners (0.46%[17]). This makes it difficult to make production decisions. This is a gender gap to work on in the project.

[17] In these percentages there could be some bias because they were calculated on the basis of the total number of women resident in each municipality, whether they are of working age or not, employed or not.

Municipality	Resident women	Owners	Usufructuaries	Presidents of cooperatives
Corralillo	12,855	31	24	0
Q. de Güines	10,509	8	2	4
Santo Domingo	24,766	51	70	0
Los Arabos	11,919	103	211	-
Amancio R.	18,780	-	51	2
Colombia	15,892	61	246	-
Jobabo	20,685	274	393	1
Total	115,406	528	997	7

Information and opportunities necessary to participate in the project

Women and men have equal access to information and opportunities to participate in and benefit from the project, there are no educational gaps between women and men that prevent access to understanding and access to project information Most of the beneficiaries belong to cooperatives that have an internal government system that obliges them to discuss and report on project issues in member assemblies, decisions are taken collectively, and participation follows voluntary principles. This process has already occurred in its initial stage, and should be ratified during the implementation of the project.
The project will seek to develop a gender-sensitive communication strategy or a broad, robust and inclusive information and dissemination system that in a special way helps to make visible the successful experiences of men and women in the territories and to reduce some information gap that can be identified during implementation.

Access to education, technical knowledge, services and technologies

According to the policies and provisions, especially of the cooperative agricultural sector (of the National Association of Small Farmers), access to education, technical knowledge and / or updating of skills is equal. But in practice the participation of women in professional improvement or training once they get married is limited, mainly due to lack of time, because they are assigned to perform tasks in the home and family that overload them, becoming more difficult when they have to travel or spend the night away from home to receive training. This is a result of the lack of family co-responsibility and the (perhaps unplanned) distribution of responsibilities in household tasks for all members, with the understanding that the responsibility belongs to all, so that all can overcome and acquire new knowledge.

The project has taken note of this aspect and proposes to plan the development of the majority of its training actions in situ, on the farms, developed by extensionists and leading producers The services and technologies provided by the project will be available and accessible to both women and men on equal terms. They will be provided according to the capacities, needs and abilities of each of the beneficiary personnel, and special consideration will be given to the traditional disadvantageous condition of women in decision making for their granting and distribution, taking into account roles in the project and other factors. Gender gaps will be considered in the distribution of technologies and access to services

Women's decision-making capacity depends on their position regarding land tenure, and women usufructuaries have the power to decide everything regarding land management, other means of

production and crops. In cases where this is not the case, the decision-making capacity depends on their position in the chains of command in the cooperatives, and within the farms in dependence on relations with their husbands and male relatives, with limitations due to machismo traits that still persist.

There are no political restrictions on women's active participation; however, economic restrictions can be seen conditioned on the payment capacities and incomes that are more favorable for men (since they are the ones that are mostly employed according to employment figures referred to in previous pages of the document). Depending on the category of occupation at work, women and men receive equal pay for the same work, product or service.

There is potential for growth in female leadership, and the necessary actions will be carried out in the territory with the support of the Gender Committee of the beneficiary provinces or municipalities, in favour of increasing the level of participation of women in management positions in the cooperative system.
In the project areas of a total of 197 co-operatives studied in the initial diagnostic phase, only seven women are presidents of co-operatives (3.6%). being under-represented, as they are 15% of the membership of co-operatives.

There are no formal restrictions for female leadership, the limitations are those imposed by their personal relationships (matrimonial) and the limitations by the workload in the home that demands a lot of time. The policies of the peasant organizations aim to favor the promotion of women to management positions and through the project, spaces will be provided that contribute to this.
This will have a positive impact on their leadership within the peasant sector, which could lead to promotions in the management positions of the cooperatives.

The initiatives of the peasant association (ANAP) and its gender strategy to reconcile actions to promote female leadership will be considered.

Needs/priorities of women and men in the context of the project

Priorities/needs were identified in a general sense, and only in some cases differentiated for men and women. For example: access to water (it is known that water is deficient, the selected areas are impacted by recurrent drought processes and in some areas there are difficulties for access), employment (the sources of employment are limited to agriculture and this situation is aggravated by the inutilization of areas by the invasion of marabou (invasive species), and training (the remoteness of the specialized entities of education and training makes access difficult, processes of specialization in specific topics are necessary).

Difficulties with access to water are identified as one of the fundamental problems of the inhabitants of the project areas, especially sensitive for women. To this end, the project will support measures aimed at collecting water and improving access to identified sources, such as installing water pumps for their extraction. The project will address training needs, recognizing differentiated skills and knowledge for men and women.

It will contribute to meet the needs of new jobs and aims to create some that will be affordable and the preference of women (example in nurseries and mini-industries). The project will plan actions to address identified differentiated priorities.

After the crossing of the four fundamental climatic threats that affect the Central and Eastern Zone (strong winds, flooding by intense rains and penetration of the sea and drought). The proposal of direct beneficiaries focuses on those Popular Councils, households and population with greater vulnerabilities (such as children, elderly and women) to the phenomena mentioned above. Of the total 55 Popular Councils (CP) (29 CP in the Central Zone and 26 in the Eastern Zone), 10 CP are in the category of very vulnerable, 18 CP in the category of vulnerable and in average vulnerability 12 CP. All the foregoing defines 34,346 vulnerable households in both zones as direct beneficiaries and thus places 102,938 persons, 49 per cent of whom are women, in the condition of vulnerable population.

No intersectional evaluations have been carried out, an aspect that should be resolved in the initial stages of the project and solutions adopted depending on the results obtained. In other words, the needs or gaps of specific and vulnerable subgroups (e.g. Afro-Cuban populations) should be identified in the first stage, with a more specific diagnosis.

The project has recognized some vulnerabilities, and has developed responses to cover them. However, at the beginning of the formulation, the GED approach has been used to analyze, design and implement proposals that generate equitable and sustainable development. In the initial stages, the problems, needs and priorities faced by women, men and specific groups for the development of response strategies, risk management and adaptation to the vulnerabilities to which they are subjected will be reviewed in greater depth.

The project will take advantage of the experiences of men and women in key aspects such as the management and conservation of local seeds for the implementation of modules of agroforestry systems that include fruit trees and crops. It also happens with the management of the postures in the nurseries, the grafting work and the operation of the laboratories whose operation the project will support (for soil evaluation among others).

The project will contribute to the reduction of stereotypes through the acquisition of means of production for production personnel, will provide technologies, will ensure training processes and will generate traditionally female jobs to which men could have access, or will have an impact on traditional male jobs in which women will be able to take part, after training processes or affirmative actions aimed at this end. Gender vulnerability will also be considered and equitable access will be sought, with emphasis on support for women. An example of this are the 6 technified nurseries that will be able to provide female jobs in the nurseries to more than 30 women.

Part II: Gender Action Plan.

Gender mainstreaming requires not only a change of culture in inter and intra-gender relations, but also a political and structural scaffolding that promotes equity at all levels, as a clear message of the priority given to the equal exercise of human rights for sustainable development.

Gender mainstreaming in territorial processes aimed at improving the quality of life and addressing vulnerabilities in the face of climate change requires a change of awareness and the articulation of key actors who can promote a substantive movement for gender equality in the territories.
The idea is to propose, from the ideological to the structural and operational, a process of reorganization, development, improvement and evaluation of the decision-making processes, which will make it possible

to respond to the differentiated needs - basic and strategic - of women and men. This process would translate into changes in the working methods of all institutions, at all levels, with emphasis on the formulation of gender-sensitive policies, and based on a gender analysis within the framework of adaptability and resilience strategies.

It is essential to guarantee the political participation of the Federation of Cuban Women (FMC) in these processes, as an allied organization that is able to resume its role in proposing agendas that position women's rights in at least four key dimensions:

- Economic and labor rights, access and control of resources.
- Prevention of gender-based violence
- Social co-responsibility of care

This concerted agenda must move towards planning and programming with a gender perspective.

The institutionalization of this perspective, through dynamic structures, with commitments in the work for gender equality, such as gender committees, focal points, FMC - ANAP brigades, is essential for sustainability. It is necessary that these structures have systematic spaces for strengthening their capacities to promote management processes oriented towards gender equality.
This transit, denunciation (of a problem that affects justice) - demand (change actions) - proposal (taking sides, acting, rendering accounts), must be accompanied by the improvement of the information and statistical system, so that it is sensitive to gender and generational differences. This will in principle provide a baseline and provide inputs for monitoring changes and formulating policies. A communication strategy with a gender perspective will support the change in social imaginaries and practices that sustain gender inequalities.

The project promotes social sustainability based on the need to generate tangible results for its participants with a criterion of promoting equity, which means that the results are distributed equitably among the participants and favor mainly disadvantaged groups.

The project is coherent with national policies, territorial development strategies and the interests of local populations, aligned with social development objectives, especially with the Development Strategy of the Ministry of Agriculture until 2030 which includes a transversal treatment of gender, as well as supports the local implementation of the Gender Strategy of the Ministry of Agriculture.

Local and agricultural authorities in particular have identified the need to improve the conditions of the project's impact areas, their productive entities, social services and living conditions in many of the socially disadvantaged communities and rural areas.

An important route that will be stimulated by the project, will be the stimulation of actions for productive improvement and optimal use of land that will lead to an improvement in community living conditions, associated with the generation of jobs and income in a sustainable manner, greater access to locally produced food, and the strengthening of community activities around the care and sustainable management of natural resources and biodiversity.

The project will assume an equity approach to achieve gender equality, according to the gaps identified in the area of intervention, from the positioning of disadvantaged groups in better conditions to generate their development, enabling their access to work, knowledge and information, decision making, better

living and working conditions. At the same time that climate resilience is improved, the solution to social problems is facilitated with an equity approach, since the intention is to include, from the very selection of areas, those communities with a certain level of social and economic vulnerability, and among the beneficiaries, priority is given to women for access to training activities and productive resources that generate income. In all areas, direct actions in the area of production-processing and commercialization-of food and forest resources have as direct beneficiaries small-scale family agriculture producers. Linking this with FAO's Gender Equality Policy (2013), which provides the framework and guidelines for mainstreaming the issue in projects, recognizing the ability to articulate the needs, priorities, skills and knowledge of women in each of the areas, will be an important element in the project's action, so that each person can better face their situations of vulnerability before the impacts of climate change.

The reduction of existing gender equity gaps is approached from a fair and equitable treatment of access to information and training, and preferential access to productive resources and jobs generated by the project, from the recognition of the disadvantaged position in which women find themselves.

A gender specialist (consultat) will be recruited to coordinate the implementation of the action plan and ensure the mainstreaming of gender throughout the project.

Gender Action Plan

Impact statement:
The project will contribute to increasing resilience to climate change and sustainable development through innovation and financial incentives to ensure critical ecosystem services of restored productive landscapes in seven municipalities in Cuba selected for their vulnerability to climate change, directly benefiting 15,968 producers of selected agricultural and livestock entities initially engaged, including 3,123 women. The direct beneficiaries, especially women, will be more resilient to climate change because they will have greater access to means of production, financial resources and technologies (including renewable energies), in addition to being trained and participate directly in the sustainable and restorative transformation of agroforestry landscapes by improving their livelihoods, access and availability of better quality water, as well as greater local production of food, jobs and income.

To ensure gender parity during implementation, gender equality measures will be developed for the entire project team and at all levels.

Outcome 1.0 Increased resilience and improved livelihoods and living conditions of the most vulnerable people in communities and regions
Indicator: Number of men and women benefiting from climate-resilient livelihood options (BL: 0 Target: 100% of beneficiaries: 50% of them are women)

Output 2.2.3: Producers trained in the restoration and management of productive landscapes for climate-resilient agriculture with gender equity.
Indicator: Number of men and women benefiting from training processes for climate resilient agriculture with gender equity[18] (BL[19]: 0 Target: 100% of beneficiaries trained: 50% of them are women).

Gaps according to gender evaluation	Activities	Indicators and targets	Execution time							Responsible party
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	
Over representation of women in unpaid work	Implementation with gender sensitivity of the 6 modules of the Project in 37,734 hectares (Outcome 1) - Construct small-scale	% of women attending areas benefited by sustainable practices that increase climate resilience (BL: 0 Target: 90%)	x	x	x	x	x	x	x	FAO project - Project Team - Ministry of Agriculture

[18]Specify the increase in the baseline with respect to the goal.
[19] Baseline (BL)

Women are more affected by drought and lack of water because they have the responsibility for domestic tasks. Women's aspirations reflect an improvement in living conditions (construction of houses, reinforcement of	water security systems (storage facilities) - Improvement of access conditions of women's transportation (roads)	Number of women beneficed for small-scale water security system (BL: 0 Target: 896) % of women benefitting from the improvement of access conditions (BL: 0 Target: at least 50%)								
	Establishment of 6 nurseries of "tubetes" (1 per municipality) for the production of forest and fruit postures. (outcome 1) - Development of mini-industries	% of new jobs generated by the project occupied by women and men (broken down by type of employment: nurseries, mini-industries, production, marketing and along the value chains). (BL: 0 Target: at least 50% of women)		**x**	**x**	**x**	**x**	**x**	**x**	FAO - Project Team - Ministry of Agriculture.
	Acquisition of productive technologies for climate resilience (outcome 1)	% of women benefited with productive resources for climate resilience in relation to total beneficiaries (BL: 0 Target: at least 50%)	**x**	**x**	**x**					FAO - Project Team - Ministry of Agriculture
	Design and implementation of a gender-sensitive communication and dissemination program or strategy. It will be included women's life stories and reviews to make	1 developed gender-sensitive internal and external communication plan for the project Mid-term and completion report including the results of the implementation of the gender action plan, including	x	**x**	**x**	**x**	**x**	**x**	**x**	FAO - Project Team - Ministry of Agriculture

transportation, sufficient water supply, others)	visible theirs contributions (outcome 2 and 3)	the gender sensitive communication and dissemination program or strategy								
	Creation or improvement of working conditions for the incorporation of women into the agricultural work of the modules to be implemented. (e.g. gender differentiated toilets will be created, and the conditions of existing toilets will be improved) Discussion spaces / workshops with local managers of the agricultural sphere, local alternatives for child and elderly care such as flexible schedules (both sexes) and nursing homes will be incorporated (outcome 1)	Number of gender differentiated toilets created or improved. (BL: 120 Target: 240) All work spaces have one for men and another for women, with door, sink, water, lighting, etc.	**x**	**x**	**x**	**x**	**x**	**x**	**x**	FAO - Project Team - Ministry of Agriculture
	Gender diagnosis and the mainstreaming of this approach in all the stages and actions of the intervention of the	Report of gender diagnosis and reviewed gender action plan. Mid-term and completion report including the gender diagnosis and the results of the	**x**		**x**		**x**		**x**	FAO - Project Team - Ministry of Agriculture

No intersectional evaluations have been carried out, an aspect that should be resolved in the initial stages of the project	project, showing concrete results. Alliances with local institutions and actors for the economic and social empowerment of women	implementation of the gender action plan (indicators, methodologies, work teams, budget, communication and evaluation)								
	Articulation of the institutions and the members of the Gender Committees or local working groups that follow up the actions of the project at the level of each benefited entity (outcome 3)	Number of members of Gender Committees created or strengthened (BL: 3 Target: 6) at least 3 members in the second semester of the year (one in each zone)	x	**x**	**x**	**x**	**x**	**x**	**x**	FAO - Project Team - Ministry of Agriculture
	Ensure the presence of representatives of gender committees or local groups working on the issue in the project governance teams at each level. (outcome 3)	Representative of the gender committees in the National coordination team and in each Provincial team. (BL: Target: At least 1 in each one)	x	x	x	x	x	x	x	FAO - Project Team - Ministry of Agriculture
	Elaboration and implementation of gender action plans at the level of each beneficiary entity that take into account the basic and strategic needs, knowledge and skills of the	Gender Action Plan document for each benefited entity in the 2 zones. (BL: 0 target: at least 85) Mid-term and 1 completion report including 1 Gender Action Plan implemented for	x	x						FAO - Project Team - Ministry of Agriculture

	communities, especially women. (outcome 3)	each benefited entity in the 2 zones. (BL: target: at least 85)								
The link between gender disadvantages and climate change is not recognized. (weak preparation of beneficiaries on gender issues and relations between gender and resilience, CC, vulnerability, etc.) There is no perception in the difference between vulnerability and risk, mainly by women	Design and implementation of a training, sensitization or knowledge management program for technical producers, extension workers and beneficiary personnel in general, focused on the differentiated needs of men and women (possible topics to be included): Gender and CC, Resilience with a gender perspective, gender violence, masculinities) (outcome 2)	% of women that participate in the capacity building program. (BL: 0 Target: 100% (7,774 women) % of the women who participate, that it have risk perception and knowledge about CC (BL: 0 Target: 90%) % of women trained who indicate they use at least one of the practices learned on their own forms. (BL: 0 Target: 80%)	**x**	**x**	**x**	**x**	**x**	**x**	**x**	FAO - Project Team - Ministry of Agriculture
The high number of housewives	Identification of a map of key actors working on gender in each	1 Mapping of key actors report with recommendations for the	x							FAO - Project Team -

with lack of preparation.	zone to establish strategic alliances and joint actions. (outcome 3)	gender action plan for each zone								Ministry of Agriculture
Only 7 women are presidents of co-operatives (3.6%)	Carry out a women`s leadership training workshop to promote women's exercise of leadership, taking into account their knowledge, skills and experiences, to meet their basic and strategic needs. (with the women leaders' s participation of ANAP and MINAG) (outcome 3)	Women`s leadership training workshop report (BL: 0 Target: At least 1 in every one) Quantity of women that are leaders (BL: 7 Target: 14)	x	x	x	x	x	x	x	FAO - Project Team - Ministry of Agriculture
The women needs access to resources (seeds, the feet of young animals, credits, instruments productive) to incorporate into production (women have less access than men to	Procurement and investment of the project with a gender focus (i.e. purchases must be made according to the needs and differentiated conditions of men and women). Prioritize the delivery of productive resources to women (outcome1)	% of resources that are for women (BL: 0 Target: at least 50%) % of women benefiting from resources provided (BL: 0 Target: at least 80%)	x	x	x	x	x	x	x	FAO - Project Team - Ministry of Agriculture

productive resources)										
There are not national statistics disaggregated by sex in several subjects	The data and statistics generated by the project (whether productive or not) recognize needs, skills, knowledge and contributions differentiated by sex (outcome 1, 2 y 3)	100% of the information collection instruments are disaggregated by sex.	x	x	x	x	x	x	x	FAO - Project Team - Ministry of Agriculture

Women's empowerment activities are linked to the delivery and access that the project will give to productive resources, the delivery of knowledge through courses, awareness workshops and training for a better development of cognitive abilities, including leadership issues (and empowerment in every way). In addition, the creation or strengths of inter-institutional or intersectoral alliances in the locality or municipality are included.