**REDD+ Project for Caribean Guatemala: The Conservation Coast**



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| --- | --- |
| **Project Title** | REDD+ PROJECT FOR CARIBBEAN GUATEMALA: THE CONSERVATION COAST |
| **Project Location** | Department of Izabal, Guatemala |
| **Project Proponent** | Fundacion para el Ecodesarrollo y la Conservacion (FUNDAECO) |
| **Document Prepared By** | Ecological Carbon Offsets Partners, LLC (ecoPartners) |
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| **Project Implementation Period and GHG Monitoring Period** | Not applicable for validation. |
| **Validation Status** | Seeking full validation |
| **CCB Status History** | Undergoing initial validation |
| **Standards Used** | VCS v3.6, VCS Methodology VM0015 v1.1, CCB v3.0 |
| **CCB Benefits Summary** | The project objectives are threefold: (i) to mitigate climate change by reducing deforestation; (ii) contribute to biodiversity conservation including High Conservation Values, and, (iii) foster sustainable development of local communities. |
| **Gold Level Criteria** | None |
| **Date of PDD Completion** | 19 December 2016 |
| **PDD Version Number** | 2.0 |
| **Expected Verification Schedule** | March 2017 and annually thereafter |

Table of Contents

[1 General 8](#_Toc469908576)

[1.1 Summary Description of the Project (G3) 8](#_Toc469908577)

[1.1.1 Project Description 8](#_Toc469908578)

[1.1.2 Project Objectives 9](#_Toc469908579)

[1.2 Project Location 11](#_Toc469908580)

[1.2.1 Ownership and Control 11](#_Toc469908581)

[1.2.2 Geographic Boundaries 12](#_Toc469908582)

[1.2.3 Project Physical Parameters 12](#_Toc469908583)

[1.2.4 Project Zone 17](#_Toc469908584)

[1.2.5 Grouped Project Area 18](#_Toc469908585)

[1.2.6 Project Area 20](#_Toc469908586)

[1.3 Conditions Prior to Project Initiation (G1) 22](#_Toc469908587)

[1.3.1 Eligibility 22](#_Toc469908588)

[1.3.2 Vegetation and Forest Type 22](#_Toc469908589)

[1.3.3 Carbon Stocks 22](#_Toc469908590)

[1.3.4 Land Use 23](#_Toc469908591)

[1.3.5 Property Rights 23](#_Toc469908592)

[1.3.6 Communities 25](#_Toc469908593)

[1.3.7 Biodiversity 33](#_Toc469908594)

[1.3.8 High Conservation Values 35](#_Toc469908595)

[1.4 Project Proponent (G4) 43](#_Toc469908596)

[1.4 Multiple Project Proponents 43](#_Toc469908597)

[1.5 Other Entities Involved in the Project (G4) 43](#_Toc469908598)

[1.5.1 Technical Skills and Capacity 45](#_Toc469908599)

[1.5.2 Regulators 45](#_Toc469908600)

[1.5.3 GHG Programme Administrators 45](#_Toc469908601)

[1.6 Project Start Date (G3) 45](#_Toc469908602)

[1.6.1 Program Start Date 45](#_Toc469908603)

[1.6.2 Project Activity Instance Start Dates 46](#_Toc469908604)

[1.7 Project Crediting Period (G3) 48](#_Toc469908605)

[1.7.1 Project Lifetime and Chronological Plan 48](#_Toc469908606)

[1.7.2 Implementation Schedule 48](#_Toc469908607)

[1.7.3 Baseline Reassessment 48](#_Toc469908608)

[1.7.4 ARR/ IFM Harvesting Periods 48](#_Toc469908609)

[2 Project Design 48](#_Toc469908610)

[2.1 Sectoral Scope and Project Type 48](#_Toc469908611)

[2.1.1 Grouped Project 49](#_Toc469908612)

[2.1.2 Project Eligibility 49](#_Toc469908613)

[2.1.3 Methodology Requirements 49](#_Toc469908614)

[2.1.4 Project Conversions 50](#_Toc469908615)

[2.1.5 Jurisdictional REDD+ 50](#_Toc469908616)

[2.1.6 Good Practice and Guidance 50](#_Toc469908617)

[2.1.7 Multiple Project Activities 50](#_Toc469908618)

[2.1.8 Multiple Project Activities Instances 51](#_Toc469908619)

[2.2 Description of the Project Activity (G3) 52](#_Toc469908620)

[2.2.1 Description of Project Technologies 53](#_Toc469908621)

[2.2.2 Project Climate Impacts 54](#_Toc469908622)

[2.2.3 Project Community Impacts 54](#_Toc469908623)

[2.2.4 Project Biodiversity Impacts 55](#_Toc469908624)

[2.2.5 Project Activity Lifetime 56](#_Toc469908625)

[2.3 Management of Risks to Project Benefits (G3) 56](#_Toc469908626)

[2.3.1 Climate Risks 56](#_Toc469908627)

[2.3.2 Community Risks 56](#_Toc469908628)

[2.3.3 Biodiversity Risks 57](#_Toc469908629)

[2.3.4 Non-Permanence Risk and Buffer Tool 58](#_Toc469908630)

[2.3.5 Management of Risk Beyond Project Lifetime 59](#_Toc469908631)

[2.4 Measures to Maintain High Conservation Values (G3) 59](#_Toc469908632)

[2.4.1 Community High Conservation Values 59](#_Toc469908633)

[2.4.2 Biodiversity High Conservation Values 60](#_Toc469908634)

[2.4.2 Project Financing (G3 & G4) 62](#_Toc469908635)

[2.4.2 Employment Opportunities and Worker Safety (G4) 62](#_Toc469908636)

[2.4.2 Employment Training 62](#_Toc469908637)

[2.4.2 Equal Opportunities for Employment 64](#_Toc469908638)

[2.4.2 Worker’s Rights 65](#_Toc469908639)

[2.4.2 Worker Safety 66](#_Toc469908640)

[2.5 Stakeholders (G3) 67](#_Toc469908641)

[2.5 Stakeholder Engagement Structure 67](#_Toc469908642)

[2.5 Stakeholder Identification 69](#_Toc469908643)

[2.5 Stakeholder Consultation 70](#_Toc469908644)

[2.5 Public Comment Period 70](#_Toc469908645)

[2.5 Stakeholder Conflicts and Grievances 70](#_Toc469908646)

[9 References 73](#_Toc469908647)

Figures

[Figure 1. Grouped Project Area Limits of the REDD+ Project for Caribbean Guatemala in the Departmento de Izabal*,* Guatemala. 11](#_Toc469908648)

[Figure 2. Soils in the Project Zone 13](#_Toc469908649)

[Figure 3. Topography of the Project Zone 14](#_Toc469908650)

[Figure 4. Precipitation in the Project Zone 15](#_Toc469908651)

[Figure 5. Temperature in the Project Zone 15](#_Toc469908652)

[Figure 6: Map of the Project Zone 17](#_Toc469908653)

[Figure 7. Map of the Grouped Project Area 18](#_Toc469908654)

[Figure 8. Map of the Grouped Project Area Limits 19](#_Toc469908655)

[Figure 9. Map of the Project Area 20](#_Toc469908656)

[Figure 10: Map of Mangrove Areas 35](#_Toc469908657)

[Figure 11. Map of community HCV management areas. 59](#_Toc469908658)

[Figure 12. Map of biodiversity HCV management areas. 61](#_Toc469908659)

Tables

[Table 1. Extent of each soil cover in hectares and its percentages 11](#_Toc469908660)

[Table 2. Spatial boundaries of the project area as of time of validation (December 2016) 19](#_Toc469908661)

[Table 3. Carbon stock estimates (see VM0015 for pool designations) 21](#_Toc469908662)

[Table 4. Analysis of land tenure type by forest area within a sample of cadastral data for the Grouped Project Area. 23](#_Toc469908663)

[Table 5. Poverty rates and indigenous populations in municipalities within the Project Zone. Fuente. Elaboración propia a partir de datos del Informe nacional de desarrollo Humano 24](#_Toc469908664)

[Table 6. Population by municipality found in the Project Zone. Fuente. Elaboración propia a partir de Proyecciones de Población para el 2015 del INE 24](#_Toc469908665)

[Table 7. Women groups within the Grouped Project Area as identified through workshops with FUNDAECO personnel. 26](#_Toc469908666)

[Table 8. Population and area in the each municipality. Source: Mapa de Centros Poblados con información del 10mo censo poblacional del 1994., 2001. INE 27](#_Toc469908667)

[Table 9. Other entities involved in the project. 42](#_Toc469908668)

[Table 10. Examples of project activity instances for the establishment of project start dates for each parcel. 46](#_Toc469908669)

[Table 11. Non-Permanence risk rating for each defined risk area within the Grouped Project Area. \*Overall risk rating cannot be below 10. 57](#_Toc469908670)

[Table 12. Training opportunities. 61](#_Toc469908671)

[Table 13. External organizations supporting training programs. 62](#_Toc469908672)

# 1 General

## 1.1 Summary Description of the Project (G3)

### 1.1.1 Project Description

This project is an Agriculture, Forestry and Other Land Use (AFOLU) project under the Reducing Emissions from Deforestation and Degradation (REDD) project category. Specifically, the project is of the “Avoided Unplanned Deforestation & Degradation” (AUDD) project category.

The project is estimated to generate approximately 23,055,591 VCUs over 30 years. The project area is located in Department of Izabal in the Caribbean coast region of Guatemala in the Sarstun-Motagua reference region proposed by the national level REDD+ program. Belonging to the biologically diverse Mesoamerican Biological Corridor, forests in the project area are important nationally and internationally for the ecosystem services they provide. The project area forests, however, have experienced a continued reduction in biomass due largely to small-scale farmers and medium to large scale cattle ranchers that have sought to expand their activities or have been displaced by agro-industrial expansion. These forests have also historically been an important source of income for local families, who periodically harvest small amounts of timber when the economic needs arise.

In 2013 Guatemala passed the *Framework for the Regulation of the Reduction of Vulnerability, the Mandatory Adaptation to the effects of Climate Change and the Mitigation of the effects of Greenhouse Gases* (Decree 07-2013) which gave landowners the rights to emission reductions generated in either voluntary or compliance markets. This law allowed the REDD+ Project for Caribbean Guatemala to pursue a Grouped Project design where the project proponent, FUNDAECO, could represent small landowners and manage the development of a REDD+ project on their behalf through legal contracts that transfer project ownership to FUNDAECO.

The expansion of industrial agriculture and migration of subsistence farmers and cattle ranchers into protected areas is a historical trend observed in the project zone. Consequently, forests and land within protected areas are an important source of income within the project zone and is the major focus of the REDD+ project. The project aims to alleviate these pressures on the forests through the support of governance capacity (including individual property titling, land-use planning and conservation zone demarcation), the generation of alternative economic activities and income sources, and through capacity building in administration and management. These project activities, beyond protecting local forests and biodiversity, contribute to social and economic development in one of the poorest areas of Guatemala. The effectiveness of these activities is partially dependent on their long-term economic success and wide-spread adoption.

Since the project’s inception, local communities have been actively participating in the project’s formulation and implementation. The early involvement of participating communities has created awareness among community members and readiness for project implementation.

### 1.1.2 Project Objectives

FUNDAECO seeks to address the issue of deforestation in Guatemala on a local level. This initiative will have positive climate, community and biodiversity impacts in the project zone. The project reduces CO2 emissions by preventing deforestation caused by the conversion of forests into cropland and pasture. The project prevents deforestation by addressing the drivers of deforestation in the project area through effective law enforcement, land-use planning, education, economic opportunities, and sustainable agroforestry initiatives. FUNDAECO created the following climate, community, and biodiversity objectives through an analysis of the drivers of deforestation in the project area, the focal issues identified in consultation with communities and the participatory rural appraisal, and threats to biodiversity in the project zone. To achieve these objectives, the project proponent designed an array of project activities that fall under five program areas: resource protection and governance, sustainable enterprise, community empowerment & inclusiveness, education, and improved access to resources.

#### 1.1.2.1 Climate Objectives

The REDD+ Project for Caribbean Guatemala’s primary climate objectives are as follows:

* **Reduce CO2 emissions that result from the conversion of intact forest to agricultural and pastoral land.**
  + Widespread protection of forest in project zone.
  + Extensive areas under agroforestry production or reforestation in project zone.
  + Alternative revenue streams from forest production (e.g. agroforestry) and conservation uses
  + Reduced illegal logging

#### 1.1.2.2 Community Objectives

The REDD+ Project for Caribbean Guatemala’s primary community objectives are as follows:

* **Empower marginalized and vulnerable communities through the legalization of land, promotion of reproductive rights and participation in resource management.**
  + All marginalized and vulnerable communities with customary right have legalized land
  + Widespread awareness among women and families of reproductive rights and health
  + Full access to reproductive health information and care within the project zone
  + Ability and capacity of communities to implement sustainable resource management techniques
  + Inclusion of all marginalized and vulnerable communities with customary rights in resource management decisions that may impact them
* **Improve quality of life in the project zone by creating access to new markets, promoting sustainable production and improving public health and education opportunities.**
  + Sufficient household income from provision of ecotourism services, sale of agroforestry products, and resource protection
  + Protection of ecosystem services important to livelihoods and health
  + Increased access to health information and care within the project zone
  + Widespread access to community capacity building and educational opportunities
* **Promote landowner and community self-sufficiency in the project zone through diversified economies and sustainable land uses.**
  + Sufficient household income from provision of ecotourism services, sale of agroforestry products, and resource protection
* **Preserve awareness and respect for traditional, cultural, spiritual and religious identities of communities within the project area.**
  + Recognition and assistance in protection of significant traditional, cultural, spiritual, and religious sites
  + Resource management with consideration of traditional, cultural, spiritual, and religious rights

#### 1.1.2.3 Biodiversity Objectives

The REDD+ Project for Caribbean Guatemala’s primary biodiversity objectives are as follows:

* **Maintain habitat for viable, abundant and diverse natural populations.**
  + Widespread protection of forest in project zone
  + Promote awareness of ecosystem and habitat importance for native species
* **Reduce threats to rare, threatened and endangered species**.
  + Prevention of critical habitat loss for rare, threatened, and endangered within the project zone
  + Maintenance or enhancement of critical habitat for rare, threatened, and endangered within the project zone
  + Awareness of rare, threatened, and endangered species and their importance
* **Maintain the function of the natural ecosystems.**
  + Widespread protection of forest in project zone.
  + Maintenance or enhancement of the integrity of important ecosystem services
* **Support local and global knowledge of biodiversity in the project zone.** 
  + Increased awareness of the role of Guatemala’s Caribbean coast in the support of diverse and globally important species populations
  + Promote awareness of ecosystem and habitat importance for native species
  + Awareness of rare, threatened, and endangered species and their importance

## 1.2 Project Location

**The** REDD+ Project for Caribbean Guatemala **is located along the Caribbean coast of Guatemala, in the department of Izabal, and has the potential to conserve up to 128,448 hectares of tropical forest that make up part of the Mesoamerican Biological Corridor (see Section 1.2.5). The climate in the region is classified as Tropical Rainforest Climate (Af, according to the Koppen-Geiger classification) and has an average of roughly 3,000 mm of rainfall per year (climate-data.org). The northernmost boundary of the project area is the Sarstun river, which marks the border between Guatemala and Belize, and the southernmost boundary of the project area shares a border with Honduras.**

### 1.2.1 Ownership and Control

Based on the VCS Standard Section 3.11.1, the project demonstrates that the proponent has ownership and or control over the emission reductions under subsection 4:

*“Project ownership arising by virtue of a statutory, property or contractual right in the land, vegetation or conservational or management process that generates GHG emission reductions and/or removals (where such right includes the right of use of such reductions or removals and the project proponent has not been divested of such project ownerhip)”*

As a grouped project the REDD+ Project for Caribbean Guatemala has a number of landholders with different land tenure arrangements where project activities are and will be implemented and emission reductions can and will be claimed. The land tenure arrangements within the Grouped Project Area encompass all of the landowners who are currently participating in the project, and those landowners who may be participants in the future. See Section 1.2.5 for a full explanation of the delineation of the Grouped Project Area. Different tenure arrangements include private owners recognized by el Registro General de la Propiedad *“propietarios”,* “*poseedores*” recognized by municipalities, state lands administered by CONAP, and state lands controlled by CECON. With the exception of *poseedores* all of the tenure arrangements present in the Grouped Project Area arise from either formal titles or formal management agreements with the State. These formal agreements are catalogued by the Cadastral Information Registry (RIC) following the Cadastral Information Registry Act of 2005 (Decree 41-2005).

In the case of *poseedore*s, land titles are recognized by the State through municipal certificates. A *poseedore* is defined as a land holder who without being land owner exercises some or all of the usual property rights over a piece of land (Article 23 of Decree 41-2005). PINPEP furthers the definition of a *poseedore* in the context of forests and delineates clear statutes of property rights and required documentation. PINPEP rules hold that to be recognized as a land holder without title (i.e. *poseedore)* a certificate provided by the mayor of the relevant municipality is required declaring that the person concerned is known as the local occupier of the land in a way that is peaceful, public, permanent and in good faith and that no competing claim on the land is known.

With established rights to property, Article 22 of the *Framework for the Regulation of the Reduction of Vulnerability, the Mandatory Adaptation to the effects of Climate Change and the Mitigation of the effects of Greenhouse Gases* (Decree 07-2013) furthers the project ownership of legal owners or *poseedores* to emission reductions generated in either voluntary or compliance markets. For the REDD+ Project for Caribbean Guatemala, all participating properties have transferred their emissions reductions project ownership to FUNDAECO. The confidential contracts with each land owner will be provided to the auditor by request, and an example contract has been provided in the project annexes (see Contrato VCUs entre FUNDAECO-PROPIETARIO 10915.doc). Each contract transfers carbon rights for a minimum of 20-years and is renewable for an additional 10-years. Where project activities have been implemented since the project start date, carbon rights are transferred retroactively and land owners have declared to not participate in any other emissions trading programs.

### 1.2.2 Geographic Boundaries

Project Activity Instances reside within the Grouped Project Area Limits. The Grouped Project Area Limits are located near the Caribbean coast of Guatemala, in the *Departmento de Izabal* (Figure 1). Spatial boundaries and coordinates for the Grouped Project Area and Project Area are provided in Sections 1.2.5 and 1.2.6, respectively.

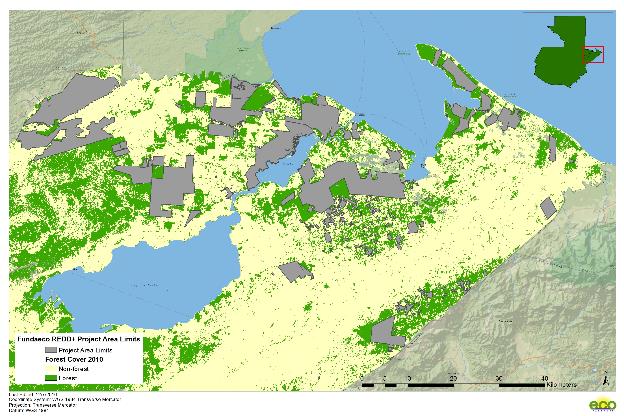


Figure 1. Grouped Project Area Limits of the REDD+ Project for Caribbean Guatemala in the Departmento de Izabal*,* Guatemala.

### 1.2.3 Project Physical Parameters

#### 1.2.3.1 Soils

Soil taxonomy of the Project Zone (see Section 1.2.4) is based on the mostly used Soil Series, proposed by Simmons, who described a Soil Series as an area with similitude between all of its genetic horizons, that share parental material, and these horizons have the same color, structure, drainage and other characteristics (Simmons, Tarano T, & Pinto, 1959).

Soil Series are available in digital format (MAGA, 2001), and these layers were used to produce maps from which we can see (Figure 2) the main Soil Series in the area is Chacalté, Chacón and Inca. Each of the Soil Series extent and percentage of cover can be seen in Table 1.

The mostly found Soil Series is Chacalté at 37% or 150 thousand hectares. Chacalte soils can be originated from limestone, and may present a karstic relief. Its drainage is good, and its texture is mostly clay, with an average depth of 50 cm. This series is found mostly in areas above 500 meters over sea level, and it covers most of Cerro San Gil, the higher parts of Cerro Sarstún, and North of Sierra Santa Cruz.

The next predominant series is Inca at 13.82% of the Surface of interest which is equivalent to 56 thousand hectares. The main origin of these soils are the sediments of the Motagua River. Thus, these are poorly drained soils, consistent mostly of very fine clays, and very deep, they can go in average to 75cm. These soils are found mostly along the Motagua Valley.

And third comes the Chacón series, with a 11.37% cover or 46 thousand hectares. These are soils whose origins are marine materials. With good drainage, median texture, very deep rounding 100 cm in depth. They are found in low areas, mostly along the shores of Lake Izabal and the Santo Tomás Bay.

|  |  |  |
| --- | --- | --- |
| Simmons Soil Series | Hectares | % |
| Water bodies | 69.41 | 0.02 |
| Chacalté | 149,645.06 | 37.09 |
| Chacón | 45,855.87 | 11.37 |
| Champona | 21,357.30 | 5.29 |
| Gacho | 36,975.40 | 9.16 |
| Guapaca | 16,389.95 | 4.06 |
| Guapinol | 14,139.10 | 3.50 |
| Inca | 55,756.20 | 13.82 |
| Manabique | 21,189.30 | 5.25 |
| Quiriguá | 3,967.36 | 0.98 |
| Sarstún | 1,599.19 | 0.40 |
| Sebach | 18,209.70 | 4.51 |
| Suelos Aluviales | 7,606.99 | 1.89 |
| Tamahú | 10,697.80 | 2.65 |
| Total | 403,458.63 | 100.00 |

Table 1. Extent of each soil cover in hectares and its percentages

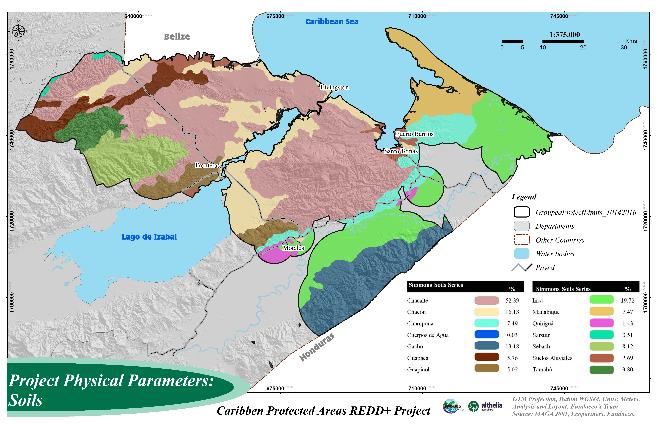


Figure 2. Soils in the Project Zone

#### 1.2.3.2 Topography

The Guatemalan Caribbean is not as mountainous as the Highlands found west of Guatemala, but it is nevertheless a place with a more pronounced relief than the pacific coast. Izabal is mostly composed of areas at lower levels than 100 meters above sea level, but these plains are interrupted by the peaks of several Hills and Ranges.

In Figure 3, the topography of the area can be seen, where Cerro San Gil can reach up to 1200 meters above sea level in some parts, followed by Sierra Caral which stands in some parts above 1000 meters. Sierra Santa Cruz, is a range that averages 600 meters, going up to 900 at its highest, while the Cerro Sarstún is the lowest of the protected areas, where the most prominent place, is 500 meters.

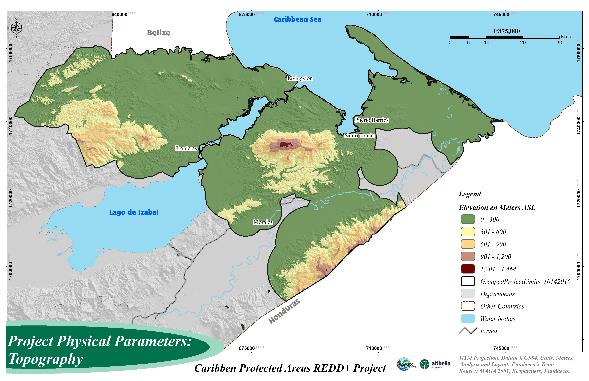


Figure 3. Topography of the Project Zone

#### 1.2.3.3 Climate

Precipitation and temperature maps of the area were produced using information from the Very High Resolution Interpolated Climate Surface for Global Land Areas or WorldClim Project (Hijmans et al. 2005), which is global data but has been very useful in many national projects since it incorporates weather stations from continuant countries and thus represents weather in political borders in a more accurate way. Figure 4 shows precipitation in the area and Figure 5 shows temperatures.

This is a very rainy area, where precipitation starts at 2,000 millimeters of rain, near the Motagua Valley, and rises to the north, where it can reach more than 5,000 mm all along the Santo Tomás Bay.

There is a 10°C range of temperature, from the lowest areas where a yearly average temp is 29°C down to 20°C at the higher points such as the Cerro San Gil peak.

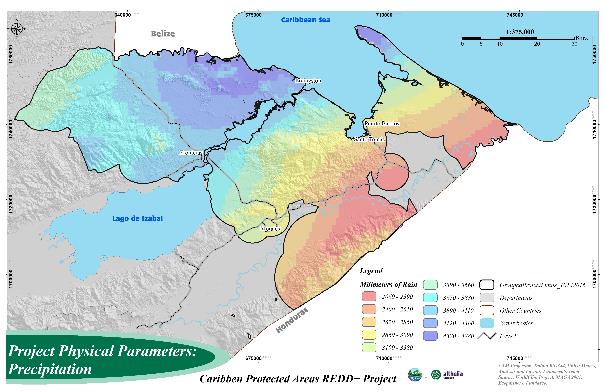


Figure 4. Precipitation in the Project Zone

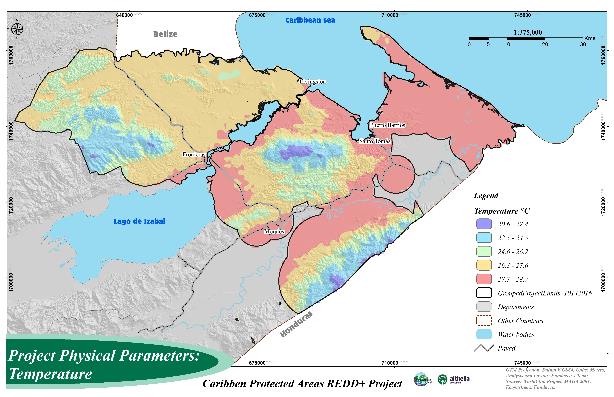


Figure 5. Temperature in the Project Zone

### 1.2.4 Project Zone

The REDD+ Project Zone is defined as the service area of the project activities implemented and provided by the project proponent. Following CCB Standard Third Edition, the project zone is defined as the area encompassing the Project Area (see Section 1.2.4) in which project activities that directly affect land and associated resources, including activities such as those related to provision of alternative livelihoods and community development, are implemented. From the array of project activities implemented by FUNDAECO (see Section 2.2) those that have spatial characteristics as well as provision alternative livelihoods, community development, and affect natural resources include:

1. Protected areas (*Areas Protegidas*)
2. Ecotourism sites
3. Health clinics (*Clinicas*)
4. Fisheries (*Refugios*)
5. Nurseries (*Viverios*)

Spatial datasets of these five areas were used to determine the service area of the FUNDAECO project activities and thus the project zone. Results from participatory rural appraisals that indicated how far individuals would travel to use resources such as nurseries, clinics, and fisheries were used to create a 10-km buffer around these.  Following the requirements of the CCB Standard 3rd Edition, the Project Zone includes all the individual parcels and potential future parcels in the Project Area according to the programmatic approach. The results of this analysis can be seen in Figure 6 below.

#### 1.2.4.1 Project Zone Map

Figure 6 below shows a map of the Project Zone located within the *Departmento de Izabal*.

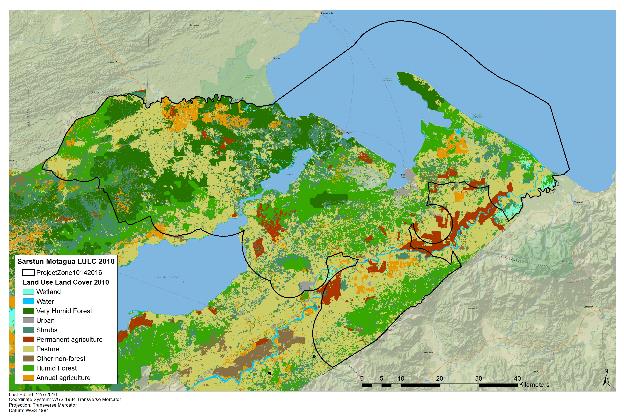


Figure 6: Map of the Project Zone

### 1.2.5 Grouped Project Area

The Grouped Project Area is defined as forest area found at the project start date within the Grouped Project Area Limits (see Section 1.2.2) that has been forested for at least 10-years. These areas define where forest in additional parcels that meet the eligibility criteria (see Section 1.3.1) can be added in the future as Project Activity Instances to the Project Area. In order to define the Grouped Project Area, first, the parcels that met the eligibility criteria and were likely to be added to the project at some point in the future were collated into one shapefile. From this larger area, known as the Grouped Project Limits, the areas that met the definition of forest for at least 10 years were extracted in order to create the final Grouped Project Area. Figure 7 below shows a map of the Grouped Project Area.

#### 1.2.5.1 Grouped Project Area Map

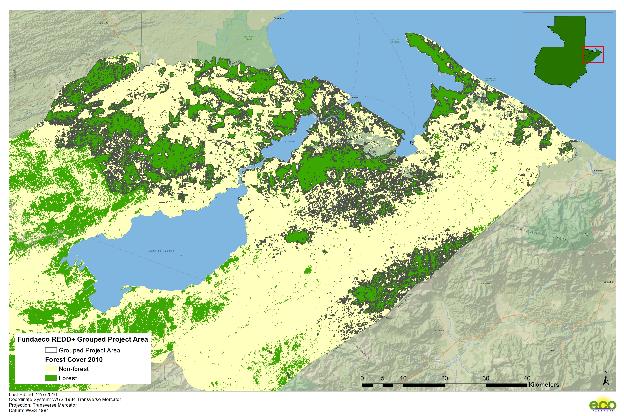


Figure 7. Map of the Grouped Project Area

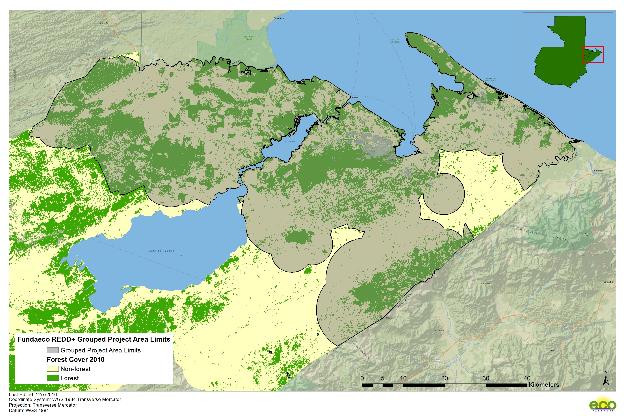


Figure 8. Map of the Grouped Project Area Limits

#### 1.2.5.2 Vector-Based Files

A Keyhole Markup Language (KLM) file is provided separately (see GroupedProjectArea.kmz).

### 1.2.6 Project Area

The Project Area is defined as forested parcels within the Grouped Project Area where the project proponent has demonstrated clear project ownership. At the time of validation, the parcels where project ownership has been demonstrated are shown in the map below. A FUNDAECO REDD+ Database has been provided in the Fundaeco VM0015 Accounting Model v1.46.xlsm that describes the name, physical boundary, description of current land-tenure and ownership, and a list of likely project participants for each individual parcel. Figure 9 below provides a map of the Project Area. The size of the Project Area is expected to increase over time as new Project Activity Instances are established.

#### 1.2.6.1 Project Area Map

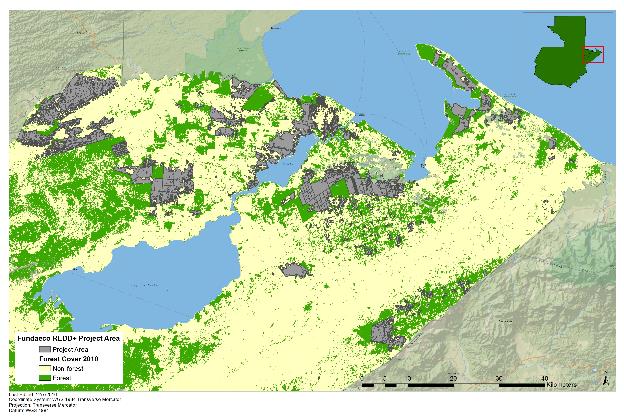


Figure 9. Map of the Project Area

#### 1.2.6.2 Spatial Boundaries

|  |  |  |  |
| --- | --- | --- | --- |
| **Project Area** | **Area (ha)** | **Center point Coordinates (Long, Lat)** | |
| Project Area | 54157.68 | -88.914903 | 15.662284 |

Table 2. Spatial boundaries of the project area as of time of validation (December 2016)

#### 1.2.6.3 Multiple Parcels

As of the time of validation, the Project Area consists of 646 discrete parcels each corresponding to a Project Activity Instance. A complete list of individual Project Activity Instances is located in Fundaeco VM0015 Accounting Model v1.46.xlsm.

#### 1.2.6.4 Project Area and Reference Region

The Reference Area corresponds to an area of 606,477.42 hectares of forest, presenting the same geographical, and deforestation and degradation conditions as the project area, as required by VM0015 and as described in Section 5.3.1.2. In addition, the reference area encompasses the project area. A map of the Reference Area can be found in Section 5.3.1.4.

#### 1.2.6.5 Vector-Based Files

A Keyhole Markup Language (KLM) file is provided separately (see ProjectArea.kmz).

## 1.3 Conditions Prior to Project Initiation (G1)

### 1.3.1 Eligibility

The project activities have been designed as part of the REDD+ project with the intention of reducing CO2 emissions from deforestation compared to baseline levels. As required by VM015, the land in the project area is forested, meeting the definition of forest as defined by the Government of Guatemala[[1]](#footnote-1). These areas were forests for a minimum of 10 years before the project start date as evidenced by historical LULC analysis (see Section 5.3.2). Additionally, as required by VM0015 peat soils with organic matter content above 65% were removed from the project area.

The project area would be deforested in the absence of the REDD project activity and the deforested and degraded areas must be mosaic in nature. Drivers of deforestation include:

1. Lack of Economic and Employment Opportunities

2. Lack of Laws, Enforcement and Capacity

3. Land Tenure

For the determination of the drivers of deforestation, see Section 4.5.3.2.

### 1.3.2 Vegetation and Forest Type

The project area is located in the biologically diverse tropical rainforests of the Mesoamerican Biological Corridor. Natural vegetation is either very humid tropical or sub-tropical rainforest (Cerezo 2013).

Like many areas in this region, forests may be largely intact with instances of agriculture, ranching and logging in various patches. The region receives extensive seasonal rainfalls each year and vegetative growth can be quite large as well as varied. The Project Zone is at lower elevation levels along the Guatemalan Caribbean, thus rain from the mountainous inlands eventually passes through this region of tropical and sub-tropical rainforests in order to reach the ocean.

A two-tier canopy system is prevalent among rainforest ecotypes which aids in allowing a wide distribution of biologically diverse trees, plants and other vegetation. In this general region, CONAP recorded 7,754 different plant species which accounts for nearly 25% of all plant species in the county (CONAP 2007). This value is considered by many to be conservative due to the lack of studies performed in the region in the recent past. Of the total reported, 78 are species endemic to Guatemala (Proyecto FFEM 2010).

Many commercially valuable timber species are considered at risk in this general region. Of the 34 commercially valuable timber species (CONAP 2007) in this region, 33 are considered threatened and reside on CONAP’s Red List (CONAP 2001) and 9 are considered threatened by the IUCN (IUCN 2015). Mentionable species include the Cypress Mountain (Podocarpus guatemalensis), Mahogany (Swietenia macrophylla), Sapodilla (Manilkara sapota) and Santa Maria (Callophyllum brasiliense) species.

### 1.3.3 Carbon Stocks

Carbon stocks are present in the form of existing forest carbon pools associated with the forest types described in Section 1.3.2. See Section 4.4.1 for more information on included carbon pools and Section **5.3.5.2** for sources and detailed estimates of carbon stocks. The carbon stocks in the project area are summarized below by carbon pool in Table 3. Carbon stock estimates provided in Table 3 are calculated in Fundaeco VM0015 Accounting Model v1.46.xlsm. Detailed estimates by LULC class are also provided in Section 5.3.5.1.

|  |  |  |
| --- | --- | --- |
| **Carbon Pool** | **Very Humid Forest Carbon Stocks (tC/ha)** | **Humid Forests Carbon Stocks (tC/ha)** |
| AGT (tC/ha) | 116.2 | 128.7 |
| AGNT (tC/ha) | N.D. | N.D. |
| BG (tC/ha) | 27.9 | 30.9 |
| DW (tC/ha) | N.D. | N.D. |
| Litter (tC/ha) | 3.9 | 7.7 |

Table 3. Carbon stock estimates (see VM0015 for pool designations)

### 1.3.4 Land Use

Land uses in the project area and throughout the project region range considerably. Within intact tropical and sub-tropical rainforests, there can be minimal or no human disruption to the land. Much of eastern Guatemala is traditionally characterized by this type of intact tropical and sub-tropical rainforests. As described in Section 1.3.8.1, the department of Izabal, where the project area resides, is notable for its eight legally protected areas (Cerezo 2013). However, many fully and partially intact rainforests have experienced a steady reduction in forest cover due to small scale agriculture and medium to large scale cattle ranches.

Increased deforestation and forest degradation have coincided with the expansion of industrial agriculture and movement of subsistence farmers deeper into forested areas. Forests have traditionally been a source of income for local families who periodically harvest timber when the need arises or clear forest to plant subsistence crops.

As a result, forest fragmentation and eventual forest loss pervade throughout the project region are notable within the project area itself. These expansions have been historically noted as common trends occurring in the project zone and exemplify the monumental roles in which deforestation and forest degradation have played in changing land use within and around the project area.

### 1.3.5 Property Rights

Through reviewing the databases and land registers available in the Geographic Information System of FUNDAECO, a comprehensive analysis of property rights and land tenure of forested areas was made for the Grouped Project Area. For this purpose, the land of each protected area of the region and the surrounding blocks that are considered important for the implementation of the project was analyzed.

According to the type of property and administration (secondment) or ownership of land, several forms of land tenure were defined to exist within the Grouped Project Area. These kinds are described below:

* **Privately owned lands,** are those lands that have been acquired in the market of land (farms) by individuals or private companies; or they have been granted by the State (plots). As explained before two cases are recognized by Guatemalan Law: properly registered in the General Property Registry under the name of its owners. For the most, these inscriptions date from the year of 1880 and onwards. This property regime is legislated by Article 39 of Legislative Agreement No.18-93 of 17 November 1993 of the Political Constitution of the Republic of Guatemala.
* **National Land owned by Poseedores:** In the case of *poseedore*s, land titles are recognized by the State through municipal certificates. A *poseedore* is defined as a land holder who without being land owner exercises some or all of the usual property rights over a piece of land (Article 23 of Decree 41-2005).
* **Poseedores can hold its titles in** state lands that have not been defined or registered under the name of the nation, to establish itself as farms (vacant). In these lands people exercise a simple, peaceful and good faith possession. Also found in this type, those lands that are occupied by communities with advanced regularization procedures in the National Land Fund, for legal adjudication by the state. The latter are properly registered in the General Registry of Property under the name of the nation. This typology is regulated by Decree 24-99. Land Fund Act and Regulations.
* **Community Land Ownership:** these lands are adjudicated by the State to the communities or groups properly organized in Family Agricultural Heritages. These lands are properly registered in the General Registry of Property under the name of the members of the community. This type of land is supported by the Decree 24-99, Law of the Land Fund and its Regulations.
* **National Land under administration by CONAP or CECON:** These are the lands owned by the Nation, which have been assigned to the National Council of Protected Areas or to the Center of Studies for the Conservation of Universidad de San Carlos de Guatemala, for strict conservation and protection. These lands are duly registered in the Registry of Property and / or are assigned on secondment agreements signed by the State of Guatemala by Governmental Agreements.

|  |  |  |
| --- | --- | --- |
| **TYPE OF FOREST OWNERS** | **PERCENTAGE OF TOTAL FOREST** | **OBSERVATIONS** |
| PRIVATE FORESTFUNDAECO | 55 | Privately owned Forest. Owned by individuals, enterprises, and FUNDAECOFUNDAECO |
| FORESTS OWNED BY COMMUNITY MEMBERS | 14 | Privately owned Forest, owned by individual living in communities with individual tenure of the land. |
| FOREST OWNED BY COMMUNITY MEMBER IN CO-OWNERSHIP | 2 | .Community forest ownership, owned in a collective tenure or co-ownership. |
| MUNICIPAL FOREST | 1 | The entire forested area of Chiclera Mountain Regional Park and surrounding farms accounted. |
| CECON NATIONAL FOREST | 4 | National Land under the administration of the CECON-USAC. |
| CONAP NATIONAL FOREST | 7 | National Land under the administration of CONAP. |
| OTHER NATIONAL FOREST | 17 | National land held by individual poseedores. |
|  |  |  |
| **TOTAL** | **100.00** |  |

Table 4. Analysis of land tenure type by forest area within a sample of cadastral data for the Grouped Project Area.

There is no precise information but estimations indicate that the actual number of possessors of lands can reach more than 1500, although in national lands regularized, in non-registered lands, and in the territorial reserves, there is not a real detail of current landholders, (this data will be defined during the project implementation). Likewise, the area of forest cover and number of possessors of land can be increased to the extent that other owners or possessors of forests are incorporated into the project.

All these types of land tenure rights are included in carbon emission reduction of greenhouse gases, referred to in Legislative Decree 07-2013, in Article 22.

### 1.3.6 Communities

Inside the Project Zone 111 communities are found, 69 of them are from the Maya-q’eqchi’ ethnic group, 40 are mestizo communities and 2 are mixed mestizo-q’eqchi’ communities. q’eqchi’ communities are located at the north, and ladino communities at the south. Communities own around 8% of forests inside the grouped project area.

Communities can have different organization levels; the Guatemalan Law for Urban and Rural Development Councils**[[2]](#footnote-2)** stipulates the development of a Councils System, as the main way for citizen participation in the public planning and public demarche. At the community level, the law indicates the creation of Community Development Councils or COCODES, which are formed by the assembly and its board of directors or coordination board. The COCODES can work through different commissions, designated for specific topics, such as water, land, health and education. The COCODES are then represented in the next participation level, which is the Municipal Development Council or COMUDE.

Communities located in the project zone are very active also in other type of civil organization. Some of them organized as second level associations formed by several communities with similar objectives and concerns, especially regarding agriculture production and the management of natural resources in a certain geographic region. In the project zone, 8 second level associations are found, and more than 30 groups dedicated to specific productive activities and also women groups.

#### 1.3.6.1 Gender Situation

The Human Development Report from 2005 was dedicated to explain the cultural diversity in the country, but also the inequity reflected between the different cultural groups living in Guatemala; mestizo and q’eqchi’. A more recent report presented in 2011**[[3]](#footnote-3)** indicates, the relation between ethnicity and poverty, this situation is confirmed in the municipalities inside the project zone; Livingston which is the municipality with the higher poverty rate -90.1%- is also the municipality with the higher indigenous population, and Morales and Puerto Barrios that have a lower indigenous population, have both poverty rates a half or third lower than Livingston.

|  |  |  |
| --- | --- | --- |
| Municipality | Poverty Rate (%) | Indigenous population (%) |
| Puerto Barrios | 40.3 | 6.3 |
| Livingston | 90.1 | 52.4 |
| Morales | 62.4 | 1.9 |

Table 5. Poverty rates and indigenous populations in municipalities within the Project Zone. Fuente. Elaboración propia a partir de datos del Informe nacional de desarrollo Humano

This situation is also confirmed with the social assessment prepared for the project in 2015. From the total of the q’eqchi’ population interviewed, 92.4% have incomes less than 1500 quetzales (192 USD), 5.3% have incomes from 1500 to 2500 quetzales (192-321 USD) and only 2.2% have incomes above 3000 quetzales (385 USD). On the other side within the mestizos, 58.5% have incomes less than 1500 quetzales (192 USD), 23.4% have incomes between 1500 and 2500 quetzales (192-321 USD), and 18.1% have incomes that exceed the 3000 quetzales (385USD).

Also other social indicators such as; housing materials, house conditions and access to basic services, show the inequity; between the mestizos 92% of the homes have access to electricity, while between the q’eqchi’s only 73 have access to this service.

The National Statistics Institute estimates that in 2015**[[4]](#footnote-4)**, the population inside the project zone was 148,571 men and 151,648 women (50.51 %)

|  |  |  |
| --- | --- | --- |
| Municipality | Men | Women |
| Puerto Barrios | 55,430 | 54,541 |
| Livingston | 33,463 | 34,594 |
| Morales | 59,678 | 62,513 |

Table 6. Population by municipality found in the Project Zone. Fuente. Elaboración propia a partir de Proyecciones de Población para el 2015 del INE

In most of the country, the population trends by sex are the same, but also the inequity conditions within the female population especially around: access to education; access to job opportunities; and incomes, even when women participate directly in the family economy they rarely receive any incomes from the work they do.

Another evidence of gender inequity is the limited participation that women have in decision making, women rarely hold positions inside the COCODES commissions, and even less in Board of Directors for any other groups or associations. That is why women have opt to create their own groups in order to take their decisions and administrate directly their resources. Inside the project zone, 23 women groups were identified, most of them created to manage productive projects and ecotourism initiatives:

|  |  |  |
| --- | --- | --- |
| Name | Purpose | Location |
| Organización de Turismo comunitario Q'ana' Itzam. Lagunita Salvador | Administran del l Restaurante y bungalows en la comunidad Lagunita Salvador | Área de Protección Especial Rio Sarstún |
| Comité de mujeres Aldea Cayo Quemado | Administración del Restaurante Manglar por el comité | Área de Protección Especial Rio Sarstún |
| comité de Mujeres y COCODE Caserío La Angostura. | Proyecto de Mixtamal. Administración de la clínica La Angostura. | Área de Protección Especial Rio Sarstún |
| Comité de Mujeres Nuevo Nacimiento San Marcos. | Anteriormente trabajaron con huertos familiares, no les funciono por falta de asistencia técnica y capacitación. | Área de Protección Especial Rio Sarstún |
| Comité de mujeres aldea Baltimore. | Actualmente se están capacitando por diferentes organizaciones, para poder gestionar proyectos. | Área de Protección Especial Rio Sarstún |
| Comité de mujeres Barra Sarstún | Alternativas económicas con la implementación de pequeños proyectos: hortalizas, molino de nixtamal, panadería, venta de Comida y Artesanía de barro | Área de Protección Especial Rio Sarstún |
| Comité de mujeres Cerro Blanco | Elaboración de artesanías con raíz de plátanos y con hojas de palmas | Área de Protección Especial Rio Sarstún |
| Comité de Mujeres aldea San Juan | Crear alternativas para la pesca, y promoción de los bajos de King fish. | Área de Protección Especial Rio Sarstún |
| Asociación de Mujeres de las comunidades de Cerro San Gil | Ayudar al mejoramiento de vida de las familias tanto a través de beneficencia como de servicio social. Dan créditos a las socias, realizan artesanía en coco, junco, corozo y telares | Reserva Protectora de Manantiales Cerro San Gil |
| Comité Artesanal de la mujer de la Aldea Laureles San Gil | Actualmente elaboran artesanías con materia prima de junco y fibra de banano. | Reserva Protectora de Manantiales Cerro San Gil |
| Comité de Mujeres de la comunidad Frontera Las Pavas | Actividades que realizan: gestionan proyectos ante la municipalidad de Puerto Barrios, instituciones de gobierno y ONG´S, se organizan para hacer limpieza en centro educativo y de salud de capacitaciones a las socias | Reserva Protectora de Manantiales Cerro San Gil |
| Comité de Mujeres la Bendición (en comunidad el Zapotillo) | Actividades que desarrollan es la ejecución de proyecto a través de donaciones. | Reserva Protectora de Manantiales Cerro San Gil |
| Comité de Mujeres | Promover la participación activa de las Mujeres, gestionan proyectos y capacitación Integral de la Mujer, Empoderamiento, atención en Salud y Conocer y promover los derechos de la mujer. | Reserva Hídrica y Forestal Sierra Caral |
| AMATURF (Asociación de Mujeres de Atención al Turismo la Firmeza). | Prestadoras de servicios turísticos de la Reserva Hídrica y Forestal Sierra Caral. | Reserva Hídrica y Forestal Sierra Caral |
| Asociación del Café Sierra Caral. | Producir café, con una distribución equitativa en cuanto a la responsabilidad de cada miembro y poder contribuir al ingreso económico familia. | Reserva Hídrica y Forestal Sierra Caral |
| Comité de Mujeres | Promover la participación activa de las Mujeres, gestionan proyectos y capacitación Integral de la Mujer, Empoderamiento, atención en Salud y Conocer y promover los derechos de la mujer. | Reserva Hídrica y Forestal Sierra Caral |
| Comisión Municipal de la MUJER - Sandra Arrivillaga y Vilma Peralta | Monitorear la implementación de proyectos a favor de la mujer a nivel municipal - operativo- | Reserva Hídrica y Forestal Sierra Caral |
| Oficina Municipal de la Mujer - Evelyn Interiano | Monitorear la implementación de proyectos a favor de la mujer a nivel municipal - equipo gestor de proyectos- | Reserva Hídrica y Forestal Sierra Caral |
| Comité de mujeres comunidad Cuichichil | Gestionan el proyecto de Hortalizas | Área de Protección Especial Sierra Santa Cruz |
| Comité de mujeres comunidad Vista del Golfete | gestionan proyectos de crianza de pollo de engorde | Área de Protección Especial Sierra Santa Cruz |
| Comité de mujeres comunidad Fajas Benque | Proyecto de protección y conservación, gestionan la producción de cardamomo, crianza de pollo de engorde, aún no están vigentes | Área de Protección Especial Sierra Santa Cruz |
| Comité de mujeres Aldea Frontera Rio Dulce | Mujeres activas y empoderadas, gestionan el proyecto de detergente y otros. Gestionan la producción de xate y cardamomo | Área de Protección Especial Sierra Santa Cruz |
| Comité de mujeres comunidad Costa del Lago cocales | Mujeres activas, participan y se empoderan en la oficina de la mujer. | Área de Protección Especial Sierra Santa Cruz |

Table 7. Women groups within the Grouped Project Area as identified through workshops with FUNDAECO personnel.

#### 1.3.6.2 Main Settlements

In the Project zone, we can find three municipal seats (county seats) Puerto Barrios, Morales and Livingston, however none of them have significant portions of forest. The population of municipal seats represents 14.54% of the population in the three municipalities.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Men** | **Women** | **Area (ha)** |
| Puerto Barrios | 13477 | 14561 | 675.13 |
| Morales | 5824 | 5866 | 1541.87 |
| Livingston | 1853 | 2086 | 169.99 |

Table 8. Population and area in the each municipality. Source: Mapa de Centros Poblados con información del 10mo censo poblacional del 1994., 2001. INE

*Puerto Barrios*

Located 300km far from Guatemala City, Puerto Barrios is the Main City of Izabal Department, and was created in 1920 when a new train stretch to connect Zacapa to Puerto Barrios Port was created. Since then the main economic activities are related with the two ports located in the area: Santo Tomas de Castilla and Puerto Barrios; including direct works in the ports, industrial packing, and lodging and food services for the travelers.

*Morales*

Morales is located 248km far from Guatemala City. The town was founded in 1890, and its population expansion and economic growth were initially an impact of the UFCO[[5]](#footnote-5) central offices opening. Then after 1904 the town rapidly turned into a pole of attraction for people in Morales and people coming from other sides of the country.

*Livingston*

Livingston is located 65km away from Guatemala city and the main access is by water following the coast line in direction to Belize. The town was founded in 1831, but it was already colonized since 1806 by a group of afro-descendants called “the Garinagus” or “Garifunas”, coming from Roatan Honduras. Currently Garinagus and Q’eqchis’ inhabit the town, but the Garinagus influence is stronger. Livingston town has two main source of income; tourism, and remittances coming from Garinagus living most of all in New York.

#### 1.3.6.3 Economic Activities

Even that industrial monocrops and cattle ranching dominate the region landscape, and even their strong participation in the region economy, they both change of scale across the territory, this is due to the economic history and the land tenure regime. For example in Puerto Barrios 89% of the *fincas* are in hands of private owners, 22% are Nation property under , and 8.6% is a mosaic of land tenure that includes small individual owner and communities[[6]](#footnote-6). This means that *campesinos* cultivate their land for susistance agriculture, but this lands do are not enough productive and they have to work for industrial *fincas*. The other economic activities –manufacture and import services- occur nearby the ports in Puerto Barrios .

In Morales municipality activities such as palm oil tree crop, pineapple, rubber and cattle ranching appears as the main land uses, but also four factories are important part of the local economy; the palm oil processing factory, the rubber processing factory, and two cardboard factories.

Livingston is the less industrial of the three municipalities, and the main economic activities are tourism services and small commerce (groceries stores). Tourism services are focus in two attractions Rio Dulce National Park and Livingston town, and more recently ecotourism and community tourism.

It worth to mention that family economy in rural areas is then based in three main activities; subsistence agriculture, cattle ranching, and seasonal work or mid-time work, such as agriculture or surveillance in private *fincas,* road maintenance, and construction, all this activities allows families to have incomes, and be able to take care of their crops –mainly maiz and frijol-.

#### 1.3.6.4 Ethnic Groups

The Project Zone is inhabited mainly by two groups; mestizos and q’eqchi’, garifunas are a minority who live only in Livingston town.

Q’eqchi´ is a Maya group originally stablished on the Verapaces Region; they reached their Pre-Hispanic peak before the Spanish invasion during the first quarter of the 16th century[[7]](#footnote-7). The Verapaces Region[[8]](#footnote-8) is located at an strategic site between the North Lowlands, the Caribbean sea, and the West Highlands, and it is believed that the q’eqchis profited its location to develop commercial exchange with the east and the west during the Classic Period. Because of the commercial activities, the q’eqchi people were always travelers, but it was only after 1542 when the Dominicans started to have a control in their territory, that they started to migrate. During the second half of the XVI century, and all along the XVII, XVIII and XIX centuries, the q’eqchis’ were running away in small groups, to Peten Lowlands and to a lesser extent to El Estor. At the end of the XIX century, a series of Liberal Policies, resulted in the grab of their lands by foreign coffee producers, making them to immigrate to other lands. In this case, they migrated to Peten, but they also started to move further away in Izabal, to the Atlantic coast, since they took the route coming from El Estor, they would remain until today in the north part of Izabal department.

Mestizos or Ladino:

This group includes the descendants from the miscegenation mainly between Spanish and Indigenous. The first mestizos were born or came to Izabal in the decade of 1830, when the president Mariano Galvez gave big agrarian concessions to foreign companies. It was with the establishment of this companies that a new colonizing dynamic started in the area. Because of the origins of the agrarian companies some mestizos might have also British, German, French or Belgian ancestors, however they predominantly were Spanish. The migration to Izabal continues today, with mestizos coming from other Guatemala Departments like Jalapa, Zacapa, Chiquimula and El Progreso, and even from El Salvador. Presently mestizos are all around Izabal department, but are more dominant in the central and south.

#### 1.3.6.5 Migration

Even when there are no specific studies on migration for this region, Grandia and Robb[[9]](#footnote-9) give information that allows to some conclusions: the people of the region migrate looking for better opportunities or better lands, also when the father does not has enough land and there is a new marriage in the family, the new couple will leave looking for new lands. This last situation is similar to both mestizos and q’eqchis’, in both cases more than 60% of the persons interviewed, had migrated before because his father had no more land, or there were no more land in the community.

The question is where these people go. In the case of the q’eqchis’-who have very strong relationship links-, they would migrate to another community where they can find a relative or a godfather. When arriving to the new community they would be interrogated, and if there is enough land, and the community considers that the person or the family is nice, they would let them stay and work in the communal croplands. This practice happens in the project zone and in other areas inhabit by q’eqchis’ in Peten and Belize. Eventually the person will have to pay some money to the community, but the amount is not related to the land price in the market, but to quotes stablished by the community according to actual needs.

Up to date migration from outside to the Project Zone, mainly occurs from El Estor zone, small groups enter through this route looking for “empty lands”. If when arriving there are no claims over certain land, the group will grow until becoming a community. However, it is important to clear that this situation can change for example, in case of an absentee landowner or when an agrarian group is behind the occupation of the land.

#### 1.3.6.6 Social Diversity

The demographic structure in the Project Zone shows that 50% of the population is in age class of 0 to 17, 44% is in the age of 18 to 59, and 6% has over 60 years.

The average family is composed by 5 individuals, however in more isolated areas families can have 9 members. The home is usually inhabited by the head of the household, the partner, the sons and daughters, and in 6% of the homes the grandchildren. 17.5% of the homes are single-parent homes[[10]](#footnote-10).

At Izabal department 58.4% is economically active population, and from them 96.9 have a work, but less than 50% is in a full-time work. The formal workforce is dominated by men, however the Social assessment shows that women have an important role as home managers and support other family activities such as agriculture and fishing in case of coastal communities.

The Region presents one of the higher non-attendance for elementary and high school, with the lack of money as main cause. This is because even when children are going to public schools, parents have to pay for transport and school materials, and in other cases lack of money means that there is a need of children to support income generation for the family. The region has one of the lowest rates of enrollment to university, 87% of the population with ages between 19 and 24 are not enrolled at the university, and of course most of this population live in rural areas and indigenous communities.

#### 1.3.6.7 Economic Diversity

Community economy is based in subsistence agriculture -79% of the homes-[[11]](#footnote-11), in combination with part time or season works as guards or doing agriculture tasks in “Fincas”. Men in communities nearby the oil pipe, also get season jobs to keep clean the pipe path, and for road maintenance. Subsistence agriculture is mainly dedicated to maize and black beans, in the case of communities in the border with Honduras Caral red beans are also part of subsistence crops.

It is usual to find in the family backyard orchards, different kind of peppers, spices being of particular interest is the “santa maria” leaf and the “zamat” used by q’eqchi’ in their soups and hierbamora (Solanum americanum) which is high protein leaf. Orchards also includes different types of fruits such as citrics, bananas, plantains, caimito (*Crysophyllum cainito*) and more recently Bread fruit *Artocarpus altilis*, as well as different tuberous roots such as yucca or manioc and yampi.

Families also breed chickens or pigs, as a source of protein, when cash is needed they sale this animals in to other family at the local market. In the last years, FUNDAECO has been supporting economy diversification by: fostering community nurseries, which then sell plants to FUNDAECO agroforestry program; supporting small producers in crop diversification; partnering community groups or individuals as entrepreneurs for ecotourism services; and supporting women in handicraft production.

In some parts of the project region, landscape is dominated by cattle ranches. However, cattle ranching is a more prominent economic basis for families who are mestizo. Because it takes more up-front capital to invest in livestock and grazing land, much of the Q’eqchi’ communities live in poverty or extreme poverty, and they are less likely to have the resources to transition from subsistence agriculture to cattle ranching. According to the Izabel Development Plan, 2816 bovine cattle ranches can be found across Izabel. In some cases, poor q’eqchis and ladino communities work in this fincas to complement their household incomes.

#### 1.3.6.8 Cultural Diversity

Even their displacement and the Christian influence, the q’eqchi people still maintain their cosmovision, several of their cultural practices, and their language called also Q’eqchi’. But as in the rest of the indigenous groups of Guatemala, many of their religious practice are mixed with Christian practices.

Between the q’eqchis anyone who is charismatic and works hard for the community, can become a leader or an Elder (at the age of 60), but when communities are recent, the Elder can be in its late 40s or 50s. Any group formed by four Elder men and four Elder women can carry out religious ritual, or rituals dedicated to crops, as well as be part of the Elders Council, where important community decisions are made. It is important to mention that within the project zone, due that communities are relatively young, and due to new influences, the Elders Council tradition, is almost lost, but not other practices such as *Mayejak* and the *aj ilonel*. The *Mayejak* is one of the most known rituals, and it is a ceremony to show respect and ask permission to the *Tzuultaq’a* or mountain and valley deities.

The q’eqchi people have good knowledge about the forest and the use of wild plants; however, they rarely share this knowledge. When a man feels “the call”, he can start studyng to become a healer or *aj ilonel*.

### 1.3.7 Biodiversity

The Caribbean region of Guatemala is classified as Central American Atlantic Moist Forest, according to the Ecoregion classification (Olson 2001). It is characterized by a relatively large altitudinal gradient, ranging from 0 to 1300 masl. Because of this gradient, its neighboring position to the Caribbean Sea which provides very humid conditions in the area, and the isolation of several mountain peaks, distinct biotic communities are found. Vegetation ranges from mangrove forest, semi-flooded forest (i.e., swamp forest), lowland *terra firme* tropical forest, mid-elevation tropical forest, and pre-montane tropical forests.

Relatively intense field surveys for several vertebrate taxa have been conducted at the regional level (birds, bats, and amphibians). Nonetheless, several taxa have been understudied, especially plants and insects, but expert opinions affirm that the area contains high levels of species richness and endemism for both taxa, and there is some evidence of endemism for some well-studied insect and plant groups.

Characterizations of bird, bat, and amphibian communities have identified relatively distinct biotic communities according the type and elevation of the different forest communities. In particular, variation in amphibian and bat communities are also related to a latitudinal gradient (Cerezo et al. 2010).

Communities at higher elevations contain a relatively high proportion of species associated to montane subtropical (“cloud”) forests to the west of the region. Thus, the distribution of plant and animal communities seem to be the product of the elevational variation, but also to biogeographic factors, related to relict cloud forest communities at higher elevations, which persist due to the isolation of very humid mountain peaks (“Massenerhebung” effect, (Holder 2004)). These cloud forest species would have dispersed into the region presumably during historic events during the Pleistocene, related to episodes of glaciation and deglaciation (McVean and Schuster 1981).

Based on these results, in particular, the singularity of biotic communities, extant forest cover and level of fragmentation of forests associated to the different biotic communities, pre-montane forests above 800 masl and lowland *terra firme* forests (below 100 masl) have been identified as top conservation priorities at the regional level (Cerezo et al. 2010).

#### 1.3.7.1 Species within the Project Zone

The Project Zone is considered one of the country´s biodiversity hotspots. With regard to its avian diversity, 426 species are reported, which corresponds to 58% of the bird species reported for the country, in only 18% of its land area (Cerezo et al. 2015, Eisenmann & Avendaño 2005). With respect to terrestrial year-round residents, 367 species are reported. The region is also critical for Neactic-Neotropical terrestrial migratory birds. One hundred and twenty (120) migratory species are reported, and use native forests as their main wintering or transiting habitat. Ninety-five (95) species are regular winter residents and of these, 46 depend on tropical rainforest as the main wintering habitat (Cerezo et al. 2015). Also, aquatic and coastal-marine habitats are important stop-over sites in autumn migration (August-October) for 24 species of shorebirds.

With respect to mammals, 145 species are recorded from the region (Rodriguez 2001, Sosa 2005) of which 52 are under some category of risk at the national or international level (CONAP 2001, IUCN 2015, CITES appendices), and 6 are Mesoamerican endemics. Among the large and threatened mammals of the region are the Jaguar (*Panthera onca*), Baird's Tapir, *Tapirus bairdii*), West Indian Manatee (*Trichechus manatus*), White-tailed deer (*Odoicoleus virginianus*), Red Brocket Deer (*Mazama americana*), and two species of peccaries, White-lipped and Collared Peccary (*Pecari tajacu* and *Tayassu pecari,* respectively*)*. With the exception of the tapir, for which relatively recent records exist only for Cerro San Gil (in 2001), all the other species are reported relatively frequently (several records per year) in various localities in the region, particularly were there are large, extant continuous forest in legally protected areas (Cerro San Gil, Río Sarstún, Punta de Manabique, Sierra Santa Cruz, Sierra Caral, Chocón Machacas Biotope). The White-lipped Peccary is the species with the largest number of reports. The manatee is reported annually in Chocón Machacas Biotope (also known as the Manatee Biotope), and less frequently in Río Sarstún, Río Dulce National Park, Lake Izabal, as well as the coastal portion between the Santo Tomás Bay and the border with Belize (the Sarstún River itself). Other charismatic mammal species found in the region are the rest of the felines, the Ocelot (*Leopardus pardalis)*, Margay (*Leopardus weidii)* and Yaguarundi (*Herpailurus yaguarondi),* three species of primates, Black and White-mantled Howler Monkey (*Allouata pigra* and *A. palliata,* respectively*)* and the Geoffroy´*s* Spider monkey (*Atteles geoffroyi*). Also, the Neotropical River Otter (*Lutra longicauda*), Kinkajou (*Potos flavus*) and the White-nosed Coati (*Nasua narica*) are also reported, the river otter having relatively few records in recent years. Several of these are also under some degree of risk at the global level (Table 1).

A total of fifty five (55) amphibian species occur in the region, representing 33.7% of the total diversity of this group for the country. The region is an important center of diversity for the frog family Hylidae (treefrogs). Seventeen (17) species have been reported from this family in the region. Another important family is Brachycephalidae (leaflitters frogs) with thirteen (13) species.

One hundred six (106) reptilian species occur in the region, representing 43.4% of the total diversity of this group of reptilian richness reported for the country. Many of these species have a widespread distribution and are common in warm and tropical regions. The most abundant group of reptiles in the region are the snakes, with fifty four species (54), representing 51% of reptile species in the region. The second most abundant group are the lizards with thirty six species (36) representing 34% of reptile species in the region.

Although there is little information concerning insect diversity in the region, it is recognized by experts that it is one of the richest of the country, which many new species yet to be discovered. As is the case of insects, plant diversity in the region is much less known. According to historical records in the Flora of Guatemala, 1825 species are reported, which corresponds to roughly 25% of plant species recognized for the country (7,754 species reported by CONAP). Nonetheless, experts agree that this number is extremely conservative due to the absence of more systematic and extensive surveys in recent years.

#### 1.3.7.2 Threats to Biodiversity

The majority of threats to biodiversity in the Project Zone are directly tied to the drivers of deforestation and forest degradation described in Section 5.3.1.1 ), in addition to the prevalence of unsustainable fishing practices along the Caribbean coast. The primary drivers of forest loss are the conversion of forest to cattle grazing and cropland for subsistence agriculture, while overfishing is driven primarily by a lack of employment and economic opportunities in the region. Deforestation rates within the region have been found to be at 3.41% from the year 2001 to 2010.

These factors have had numerous negative effects on biodiversity by causing a drop in marine species abundance, increasing habitat fragmentation, changing the forest’s structural composition, and the overall loss of forest cover within the project region. All of this leads to changes in species composition and ecosystem function, which greatly impact an ecosystem’s ability to maintain and support original levels of biodiversity. In order to reduce the threats to the broadest range of biodiversity within the project area, the project will focus on preventing deforestation and forest degradation as well as implementing fishing restoration zones. Due to the fact that biodiversity loss is clearly tied to habitat fragmentation and destruction, the most effective benefits for biodiversity will come as a result of forest conservation.

### 1.3.8 High Conservation Values

According to criteria associated to High Conservation Values, and the information described above and in the following subsections, and considering the precautionary principle, the region contains High Conservation Values following criteria 1 and 2. In general, the region is considered species-rich, a center of endemism (for amphibians in particular), harbors an important number of threatened species according to IUCN, other international and national standards, and contains a large number of protected areas.

#### 1.3.8.1 Protected Areas

There are eight (8) protected areas within the project area which have some form of legal declaration at the national level:

- Cerro San Gil: declared in 1996 as a Watershed Protection Reserve, with and extension of 47,433 ha. Its native forests consist mainly of lowland humid tropical forest to humid pre-montane tropical forest, with a smaller proportion of mangrove and coastal habitats. Its elevational gradient varies from 0 to 1300 masl.

- Sierra Caral: Declared in 2014 as a Hydrological and Forest Reserve, with an extension of 19,013 ha. Its native habitats are humid tropical forest and humid pre-montane tropical forest. Its elevational gradient varies from 150 to 1300 masl.

- Sierra Santa Cruz: declared in 1990 as a Special Protection Area, with an extension of 59,748 ha. Its natural habitats vary from lowland humid tropical forest to humid pre-montane tropical forest. Its elevational gradient varies from 0 to 1000 masl.

- Chocón Machacas Biotope: declared in 1990, with an extension of 6,265 ha. Its native habitats consist of semi-flooded tropical forest, humid tropical forest and wetlands. The biotope was mainly created for the protection of the West Indian Manatee.

- Montaña Chiclera: Recognized by the National Council of Protected Areas (CONAP) in 2003 as a Municipal Reserve, with an extension of 1490 ha. Its native habitat is humid tropical forest, with elevations ranging from 150 to 450 masl.

- Río Sarstún: Declared in 2005 as Multiple Use Area, with an extension of 35,202 ha. Its natural habitats consist of lowland humid tropical forest and mangrove and coastal habitats.

- Punta de Manabique: Declared in 2005 as a Wildlife Refuge Reserve, with an extension of 151,878 ha. Its native habitats consist of semi-flooded tropical forest, humid tropical forest, mangrove forest and marine coastal areas.

- Río Dulce National Park: declared in 1955, with an extension of 13,000 ha. Its natural habitats are lowland humid tropical forest and freshwater coastal areas.

Because all of these protected areas contain significant proportions of natural habitats, it can be safely assumed that they contain a significant proportion of the region´s biodiversity, thus constituting High Conservation Values (see Section 2.4). The region has also been identified as an Important Bird Area, thus adding to its potentiality as a High Conservation Value.

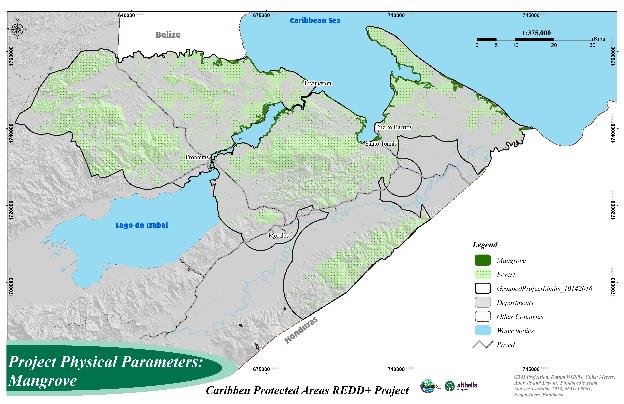


Figure 10: Map of Mangrove Areas

#### 1.3.8.2 Threatened Species

According to IUCN, two resident bird species are considered “Vulnerable”, Highland Guan (*Penelopina nigra*) and Keel-billed Motmot (*Electron carinatum*); one is “Endangered”, Yellow-headed Parrot (*Amazona oratrix*). In addition, analyses of data from the North American Breeding Bird Survey (N.A.B.B.S.) indicate that populations of many of Nearctic-Neotropical migratory species have declined over the past three decades (Sauer et al. 2014). Among the migratory land birds that winter in the region in large numbers are the Woodthrush (*Hylocichla mustelina*), Prothonotary Warbler (*Prothonotaria citrea*), Kentucky Warbler (*Geothlypis formosa*), and Worm-eating Warbler (*Helmitheros vermivorum*), all presenting declines in their populations that have warranted their listing in the National Fish and Wildlife Services´ “Birds of Conservartion Concern 2008” (henceforth, BCC2008; USFWS, 2008) and American Bird Conservancy´s “List of Birds of the United States with Conservation Rankings” (American Bird Conservancy 2012). These species are particularly abundant at elevations below 500 m.a.s.l. The Cerulean Warbler (*Setophaga caerulea*) is considered “Vulnerable” (Cerulean Warbler) in IUCN´s Threatened Species Red List (IUCN 2016). The Golden-cheeked Warbler (*Setophaga chrysoparia*), also of “High Continental Concern” (USFWS 2008) and considered “At Risk” (ABC 2012), and listed as “Threatened” in IUCN´s Red List (IUCN 2016), is reported for Cerro San Gil (Howell and Webb 1995) and Sierra Santa Cruz (S. Pérez, pers. comm.). Thirty-three (33) additional species wintering or transiting through Cerro San Gil have also recently reported declines (Sauer et al. 2014), of which 14 are listed as BCC2008 (USFWS 2008). Fourteen (14) species not declining but listed in BCC2008 are also reported for the region.

Also, aquatic and coastal-marine habitats are important stop-over sites in autumn migration (August-October) for 24 species of shorebirds. Seven (7) species reported in this reserve are listed as “ Birds of Conservation Concern 2008”(USFWS 2008): Wilson´s Plover (*Charadrius wilsonia*); American Oystercatcher (*Haematopus palliatus*); Solitary Sandiper (*Tringa solitaria*); Lesser Yellowlegs (*Tringa flavipes*); Whimbrel (*Numenius phaeopus*); Red Knot (*Calidris canutus*); and Short-billed Dowitcher (*Limnodromus griseus*). Four (4) additional species area listed in American Bird Conservancy´s Yellow List (“declining or rare continental species”, American Bird Conservancy 2012): Sanderling (*Calidris alba*); Western Sandpiper (*Calidris mauri*); Stilt Sandpiper (*Calidris bairdii*); White-rumped Sandpiper (*Calidris fuscicollis*). Finally, the Buff-breasted Sandpiper (*Tryngites subruficollis*), listed as “Near-threatened” by IUCN and Birdlife International, is also reported.

With respect to mammals, and according to IUCN standards, three species are considered “Endangered”: Yucatan Black Howler Monkey (*Alouatta pigra*), Geoffroy’s Spider Monkey (*Atteles geofroyi*) and Baird´s Tapir (*Tapirus bairdii*); and two species are considered “Vulnerable”: Thomas's Sac-winged Bat (*Balantiopterix io*) and White-lipped Peccary (*Tayassu pecari*).

Amphibians are by far the most threatened taxonomic group in the region, with 12 endangered species according to IUCN standards. Three frog species (*Craugastor aphanus*, *Craugastor psephosypharus* and *Eleutherodactylus leprus*) and one salamander species (*Bolitoglossa mulleri*) are considered “Vulnerable”; five frog species are considered “Endangered” (*Craugastor charadra*, *Craugastor sabrinus*, *Craugastor sandersoni*, *Duellmanohyla soralia* and *Ptychohyla panchoi*); and three frog species are considered “Critically Endangered” (*Agalychnis moreletii*, *Craugastor trachydermus* and *Ptychohyla sanctaecrucis*.

With respect to reptiles, two species are considered “Vulnerable”: American Crocodile (*Crocodylus acutus*) and Mexican Caecilian (*Dermophis mexicanus*) and one is considered “Critically Endangered”, the Central American River Turtle (*Dermatemys mawii*).

Considering plants, and according to IUCN standards, four species are considered “Vulnerable”: *Chamaedorea adscendens*, *Chamaedorea oblongata*, *Dalbergia glomerata*, and *Hylocereus minutiflorus*; and two are “Endangered”: *Ceratozamia robusta* and *Zamia variegata.*

Additionally, many commercially valuable tree species are considered at risk. Of 34 species considered of commercial importance reported for the region, 33 are considered threatened according to the National Council of Protected Areas´ red list (CONAP 2001, 2007). Of these, the most important species are: *Podocarpus guatemalensis*, *Swietenia macrophylla*, *Manilkara zapota* and *Callophyllum brasiliense*.

#### 1.3.8.3 Endemic Species

With respect to birds, 38 are considered regional endemics (either Mesoamerican, or endemic to the Gulf-Caribbean Slope; Stotz et al. 1996, Howell & Webb 1995).

Regarding amphibians, and particularly the family Hylidae (tree frogs), four of seventeen (17) species are endemics (Cerezo & Vázquez 2015). *Ptychohyla sanctaecrucis* is endemic to Sierra Santa Cruz, and *Ptychohyla panchoi* is endemic to Cerro San Gil and is shared with Sierra de las Minas. *Duellmanohyla soralia* is also endemic to Sierra Caral and shared with Sierra Merendón in Honduras. Also, *Isthmohyla melacaena,* has been recently reported in Sierra Caral and is shared only with Sierra del Merendón along the Honduras border. Another important family is Brachycephalidae (leaflitter frogs) with 13 species in the region, of which eight are endemics. Two species are endemic of Cerro San Gil (*Craugastor aphanus* shared with Sierra de las Minas, and *Craugastor campbelli)*, *Craugastor nefrens* is endemic of Sierra Caral, *Craugastor trachydermus* of Sierra Santa Cruz, and the rest are endemics of the Caribbean region, eastern Alta Verapaz and the Maya Mountains in Belize; some are shared along the Honduran border. Also, five of 11 species of the salamander family (Plethodontidae) are considered endemics. *Nototriton stuarti* and *Bolitoglossa sp. nova* are endemic to Cerro San Gil; *Nototriton brodiei*, *Cryptotriton nasalis* and *Bolitoglossa dunni* are endemic to Sierra Caral and shared with the Sierra Merendón on the Honduran border. *Bolitoglossa oddonelli* is endemic to Guatemala, occurring in Sierra Santa Cruz and Cerro San Gil, as well as Sierra de las Minas.

With respect to reptiles, two species of snakes are considered regional endemics. *Bothriechis thalassinus* is endemic to Sierra Caral and shared with Sierra Merendón in Honduras. The other endemic snake is *Micrurus hippocrepis* which occurs in Cerro San Gil and is shared with some areas in Belize. Only one turtle species, *Dermatemys mawii,* is endemic to northern Guatemala, including Izabal, Yucatan Peninsula and Belize.

In the case of plants, the Flora of Guatemala recognizes 78 endemic species for the region.

#### 1.3.8.4 Areas that Support Significant Concentrations of a Species During Any time in Their Lifecycles

As mentioned above, the area is critical for a large number of Nearctic-Neotropical Migratory species during the boreal winter. It is also an important migratory route for Neartic Shorebirds. Ninety-five (95) species are regular winter residents and of these, 46 depend on tropical rainforest as the main wintering habitat.

Also, aquatic and coastal-marine habitats are important stop-over sites in autumn migration (August-October) for 24 species of shorebirds.

#### 1.3.8.5 Landscape Level Biodiversity

The Project Zone´s extent is well above the recommended threshold of 50,000 ha for the region to be considered a High Conservation Value, under criterium 2. Thus, the region probably maintains an area sufficient to maintain viable populations for most large species. For example, a recent study suggests that the region contains a population of Jaguar (*Panthera onca*) and several of its prey species, with recent records in several protected areas. This study also considers the region of critical importance for the connectivity of jaguar populations between northern Guatemala and Belize, and northern Honduras (Calderón 2015). In keeping with the precautionary principle, viable populations at the landscape level are an HCV until new information in the future indicates otherwise.

#### 1.3.8.6 Threated or Rare Ecosystems

The most threatened ecosystems in the region are undoubtedly those at lower elevational levels. Lowland *terra firme* forests have recently suffered high deforestation rates, due to the advance of the agricultural frontier, associated mainly with cattle ranching activities (Castellanos et al. 2011, Regalado et al. 2012). Much of this forest is also degraded from timber and firewood extraction.

Mangrove forests and associated coastal areas are rare ecosystems in the region, constituting less than 5% of total forest cover, and are also highly threatened, mainly from beach housing developments, firewood extraction and low-scale coal production.

#### 1.3.8.7 Areas that Provide Critical Ecosystem Services

Watershed and environmental services in the Caribbean Region of Guatemala:  
The Caribbean region of Guatemala occupies three large basins: 1) Motagua River Basin, 2) Basin of Lake Izabal-Río Dulce and 3) Sarstún River Basin. The main rivers are Rio Dulce (43 km), Rio Sarstún (55 Km) and Motagua (486 Km). They cross the protected areas and constitute the most important water bodies in the region. These tributaries provide navigation services, fishing, and tourism; drain directly into the Amatique Bay, and the slope of the Caribbean Sea.

Protected areas of the Caribbean Region comprises 21 sub basins that drain directly into the Golfete-Rio Dulce, the Bay of Santo Tomas, Amatique Bay, the Sarstún River, and in the maritime area of RVS Punta de Manabique Gulf of Honduras . These basins provide water to approximately 172 communities and villages that live in protected areas and adjacent areas. The forests of these basins are an important barrier that reduces the sedimentation and siltation of navigation canals of port complex in Amatique Bay, which includes the inner Bay of Santo Tomas de Castilla.

**The RPM Cerro San Gil (RPMCSG): Extension: 47,434.65 hectares**

This protected area includes the highest part of the mountains of Mico in Izabal. It preserves an important remnant of tropical rain forest. It has 9 sub basins, 43 micro basins and 19 tributaries of the first order, with a total of 187.94 km. of linear streams. The Reserve offers several environmental services including carbon capture and storage, biodiversity protection, regulation of the hydrological cycle and decreased erosion and sedimentation accordingly. The last two take particularly importance because there is a number of rivers that originate in the upper of the Cerro San Gil, and flow into Amatique Bay, where the port of Santo Tomas de Castilla is located. The main basins of the Reserve are:

1. **Las Escobas:** Located in the Recreation Zone and Protection Zona of the protected area, it covers an area of 1050.38 hectares, with 707 hectares of forest in good condition, which constitutes the recharge area of the micro basin, located at 960 m.a.s.l. The basin has a drainage area of 9.2 km2 and is part of a hydrological complex consisting of other basins as Quebrada Seca River, San Carlos, La Esperanza and Rio Escondido River Cacao. The main tributary is 4.73 km. The watershed drains into the Bay of Santo Tomas. In the basin, there is dam that distributes water to the population of Puerto Barrios and Santo Tomas de Castilla, benefiting 5319 families. This dam is located in the middle part of the basin and limits the core area with the recreational area of the protected area. Water services generates a profit of USD 5,000 per year for forest protection. The water service is administered by the Municipality of Puerto Barrios. The basin has the capacity to supply water to at least 50,000 users of the municipalities of Livingston, Morales, Puerto Barrios and Santo Tomas de Castilla, and the 40 communities of the protected area. The 75% of the water is for domestic use, in an estimate of 120 liters/person/day.
2. **Tamejá:** It is located at the north side of the reserve. It covers an area of 9,386.91 hectares, of which 8,990.25 are within the perimeter of the protected area, the rest is in the PN Rio Dulce. Water recharge area is located in the core area of Cerro San Gil at 1,267 meters. The mainstream measures 28.20 km, is navigable for shallow draft boats. The river drains into the widening of the Río Dulce, called the Golfete in the Rio Dulce National Park. This basin supplies water to seven communities for domestic use, and to five communities for agricultural use, for 5000 families that use about 54 gallons of water / family / day. The forests of the basin protects from sedimentation and siltation to the Río Dulce canyon.
3. **San Marcos:** Located in the Multiple Use Zone and Buffer Reserve, covering the biological corridor CSG. It covers an area of 12,839 hectares, with a forest cover of 3806.07 hectares. Water recharge area is at 700-800 meters in the Core Zone of CSG. The main stream measures 12.67 Km, and drains directly on Lake Izabal. This watershed provides water to 3 communities at the Reserve, and to about 1500 families. Water is for domestic use and for small-scale agriculture.
4. **Juan Vicente:** It covers an area of 4715.18 hectares. The basin flows into Lake Izabal-Rio Dulce. The water recharge area is at 900 meters in the Core Zone, with a forest cover of 7,900 hectares. The main stream has 17.60 km length. The basin provides water for 2500 families for domestic and agricultural use of subsistence.

**The AP Sierra Santa Cruz (SSC): Extent: 59,748 hectares.**

SSC is an important water recharge area. It has 17 tributaries that provide the water service to more than 10,000 people, including the tourist site of Frontera Rio Dulce. Most communities at SSC are supplied with water births wooded areas; very few communities have piped water service for its supply. The most important basins of the protected area are:

1. **Sumaché:** Located in the municipality of Livingston. It covers an area of 4,923.92 hectares. The water recharge area is located at 1,019 meters above sea level in the Core Zone of the AP. The main tributary is Sumaché River, which flows into the northeastern part of Lake Izabal. It has a length of 40 km, and it is formed at 600 meters above sea level, where there is a water catchment dam. The sub-basin has an estimated water potential of 14.18 m3 per year.
2. **Cienega:** Located in the municipality of Livingston. It covers an area of 1,864.77 hectares of which 1,305 hectares are covered with forest. The main river is a short river that forms on the north by the union with the Sumache. The rivers rises at 1019 m.a.s.l. It receives several tributaries, including Sahila and Caquilá and rivers. It flows into the Rio Dulce, and provides water to six communities. Its water is for domestic, agricultural, forestry and recreational use (tourism). For this river, a flow rate of 4.78 m3 /s is estimated. At the top are few smallholdings and activity logging is being controlled by the Water Committee. This basin has low sedimentation values (between 0 mm and 0.5 mm/h), indicating that the basin is well protected.
3. **Chahal.** It covers an area of 2,854 hectares, of which 1,871 hectares are covered with forest. The main tributary is a short river that rises in the foothills of the Sierra Santa Cruz 400 meters, and it is formed by the confluence of other streams. In Alta Verapaz, local Mayans know him as Sepemech (shells). It flows into the river Gracias a Dios, which is a tributary, which joins the Chocon Machacas River, a tributary of Sarstún River. It is estimated that the river has a flow rate of 106.25 m3 /s. It provides water for domestic use, subsistence agriculture and tourism. Sedimentation values range from 0 mm to 10 mm / h. These values indicate a very low sedimentation in the dry season, indicating that the basin is well protected.

**The Sierra Caral AP: Extension: 37.870 hectares.**

It is located in the Motagua River Basin in the municipality of Morales in Izabal boundary with Honduras. The protected area consists of five sub basins and numerous streams and tributaries of the first order that flow into the Motagua River. The water potential of Sierra Caral favors 17 communities, about 8,000 people inside and on the periphery of the protected area. The main basins are:

1. **Bobos:** Located in the municipality of Morales, Izabal, and adjoins Honduras. It covers an area of ​​8433.59 hectares. The main tributary is the Bobos River, which rises southeast of the area in Honduras, and download into the Motagua River. This river is fed by several streams that provide abundant flow, used mostly by the hydroelectric generation plant known as "Fabrigas" in the San Silvestre (Hydroelectric Bobos River) located in the lower part of the Sierra, about 600 meters. In Guatemala, the river has an area of ​​approximately 25 km. It provides water to seven communities within the protected area.
2. **Ánimas:** It covers an area of ​​9,207.06 hectares. The main tributary is the Animas River, which originates in Honduras; near the border, it receives the arroyo of Corozo, and empties into the Motagua River. In Guatemala, the river has an area of ​​approximately 36 km. The basin has 3859.41 hectares of forest. It provides water to six communities in the protected area.
3. **Negro:** It covers an area of ​​9,713.11 hectares. The main tributary Negro River originates north of the hill of Meredoncito. Negro River flows through the village take the Northeast and receives the streams La Ceiba and La Vegona; download in the Motagua River, with an approximate distance 38 km. The basin supplies water to four communities.
4. **Chiquito:** It covers an area of ​​nine, 263.03 hectares. The main channel, Chiquito River is the union of Frio River and Bananas River in the community of Peñitas, this river is the widest of all, with approximately 10 meters wide. The rivers flows through the valley of Motagua. The Quebrada Grande River originates in the area of ​​Guatemala in the Water Pit Hill, irrigates the communities of San José Bonanza and Quebradas, and empties into the Motagua River through the union of the canals and rivers Animas.

**Erosion Control**

As part of the hydrological cycle, the protected area of Cerro San Gil plays an important role in the functioning of the Port of Santo Tomas de Castilla. This occurs due to the high forest cover in the area that minimizes erosion, thus generating less drag materials in rivers flowing into the Bay of Santo Tomas de Castilla, consequently in Amatique Bay. The materials carried by erosion in the bay decrease the depth of the draft and dredged necessary to maintain the proper level of navigation channels and berths.

For the forest of the Core Zone of Cerro San Gil, the estimated erosion is less than 10 tons, average per hectare per year, which is classified as a slight erosion. While on the other hand, in a scenario of intensive deforestation in the Cerro San Gil (about 7492 hectares considered), the potential erosion could amount to an average of 216 tons per hectare per year (severe erosion). Consequently, in the absence of the Reserve, or under insufficient controls and conservation mechanisms in it, one would expect greater forest degradation and the consequent increase in soil erosion. Consequently increased sedimentation of the bay, which would increase the frequency of maintenance dredging, while increasing operating costs of the National Port Santo Tomas de Castilla, as well as the frequency and possibly a greater volume of material removed. The avoided cost represents in this case the benefit provided by the environmental service of the Reserve Cerro San Gil.

According to the projections of FUNDAECO, the annual erosion in the Reserve of Cerro San Gil is estimated at total 155,898 tons of materials. In a scenario of intensive deforestation, erosion could reach 1,616,433 tons; which means more than ten times the current erosion. This means that in one year, the maximum erosion is avoided 1,460,535 tons.

#### 1.3.8.8 Fundamental Community Needs

The Project Zone is fundamental for water generation, especially watersheds mentioned in section 1.3.8.7. Local communities also obtain fuel wood; medicinal plants; fruits such as caimito, cushin, zapote, aguacate, guanaba, anona; and natural fibers and seeds that are used for the production of handicrafts.

Some communities around the mountain known as Sierra Santa Cruz, extract the leaves of an ornamental plan known as xate (*Chamaedorea elegans and Chamedorea oblongata*) which is exported to United States and Europe.

Regarding wild animals, it is believed that before it was an extended practice to hunt animals such as wild rabbits, tepezcuintle and iguanas, however since an important surface within the project zone is protected area, and special regulations are applied to protect wildlife, people are concern of having legal troubles when giving information and is hard then to know how usual is this practice today. For example in the social assessment only 5 people of the 370 interviewed informed that they extract wild animals for subsistence.

#### 1.3.8.9 Cultural Identity

The Q’eqchi’ beliefs revolves around respect to the earth and the cosmos that are recognized as *Tzuultaq’a*, which literally means “the mountain and what is below”. The way in which Q’eqchi’ express the faith related to *Tzuultaq’a* varies between regions, communities and families, but there is a common belief that *Tzuultaq’a* are living inside the mountains, specifically inside caves. While the sacred sites or *Tzuutaq’a* sites are not well defined geographically, participatory sessions and previous activities supporting cultural traditions, have allowed the project proponent to identify as sacred sites at a regional level; the Tameja River cave system, Rio Quehueche cave system, and the mountain known as Cerro Sarstun.

## 1.4 Project Proponent (G4)

Fundacion para el Ecodesarrollo y la Conservacion (FUNDAECO) is a non-profit organization dedicated to conservation and community development based in Guatemala City, Guatemala with field offices in the Department of Izabal. FUNDAECO is the project proponent and is solely responsible for all aspects of project design, implementation, and management. As discussed in Section 1.2.1, FUNDAECO has full project ownership for all emissions reductions from the REDD+ Project for Caribbean Guatemala.

|  |  |
| --- | --- |
| Organization name | Fundacion para el Ecodesarrollo y la Conservacion (FUNDAECO) |
| Contact person | Karen Aguilar |
| Title | Director of Development |
| Address | 25 calle 2-39 zona 1 |
| Telephone | 50223141923/50223141900 |
| Email | [k.aguilar@FUNDAECO.org.gt](mailto:k.aguilar@fundaeco.org.gt) |
| Website | [http://www.FUNDAECO.org.gt/](http://www.fundaeco.org.gt/) |

### 1.4 Multiple Project Proponents

Not applicable. FUNDAECO is the only project proponent at the time project validation.

## 1.5 Other Entities Involved in the Project (G4)

Table 9 presents the main organizations and individuals currently providing services for the development of the REDD+ Project for Caribbean Guatemala.

|  |  |  |
| --- | --- | --- |
| **Company** | **Brief Description of Roles** | **Key Contact** |
| **ecoPartners** | Assistance in project design, PDD drafting, carbon accounting, spatial modelling – based in Berkeley, California, USA. | Kyle Holland |
| **Universidad del Valle de Guatemala (UVG) Centro de Estudios Ambientales y de Biodiversidad (CEAB)** | Establishment of LULC maps over the historical reference period, development of species specific allometric equations, and measurement of carbon stocks. | Edwin Josué Castellanos López |
| **Althelia Ecosphere** | Funding of project implementation and co-management of credit sales. | Adam Gibbon |

Table 9. Other entities involved in the project.

**Ecological Carbon Offset Partners, LLC (ecoPartners)** is a consulting firm based out of Berkeley, California, USA. As a leader of carbon-financed conservation, [ecoPartners](http://ecopartnersllc.com/) works with project developers, forest owners and verification bodies to build successful carbon offset projects. They are experts in the technical aspects of project design, planning and development including biometrics, accounting methodologies and remote sensing. ecoPartners has extensive experience validating and verifying projects under the California Air Resources Board (ARB), Climate Action Reserve (CAR) Standard, Verified Carbon Standard (VCS), and Climate Community & Biodiversity (CCB) Standard. For the REDD+ Project for Caribbean Guatemala, ecoPartners has provided technical consulting services to FUNDAECO on project design, documentation, carbon accounting, validation, and remote sensing, as well as in drafting this Project Description.

Contact: Kyle Holland, Managing Director, Member

Address: 2930 Shattuck Ave, Suite 305, Berkeley, CA, 94795, USA

Telephone: +1 415-634-4650

Email: [kholland@ecopartnersllc.com](mailto:kholland@ecopartnersllc.com)

Website: [www.epcarbon.com](http://www.epcarbon.com)

**Universidad del Valle de Guatemala (UVG) Centro de Estudios Ambientales y de Biodiversidad (CEAB)** aims to find solutions to environmental problems in Guatemala with a comprehensive and interdisciplinary approach. UVG CEAB has been contracted with to develop the baseline for the Sarstun-Motagua reference region as part of the national REDD+ program under development in Guatemala. Under this capacity UVG CEAB has held workshops in the Sarstun-Motagua region to understand agents and drivers of deforestation, has developed land-use/land-cover maps for the region, and will eventually implement baseline estimates for this region. A number of technical materials for the REDD+ Project for Caribbean Guatemala has aligned with the national REDD+ program and Sarstun-Motagua region. As a result, many of the technical materials created by UVG CEAB have been used in the development of this project.

Contact: Edwin Josué Castellanos López, Director del Centro de Estudios Ambientales.

Address: Ecosphere Capital Partners LLP (advisors), 7 Chalcot Road, Primrose Hill, London NW1 8LH

Telephone: 2364-0336 al 40 ext 596

Email: [ecastell@uvg.edu.gt](mailto:ecastell@uvg.edu.gt)

Website: <http://www.uvg.edu.gt/investigacion/ceab/index.html>

**Althelia Ecosphere** is a fund dedicated funding innovative models that lead to long term transitions to sustainable land use and mitigate greenhouse gas emissions while providing sustainable livelihoods. Their model aims to address the drivers of deforestation and unsustainable land-use and release additional value from standing forests through payments for environmental services. Through a focus on blended value investments that deliver the highest caliber of social, environmental, and economic performance, they aim to demonstrate that financial performance can be fully aligned with sound environmental stewardship and social development. In the context of the REDD+ Project for Caribbean Guatemala, Althelia has provided financing for project development costs.

Contact: Adam Gibbon, Chief Technical Officer

Address: Ecosphere Capital Partners LLP (advisors), 7 Chalcot Road, Primrose Hill, London NW1 8LH

Email: [adam.gibbon@althelia.com](mailto:adam.gibbon@althelia.com)

Website: [www.althelia.com](http://www.althelia.com)

### 1.5.1 Technical Skills and Capacity

The FUNDAECO leadership team has extensive experience in community engagement, biodiversity assessment, and forest measurement in Guatemala. The organizational structure for the REDD+ Project for Caribbean Guatemala as well as the team’s experience is detailed in the Implementation Plan (see Plan de Implementación REDD V6.docx).

### 1.5.2 Regulators

The Ministry of the Environment and Natural Resources (MARN) is the primary regulator of forest lands in the Guatemala. Compliance with VCS and CCB standards is regulated by a third party verification body. AENOR is an accredited verification body for VCS and CCB and serves as the initial validator and verifier for the project.

### 1.5.3 GHG Programme Administrators

The VCS Association (VCSA) and the Climate, Community and Biodiversity Alliance (CCBA) are responsible for administering their respective programs. These responsibilities include maintaining documents relevant to project design, implementation, and monitoring. CCBA posts a version of this document for public comment during validation as well as the Monitoring and Implementation Report when the project seeks verification. VCSA maintains a registry of projects including descriptions, monitoring results, and emissions reductions issued.

## 1.6 Project Start Date (G3)

### 1.6.1 Program Start Date

The project start date is April 1, 2012. This is the date of the first Project Activity Instance (PAI) established using expected carbon revenues and debt-finance with anticipation of REDD+ carbon credit payments (see Section 1.6.2). FUNDAECO began a transition from grant and philanthropic funding to results based payments mechanisms found in REDD+ as early as 2010. The start of this transition was marked by a Memorandum of Understanding (MOU) signed in August 2010 between BNP Paribas/ Althelia Ecosphere and FUNDAECO to reduce emissions through a REDD+ project (MOU BNP PARIBAS\_Complete.pdf). In addition to increasing the focus on a finance strategy based on REDD+ the funding from grant and philanthropic sources was ramped down as early as 2011. In 2011 the contract between FUNDAECO and the Jade Project, supported by the Netherlands, the supported conservation activities in the network of protected area in Izabal was terminated with the last disbursement schedule in April 2011 (Finalizacion CONTRATO JADE 2010-2011.pdf). This last payment covered operational costs for the remainder of the 2011 annum and FUNDAECO thereafter sough debt-financing to support a REDD+ project starting in 2012.

FUNDAECO demonstrated its intent to develop a REDD+ program in the Izabal region by following the five phases set out within the scope of the MOU including Project Identification, Commercial Structuring, Development, Implementation, and Monetization. Important milestones within the MOU were achieved including completion of a feasibility study September 14th, 2012, commercial structuring of a REDD+ program with Althelia with a contract reach in early 2015, and the contracting of ecoPartners LLC in early 2015 to assist with the development and implementation of REDD+ project activities.

This timeline demonstrates FUNDAECO’s intentional transition between conservation finance strategies that, in terms of financial cash-flows, transitioned at the start of 2012. The project start date is reflected as the first PAI that resulted in emission reductions as a result of project activities funded through FUNDAECO’s new financial strategy based on REDD+. The first PAI occurred on April 1, 2012 and created emission reductions from the patrolling of forest areas. See the Project Description Annexes for all of the start date materials discussed above.

### 1.6.2 Project Activity Instance Start Dates

In addition to the Project Start Date for the REDD+ Project for Caribbean Guatemala start dates were collected for each Project Activity Instance (PAI). These start dates were based on a number of potential project activities implemented by FUNDAECO that lead to emission. Examples of the types of project activities are summarized below in Table 10 along with the type of documentation provided to demonstrate each PAI start date. For a full list of PAI types and start dates, see the FUNDAECO REDD+ Database in the Fundaeco VM0015 Accounting Model v1.46.xlsm.

|  |  |  |  |
| --- | --- | --- | --- |
| **PAI Code** | **Project Activity Instance** | **PAI Start Date** | **Evidence Establishing PAI Start Date** |
| **LD** | **A parcel protected by legal designation** | **Date of protected area status** | Documents showing FUNDAECO's instrumental role in the designation of a new protected area; Documents establishing date of protected area designation |
| **EDU** | **A parcel protected after environmental training** | **Date of the training** | Training report, participants list |
| **CP** | **A parcel protected after BAP training** | **Date of the training** | Training report, participants list |
| **PP** | **A parcel protected by patrol** | **Date of first patrol after Althelia MOU** | Documentation of first forest patrol post-Althelia MOU for parcel (reports, participants list, logbooks). This PAI includes:   * PPI: forest owner allows FUNDAECO or CONAP to develop a patrol * PP2: forest owner participates or support the realization of patrols in his forest and surrounding forests * PP3: implementation of rounds and fence or boundaries maintenance for better forest protection * PP4: implementation of infrastructure to reduce illegal deforestation; fences, gates, security cabins   PP5: implementation of firebreaks |
|  |  |  |  |
| **PINFOR/PINPEP** | **A parcel protected by PINFOR or PINPEP** | **Date of PINFOR/PINPEP approval or verification after Althelia MOU** | PINFOR/PINPEP resolution or vertification, post-Althelia MOU showing contract date and forest area under protection/natural forest management |
| **PA** | **A parcel protected by acquisition** | **Date of purchase** | Purchase agreements, title records |
|  |  |  | FUNDAECO |
| **PM** | **A parcel protected by contractual agreement for protection or management** | **Date of agreement** | Contracts or land management plans between landowners and FUNDAECO specifying FUNDAECO's involvement in land management and forest protection. Must be dated post-Althelia MOU and include evidence showing FUNDAECO's role in forest protection |
| **PD** | **Parcel protected after alternative productive activities to reduce pressure over the forest** | **Date of implementation** | Logbook |
| **ECO** | **Parcel protected after ecotourism project to reduce pressure over the forest** | **Date of implementation** | Logbook |
| **LL** | **Land Legalization** | **Date of legalization** | FUNDAECO's role in legalization |

Table 10. Examples of project activity instances for the establishment of project start dates for each parcel.

## 1.7 Project Crediting Period (G3)

The project crediting period is 30-years.

### 1.7.1 Project Lifetime and Chronological Plan

The Project has four implementation phases; phase one starts in April 2012 and finishes in December 2014; phase two start in January 2015 and runs through to December 2022 (baseline reassessment); phase three is from January 2023 to December 2032 (baseline reassessment); and the last phase will from January 2032 to the end of March 2042.

A detailed chronological plan is presented in the implementation plan, showing activities to be implemented for each project component, and expected outcomes for each group of activities. The plan is constructed showing the years that each activity will cover along the crediting period. FUNDAECO will use adaptive management to review activities effectiveness and their duration. See the Implementation Plan (Plan de Implementación REDD V6.docx) for details.

### 1.7.2 Implementation Schedule

The Project Implementation Plan includes a 30 years schedule that presents, expected outcomes and activities for the whole period. Refer to the implementation plan for a full implementation schedule.

### 1.7.3 Baseline Reassessment

The project baseline will be reassessed in years 11 and 21.

### 1.7.4 ARR/ IFM Harvesting Periods

Not applicable. The project is not conducting ARR or IFM activities.

# 2 Project Design

## 2.1 Sectoral Scope and Project Type

This project is an Agriculture, Forestry and Other Land Use (AFOLU) project under the Reducing Emissions from Deforestation and Degradation (REDD) project category, sectoral scope 14. Specifically, the project is of the “Avoided Unplanned Deforestation & Degradation” (AUDD) project category. The project will not pursue IFM nor ANR activities in any of the project areas. Some of the project activities do occur on wetlands; however the specific carbon pools and GHG sources have not been accounted for as their exclusion leads to conservative estimates of the total GHG emission reductions. The methodology VM0015 establishes that both below ground biomass and soil organic carbon are optional carbon pools and may be conservatively excluded.

### 2.1.1 Grouped Project

This project is a grouped project and also uses the programmatic approach. The grouped project area is shown in Figure 7 and described fully in Section 1.2.5. The grouped project area has been designed to display a single baseline scenario (Section 2.4) and demonstration of additionality (Section 2.5). The risk rating is divided into two areas based on land ownership (Section 2.3.4).

### 2.1.2 Project Eligibility

The project meets all of the requirements set forth in the VCS Standard v3.6, issued October 19th 2016, and the VCS AFOLU Requirements v3.5, issued October 19th 2016.

The project further complies with all of the rules and requirements of the Climate, Community and Biodiversity Standard (CCBS), Third Edition, December 2013.

The project also complies with all relevant legislation as specified in Section 3.

### 2.1.3 Methodology Requirements

The project is using VCS-approved methodology VM0015, “Methodology for Avoided Unplanned Deforestation v1.1” for quantification of GHG emission reductions and removals generated in mosaic and landscape scale REDD+ projects. The project applies the methodology VM0015 in full (See Section 4).

This methodology also refers to the latest versions of the following approved tools and modules:

* CDM A/R Methodological Tool Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities.
* CDM A/R Methodological Tool 03 Calculation of the number of sample plots for measurements within A/R CDM project activities.
* CDM A/R Methodological Tool 06 Procedure to determine when accounting of the soil organic carbon pool may be conservatively neglected.
* CDM A/R Methodological Tool 09 Estimation of GHG emissions related to displacement of grazing activities in A/R CDM project activity.
* CDM Tool for testing significance of GHG emissions in A/R CDM project activities.
* VCS Tool VT0001 Tool for the demonstration and assessment of additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) project activities.
* VCS Tool for Remote Sensing Biomass Measurement v2.0
* VCS Tool for calculating deforestation rates using incomplete remote sensing images.
* VCS Module VMD0033 Estimation of emissions from market leakage.

Finally, the project meets all of the requirements for models and default factors set forth in the VCS Standard v3.6, issued October 19th 2016, and the VCS AFOLU Requirements v3.5, issued October 19th 2016.

### 2.1.4 Project Conversions

The project is designed to protect native vegetation. None of the project activities will lead to the conversion of forest ecosystems nor will any of the project activities drain native ecosystems.

The project does not contain any ARR, ALM, or ACoGS project areas and is therefore not required to provide documentation that the project activities (alternative agricultural activities) will not lead to conversion of forest ecosystems. The project does not occur on wetlands and is therefore not subject to WRC requirements (see Section 2.1).

### 2.1.5 Jurisdictional REDD+

Currently, there is no national or jurisdictional REDD+ program. Therefore, the project is not located within a jurisdiction covered by a REDD+ jurisdictional program in Guatemala and not required to follow the VCS jurisdictional REDD+ requirements.

However, the Guatemalan government led by the Ministry of Environment and Natural Resources (MARN) as the REDD+ focal point is in the process of developing a national REDD+ strategy. The Guatemala National Emissions Reduction Program has followed a jurisdictional nested approach and has delineated five regions that will independently establish reference emission levels (RELs). Additional programmatic details have been described in the latest version of the Emission Reductions Program Idea Note (ER-PIN) (Guatemala ER-PIN Version Sept 2014.pdf). The REDD+ Project for Caribbean Guatemala falls within the Sarstun-Motagua region which has initiated the collection of data for determining a REL. The REDD+ Project for Caribbean Guatemala is moving faster than the national strategy, however, it recognizes the importance and need to harmonize with programmatic details that have been established. FUNDAECO is participating in the national REDD+ strategy discussions, and is also coordinating with Universidad Valle (UVG) to ensure that all information produced on deforestation and degradation, carbon estimates, and land use classification can be used in the development of the REDD+ Project for Caribbean Guatemala.

### 2.1.6 Good Practice and Guidance

The project follows the IPCC good practice guidance for land-use, land-use change and forestry (LULUCF) that was developed from the Marrakesh Accords; as well as the Social and Biodiversity Impact Assessment Manual for REDD+ Projects (“SBIA Manual”) Manual for REDD+ Projects for guidance on the community and biodiversity elements of the project.

### 2.1.7 Multiple Project Activities

The project includes only one VCS project activity, AUD and is using only one methodology, VM0015. Further, the methodology does not specify requirements for demonstrating additionality other than those specified in the latest version of the VCS approved *VT0001 Tool for the Demonstration and Assessment of Additionality in VCS AFOLU Project Activities* to demonstrate additionality; therefore, only the additionality requirements of the VCS Tool are adhered to.

### 2.1.8 Multiple Project Activities Instances

As a grouped project multiple project activity instances will be incorporated into the Grouped Project Area for quantification of GHG emissions and each must demonstrate the eligibility requirements with VCS Standard v3.6 and VM0015 Methodology v1.1. As described in Section 2.1.1 above, the Grouped Project Area has been defined as forest area existing for at last 10-years where mangrove areas with peat soils have been removed. As such, each PAI added to the Grouped Project Area with meet these eligibility criteria elucidated in VCS Standards 3.6 and VM0015 Methodology v1.1. In addition to the eligibility requirements described in section 3.4.10 of the VCS Standard v3.6 each new project activity instance must meet the following eligibility criteria:

* **Applicability of VM0015 Methodology v1.1**
  + Baseline activities may include planned or unplanned logging for timber, fuel-wood collection, charcoal production, agricultural and grazing activities as long as the category is unplanned deforestation according to the most recent VCS AFOLU requirements;
  + Project activities may include one or a combination of the eligible categories defined in the description of the scope of the VM0015 methodology;
  + The project area can include different types of forest, such as, but not limited to, old-growth forest, degraded forest, secondary forests, planted forests and agro-forestry systems meeting the definition of “forest”;
* **Additionality** – as demonstrated in Section 4.6 the project activities supported by the project proponent, FUNDAECO, are additional. As a result, new PAIs must demonstrate that they received financial or technical support from the project proponent that resulted in emission reductions. Project activities can be those described in Section 2.2;
* **Project Ownership** – each new PAI must demonstrate that the project ownership has been transferred to the project proponent through a legal contract;
* **Baseline scenario** – A single baseline has been established for the grouped project area (Section 4.5) and new project activity instances also fall under a baseline scenario of unplanned deforestation by known agents and drivers of deforestation;
* **Project activities –** the technologies employed for new project activity instances will follow those described in section 2.2.
  + Parcel protection by legal designation as a protected area
  + Parcel protected by forest patrols
  + Parcel protected by PINFOR/ PINPEP
  + Parcel protected by acquisition
  + Parcel protected after environmental and forest training
  + Parcel protected after Best Agricultural Practices training – BPA – to reduce pressure over the forest
  + Parcel protected after alternative productive activities to reduce pressure over the forest
  + Parcel protected after ecotourism project to reduce pressure over the forest
  + Parcel protected by contractual agreement for protection or management
  + Parcel protected by land legalization

In addition using the technologies described above these technologies will be enabled by the financial or technical assistance of the project proponent.

## 2.2 Description of the Project Activity (G3)

The REDD+ Project for the Caribbean Guatemala includes a series of actions that altogether will allow the reduction of deforestation caused by the following factors:

* Due to the lack of productive options and because people do not implement appropriate practices of soil productivity, more land is needed for subsistence crops.
* A weakness in Law enforcement due to insufficient presence of the authorities and low budget for surveillance, which allows for encroachment into forest areas by subsistence farmers and cattle ranchers.

In order to mitigate these factors and achieve solutions, the REDD+ Project has planned the following strategies:

* Supporting and Assisting Agroforestry: providing supplies and assisting the establishment of crops which products have a potential market, to diversify family economy and generate alternative incomes in key communities. FUNDAECO has selected 7 productive systems with high potential of income generating, establishing a strategic alliance with The Guatemalan Exporters Association (AGEXPORT) for a successful production chain.
* Fostering Forest value: supporting the access to forest incentives of the PINFOR, PINPEP and more recently PROBOSQUE forestry incentives. The project covers all expenses related to the preparation of files required by forestry incentives programs, such as forest inventories, legal files, forest management plans. In addition, endorsing the registration, validation, verification and sell of VCU’s in support of the forest owners that have joined the project.
* Education of girls and young women, and improving the training opportunities: supporting young women to finish their elementary education and to continue high school studies; also, assisting with direct training in order to expand their job opportunities.
* Raising awareness on sustainable management of natural resources and the biodiversity values of the Caribbean Guatemala: FUNDAECO through formal education supporting or giving environmental and biodiversity talks with students in public and private schools and through organizing and supporting non-formal education activities such as talks and workshops with communities, environmental fair and exhibits.
* Raising forest value and creating economic opportunities through Ecotourism: FUNDAECO is promoting the conservation coast as an ecotourism destination in Guatemala, the destination is integrated by Ecotourism sites, which not only expose the biodiversity values of the region but also generate alternative economic activities for local communities. The model of these sites is that FUNDAECO gives “concessions” to local communities and entrepreneurs to give tourism services such as guiding, food services, handicrafts and souvenirs sales, and lodging services. Services demand in the ecotourism sites also benefits local transport such as taxis and boats.
* Law enforcement: Two main strategies
  + Control and Surveillance: Project will strengthen the protection and surveillance actions inside the project zone, especially in the highly threatened sites- in coordination with the National Protected Areas Council (CONAP), the Public Prosecutor's Office, and the Nature Protection Division of the National Police (DIPRONA), the Guatemalan Army and Navy, the Fisheries Department (UNIPESCA), Municipalities and local communities.
  + Litigation and Environmental Defense: to stop illegal logging and deforestation, the Project will follow up the legal complaints against deforestation or other related illegal activities. FUNDAECO will work closely with the Natural Protection Division (DIPRONA), the Public Prosecutor's Office, the National Protected Areas Council (CONAP) and local courts, to ensure the proper conclusion of the high priority cases. In addition, the Project will offer legal assistance to communities and individual forest owners when and illegal activity is committed by a third party inside their forest.
* Land legalization: the Project will support the communities that have inhabited the zone but do not have their land titles, to obtain land legalization; FUNDAECO supports the preparation of social studies, legal files and land use capacity studies that need to be presented to the legalization programs from FONTIERRAS (ACCESO and Programa de Regularización y Adjudicación). Land titling allows not legalized communities to form part of the REDD+ project Grouped Project Area.
* Social and biological monitoring: in order to verify the relevance of the actions and the achievement of their results, the Project will maintain a social monitoring program for the local communities. Also, the Project will implement the monitoring of HCV species.

### 2.2.1 Description of Project Technologies

In order to reduce GHG emissions, the project will use a series of technologies to avoid deforestation. Law enforcement; by increasing control and surveillance in deforestation fronts, and also supporting institutions and protected area councils in forest governance. Increasing forest value through supporting access to forest incentive programs PINFOR, PINPEP and PROBOSQUE, and also with VCUs benefit share, as well as raising awareness on forest value for environmental services generation especially water.

The project also includes activities designed to reduce the need for new agricultural land, by supporting economy diversification specifically supporting the implementation of permanent crops and agroforestry systems in previous deforested lands, and encouraging improved agricultural practices for soil conservation and a sustainable management of maiz lands.

### 2.2.2 Project Climate Impacts

According to the ex-ante GHG estimates, the project is expected to reduce 27,268,810 tonnes of CO2 over a period of 30 years (net anthropogenic emissions reductions).

The theory of change analysis was used to determine causal relations between drivers of deforestation and degradation, and the activities to be implemented to generate climate impacts.

According to the agents and drivers analysis, Illegal land use change for cattle-ranching and Illegal logging were identified as deforestation drivers related to lack of law or a weak law enforcement. The impacts resulting from addressing these drivers are: Widespread protection of forest in project zone and the reduction of illegal logging.

In addition, the lack of economic and employment opportunities were identified as another strong factor for deforestation in the Sarstun-Motagua Region, specially related to the expansion of subsistence agriculture. This underlying driver can be tackled improving two basic conditions Access to Resources and Economic Opportunities, and Education that will then trigger positive long-term climate impacts; Extensive areas under agroforestry production or reforestation in project zone; and Alternative revenue streams from forest production (e.g. agroforestry) and conservation uses.

### 2.2.3 Project Community Impacts

A study on drivers of deforestation in the Sarstun Motagua Region carried out in 2015[[12]](#footnote-12), mention the lack of economic and employment opportunities as the strongest factor for deforestation in the Sarstun-Motagua Region, where the project is located. According to the project Theory of Change (TOC Activity Matrix v1.14.xlsm) this underlying driver can be tackled improving two basic conditions that will then trigger positive long term impacts: Access to Resources and Economic Opportunities, and Education.

The theory of change presents the path in which project activities will generate outcomes and positive impacts for communities inside the project zone, identified impacts are:

* + Sufficient household income from provision of ecotourism services, sale of agroforestry products, and resource protection
  + Widespread access to community capacity building and educational opportunities
  + Widespread awareness among women and families of reproductive rights and health
  + Full access to reproductive health information and care within the project zone
  + All marginalized and vulnerable communities with customary right have legalized land
  + Ability and capacity of communities to implement sustainable resource management techniques
  + Inclusion of all marginalized and vulnerable communities with customary rights in resource management decisions that may impact them.
  + Protection of ecosystem services important to livelihoods and health
  + Increased access to health information and care within the project zone
  + Recognition and assistance in protection of significant traditional, cultural, spiritual, and religious sites.

An impact of Law enforcement activities is the increased control on verifying legal permits for familial timber extraction or woodshop permits, which can be perceived by communities as less access to resources. FUNDAECO organizes community talks and visits to woodshops in order to raise awareness on legal procedures to obtain familial permits, as well as to obtain wood shops permits. Familial Permits are given to a family when building a home, or any other familial but non-commercial purpose, and in a limited volume once in a year[[13]](#footnote-13). In the case of woodshops, they need to have a document that states the volume they are receiving and the origin, in order to guarantee that wood is coming from an authorized forest plantation or managed forest outside the grouped project area[[14]](#footnote-14). Woodshops and their operations also need to be registered at the SEINEF[[15]](#footnote-15).

### 2.2.4 Project Biodiversity Impacts

The Project Zone consists of one of the most important biodiversity hotspots in Guatemala, and serves as crucial habitat for numerous migratory and endemic species of birds, amphibians, mammals, and marine life. FUNDAECO has designed project activities that will have a positive impact on biodiversity within the project area and the region as a whole. By using the Theory of Change framework, project activities were designed with long term biodiversity impacts in mind. This framework provides a method for structuring project activities in a way that considers the short and medium term outcomes of the project activity, as well as the long term benefits. For example, the theory of change analysis identifies land use change resulting from lack of law enforcement as a key threat to biodiversity. The related activity consists of designating forest patrols to man the perimeter of protected areas to discourage anyone from partaking in illegal logging or the unauthorized clearing of land. The short term outcome of this activity is the prevention of habitat loss and the maintenance of natural ecosystems, and the medium term outcome is the widespread protection of forest in the project zone, through the effective enforcement of the law. A more detailed breakdown of the project activities with positive biodiversity impacts can be found in section 7.1, or in the Theory of Change Matrix (TOC Activity Matrix v1.14.xlsm).

No negative impacts on biodiversity are expected as a result of project activities, as these activities are designed to prevent deforestation and forest degradation, improve environmental management, and promote a widespread awareness of environmental stewardship. However, potential negative effects on the environment could arise from the use of pesticides/fertilizers, ineffective waste management, and monoculture plantations. FUNDAECO has taken steps to mitigate any of these risks using a combination of organization protocols and USAID safeguards, as described in Sections 2.3.3 and 7.

### 2.2.5 Project Activity Lifetime

Both the crediting period of the project and the project lifetime are 30 years. The financial plan for the project also extends 30 years.

## 2.3 Management of Risks to Project Benefits (G3)

### 2.3.1 Climate Risks

Institutional weakness is one the risks that can affect both climate and biodiversity benefits, especially due to lack of resources and lack of continuity of public servants, which results in a slow and interrupted implementation of public policies and strategies. This can affect the project coordination with authorities in charge of law enforcement. To manage these risks FUNDAECO has included in the project an Environmental Litigation and Lobbying and Advocacy Program. At the National level, FUNDAECO is also part from ASOREMA. ASOREMA is the national association for environmental NGOs that holds a chair at INAB Board of Directors, CONAP Council, and the Climate Change Council. At the local level (Izabal Department) FUNDAECO is part of the CODEDE, the MICAI, and Izabal Competitiveness Work Group. From these mechanisms, FUNDAECO is constantly guaranteeing coordination and support to project strategies and activities. The project was presented and obtained endorsement from PRONACOM, Izabal Government, MARN and SEGEPLAN.

Lack of governance in areas surrounding project zone can indirectly affect the project. To reduce this risk the project team is integrated by local technicians and community promotors that keep a constant and close communication with communities and landowners to understand their situation and demands. FUNDAECO participates actively in the MICAI to identify and avoid potential conflicts.

The potential lack of carbon market to cover opportunity costs is also a risk that can affect benefits to climate, communities and biodiversity benefits. To manage this risk FUNDAECO has obtained the initial support of Althelia Climate Fund as carbon investors, ACF and FUNDAECO are creating a joint carbon marketing unit, and initial VCUs buyers portfolio is prepared.

### 2.3.2 Community Risks

Lack to access markets is a risk for agroforestry, artisans, ecotourism and VCUs beneficiaries. FUNDAECO is closely working with AGEXPORT in order to increase market opportunities for vendors and producers supported by the project. AGEXPORT has been assessing FUNDAECO in market identification and contacts, value chains, and commercial image. FUNDAECO has registered the “Conservation Coast” as the trademark that will support project products image and marketing; based on a value differentiation.

FUNDAECO is also training local producers and vendors to implement BPAs, improve productivity and in the case of artisans to improve and update handicrafts designs.

As mentioned in the Climate Risks section lack of carbon markets to cover opportunity costs is also a risk. As informed above FUNDAECO is managing these risks by working closely with ACF in the preparation of a VCUs marketing strategy, but also supporting communities and individual landowners to diversify their household economy, through supporting resources for alternative economic activities, access to markets, and technical support to forest incentives such as PROBOSQIES, PINPEP, and PINFOR.

Backing commitments under REDD+ project is a challenge since expectations may change over the years. FUNDAECO anticipated this challenge through a broad consultation process including the discussion of the carbon contract with each beneficiary. The project team is integrated by local technicians that are committed to sustainable development and nature conservation in the project zone, and that have a close communication with communities and individual landowners. The grievance and redress mechanism, and the adoption of an adaptive management approach will timely implement solutions. An annual social survey will be carried out to know about beneficiaries’ satisfaction level with FUNDAECO work.

### 2.3.3 Biodiversity Risks

The FUNDAECO project has used the theory of change to determine the most effective methods for bringing about benefits to biodiversity. However, there are still several natural and human induced risks to biodiversity benefits that underlie assumptions in the theory of change model. Some of these threats may be outside of the project’s control, but others may have concrete mitigation measures that can be implemented by the project.

Specific risks to biodiversity that may be out of the project’s control include the risk of continued habitat degradation outside of the project area, as well as the socio-political stability of Guatemala, which could impact economic drivers of deforestation as well as FUNDAECO’s influence over the project area. There is also the risk that income generated from agroforestry systems and ecosystem services payments may not be enough to compete with income derived from activities such as illegal logging and the clearing of forest for agriculture or cattle grazing, resulting in less reductions in deforestation than anticipated. Additional human-induced risks include changes in local economic conditions, the lack of capacity and governance in local communities, the potential use of environmentally harmful practices as part of project activities, and the lack of a functional land tenure system. Natural risks to the project have been evaluated using the Non-Permanence Risk Tool (see Fundaeco REDD+ Non-Permanence Risk Report\_Risk Area A v1.7.doc and Fundaeco REDD+ Non-Permanence Risk Report\_Risk Area B v1.2.doc), and have been found to pose insignificant threats to the project area, and consequently pose little threat to the project’s biodiversity benefits.

FUNDAECO has implemented several strategies for mitigating many of these risks to the project’s biodiversity benefits. Targeted project activities as well as organization policy both will serve to strengthen biodiversity benefits and reduce any potential risks (see Section 7 for more details on project activities tied to biodiversity benefits). Although several risks are outside of the project’s control, including local governance, changes in local economies, and land tenure systems, FUNDAECO is working to minimize these through project activities geared at empowering communities and providing land tenure access to vulnerable populations. Any biodiversity threats caused by the degradation or fragmentation of forest outside of the current project area also have the potential to be minimized through educational initiatives and the incorporation of these properties into the project area over time.

FUNDAECO’s policy documents also outline the measures that the organization will take to ensure that project activities do not cause environmental harm. For example, in the FUNDAECO Policy document (Plan General de BPA 2016.docx), the use of GMOs and invasive species are prohibited, and environmentally friendly waste management measures are to be implemented as part of any project activity. All agroforestry and sustainable agricultural programs through FUNDAECO also abide by USAID guidelines for safe pesticide use (Plan General de BPA 2016.docx), and an internal best agricultural practices policy that outlines and justifies safe and appropriate pesticide and fertilizer use (Plan General de BPA 2016.docx). FUNDAECO agroforestry programs do use non-native and non-invasive species such as rubber in small-scale plantations within a larger mixed-use sustainable agriculture system. By using naturalized non-native and non-invasive species in sustainable and mixed-use agroforestry systems, FUNDAECO can enable farmers to access markets that provide them with better economic opportunities, thus preventing them from further clearing forest. A detailed justification for the use of non-native species in small-scale agroforestry plantations can be found in Consultoria Selvin Perez doc Final 10062014.docx. Overall with a combination of targeted project activities and organization policies, FUNDAECO is continuously taking steps to identify and mitigate threats to biodiversity within the project area and project zone.

### 2.3.4 Non-Permanence Risk and Buffer Tool

The project team has prepared separate risk ratings according for defined risk areas within the Project Area under the VCS AFOLU Non-Permanence Risk Assessment Tool (VCS Version 3.2) and following Section 3.8.2 of the AFOLU Requirements. The project area, as defined in Section 1.2.6, has been divided into 2 separate risk areas distinguished based on differing land tenure and conservation commitments. Risks are assigned at the property level based on the REDD+ Database (Fundaeco VM0015 Accounting Model v1.46.xlsm). The total risk rating for each risk area is summarized in Table 11 and individual non-permanence risk reports have been provided separately to validators (see Fundaeco REDD+ Non-Permanence Risk Report\_Risk Area A v1.7.doc and Fundaeco REDD+ Non-Permanence Risk Report\_Risk Area B v1.2.doc). Descriptions of the different risk areas are also provided below.

**Risk Area A**

Risk Area A is defined by properties that are owned through clear title by FUNDAECO.

**Risk Area B**

Risk Area B is defined by properties that are owned through clear title by national entities, municipal entities, private owners, and *possedores*.

|  |  |  |
| --- | --- | --- |
| **Risk Category** | **Risk Area A Rating** | **Risk Area B Rating** |
| 1. Internal Risk | 13 | 13 |
| 1. External Risk | 0 | 0 |
| 1. Natural Risk | 0 | 0 |
| **Overall Risk Rating (a + b + c)** | **13\*** | **13\*** |

Table 11. Non-Permanence risk rating for each defined risk area within the Grouped Project Area. \*Overall risk rating cannot be below 10.

### 2.3.5 Management of Risk Beyond Project Lifetime

The project lifetime is 30 years; however, the project is designed to create benefits and impacts that are expected to last far beyond this time frame. Through activities to support land titling FUNDAECO is ensuring community rights and also access to projects, funding, and stability for benefited communities.

Through the support and technical assistance for productive alternatives –ecotourism, agroforestry, handcrafts-, FUNDAECO expects to contribute to family livelihoods and welfare.

FUNDAECO will also support access to education, and sexual and reproductive health, especially for young women and women in order to raise opportunities for the whole family.

It is expected all these joint interventions to generate impacts at the local development dynamics and patterns in the project zone, beyond project lifetime.

## 2.4 Measures to Maintain High Conservation Values (G3)

### 2.4.1 Community High Conservation Values

According to Richards and Panfil (2011), Social or Community HCV are those that provide critical ecosystem services or are of cultural importance. In the project region both of them are founded.

A network of sacred sites where Queqchi and Garifuna communities practice religious rituals have been identified; each site is composed by several points, specially caves or small mountains called “*cerros*”:

* Tameja River and caves
* Rio Quehueche River and Caves
* Cerro Sarstun and Sartun River
* Rio Cocoli
* Siete altares
* Caves and cerros at the north of Sierra Santa cruz (Rubel Ho, Rubel Cacao, Sesaquipec and Sesaquisuib)

Ten watersheds were identified as HCVs that provide critical ecosystem services; **Las** Escobas, Tamejá, San Marcos, Juan Vicente, Sumaché, Cienega, Chahal, Bobos, Negro and Chiquito.

The project is dedicated to maintaining these community HCVs through several targeted project activities. HCV management areas have been identified (see Figures 11 and 12) in order to focus HCV conservation efforts within the project area. The primary measure taken to maintain HCVs is the reduction of deforestation within the sites identified as HCVs, through the voluntary integration of some of these forests to the project area and the implementation of protection activities. By reducing deforestation and degradation, the project will avoid threats within these areas, and their environmental services and cultural uses can be guarantee.

FUNDAECO is implementing forest protection measures through the deployment of forest patrols, the enrollment of landowners along watersheds in PROBOSQUE and PINPEP programs, conservation education initiatives, and support to preserve awareness and respect for traditional, cultural, spiritual and religious identities of communities within the project area.

A map of community HCV Values can be seen in Figure 11 below.

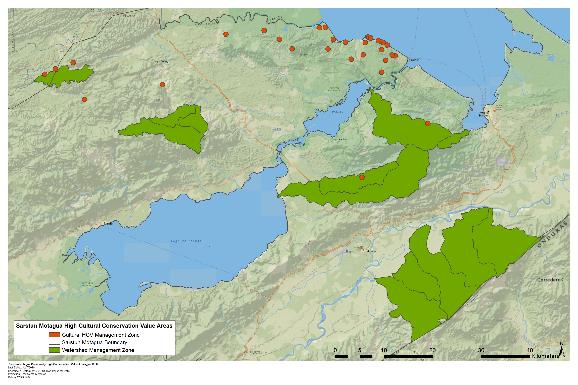


Figure 11. Map of community HCV management areas.

### 2.4.2 Biodiversity High Conservation Values

Biodiversity High Conservation Values for the Project as detailed in Section 1.3.8 are:

HCV 1: Concentrations of biological diversity:

Protected areas

Threatened species: numerous IUCN Red List threatened species

Endemic species: high endemism in the region

Migratory corridors

HCV 2: Landscape level ecosystems and mosaics

Intact and partially intact forest area sufficient to support naturally occurring species in natural patterns of distribution and abundance

HCV 3: Rare, threatened or endangered ecosystems

Lowland forests

Mangroves

The project is dedicated to maintaining these biodiversity HCVs through numerous targeted project activities. Several HCV management areas have been identified (see Figure 12) in order to focus HCV conservation efforts within the project area. The primary measure taken to maintain biodiversity HCVs is through the reduction of deforestation within the project area. As is discussed in Section 7, biodiversity is highly correlated with forest cover (Richards and Panfil, 2011), and many of the identified biodiversity HCVs consist of forested areas within the project area and project zone, including protected areas, migratory corridors, landscape level ecosystems, and threatened ecosystems. By reducing deforestation and degradation threats within these areas, both the ecosystems and the threatened species within those ecosystems will be protected and maintained. FUNDAECO is implementing forest protection measures through the deployment of forest patrols, the enrollment of landowners in PINFOR and PINPEP programs, conservation education initiatives, and agroforestry systems. These project activities and their direct biodiversity benefits are described in more detail in Section 7.

Additionally, FUNDAECO is implementing specific measures to protect endangered amphibian species within the project area through the training of park guards in measures to prevent the spread of deadly amphibian fungal diseases. See Figure 12 for a map of amphibian protection zones.

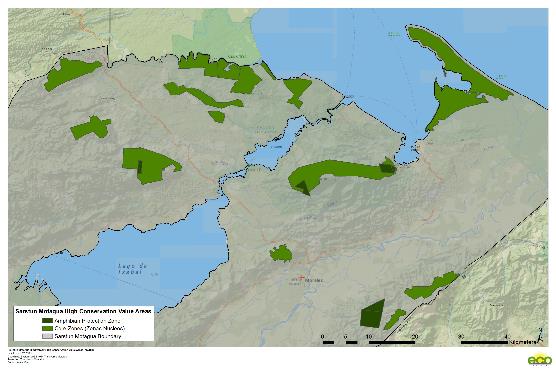


Figure 12. Map of biodiversity HCV management areas.

## 2.4.2 Project Financing (G3 & G4)

FUNDAECO is committed to cover project operation costs, initially through an investment from Althelia climate Fund that covers development expenses. During the rest of the project lifetime FUNDAECO is committed to sell carbon credits with the support from ACF. Also a VCUs marketing unit will be stablished in Guatemala to reach local companies. However considering the carbon market uncertainty, to guarantee project casflow. FUNDAECO continue to seek funds from international cooperation. FUNDAECO will work with recognized sustainable development and conservation funds and agencies to cover costs from the different project components.

## 2.4.2 Employment Opportunities and Worker Safety (G4)

Since its foundation in 1990 FUNDAECO, has complied with legal and administrative provisions on labor and social security and work rights; this practice is implemented throughout all of FUNDAECO Programs and Projects.

The rights and obligations of workers are contained in the Labor Code (Decree 1441 of the Guatemalan Congress). The state agency that enforces workers rights respect is the Ministerio de Trabajo y Previsión Social, and the social security is in charge of the Instituto Guatemalteco de Seguridad Social –IGSS-. FUNDAECO is registered as an employer with both entities, and can receive evaluations as required by the law. In addition to social security coverage, the institution establish an aggregate insurance policy with life insurance and medical expenses coverage.

FUNDAECO -in compliance with the content on civil, commercial and labor- enacts a Human Resources Policy, as part ofManual for Policies, Rules and Procedures*,* including in Chapter 1 among others items: types of recruitment, recruitment processes, wages and salaries, interpersonal relations and performance evaluations.

2.4.2 Employment Training

In order to build local useful skills and knowledges to increase success in the project implementation and goals, a significant amount of training and capacity building its being implemented by FUNDAECO, and is provided in different level to field technicians and community beneficiaries.

Through workshops, filed technicians, and project beneficiaries will be trained to implement several types of agro-ecological products (black pepper, cardamom, rambutan, forestry amount others) and ecotourism in an environmentally low-impact manner. Through these activities economic opportunities can be improved in different area, see the next table.

|  |  |  |
| --- | --- | --- |
| Training opportunities | | |
| SAF | **ECOTOURISM** | **HANDCRAFTS** |
| Plant Production | Development of tourism product | Quality and added value |
| Grafting | Community Tourism Guides | New designs |
| Soil preparation and nutrition | Provision of food services | Material costing and small business mangement |
| System establishment | Management of groups and tourism culture |  |
| Crop Management | Provision of lodging services |  |
| Harvest |  |  |
| Post harvest |  |  |
| Processing |  |  |
| Packing |  |  |
| Biofertilizers |  |  |
| BPAs |  |  |

Table 12. Training opportunities.

**Specific training for the project:**

FUNDAECO trains all staff in the different aspects of the project components. For new employees, training period (induction process) will be provided in a 4 week term, immediately after beginning employment. The Induction process starts with identifying relevant topics to train the new employee. This process will include field visits looking to integrate the technician in ongoing efforts with project stakeholders and communitarian leaders. Also periodical training can be made with project staff, covering relevant topic that are new to the staff or that needs to be improved and updated.

Directors and Coordinators will ensure that additional training is provided to staff, where needed, with efforts from FUNDAECO or from external support.

**Communities:**

FUNDAECO implements capacity-building activities with communities all over Caribbean Guatemala. When working with community members, the community itself will select the people participating in the proposed activities.

FUNDAECO divides 3 different levels of development in staff training systems:

-1st level: FUNDAECO technical staff receives training in productivity, organization and legal subject; these technical teams are the ones that have the job to replicated -with knowledge transfer and generation of capabilities- across project organizations (Producers Organizations, Local Committees and COCODES)

-2nd level: FUNDAECO technical staff, along with the accompanied of organizations leaders, provides technical assistance to producers at an individual plot level.

-3rd level: For the different products will feature and deliver technical manuals containing the minimum "technology package" for the productive development of each of the production initiatives; all contents and tools provide by the technology package and deliver for capacity building activities, are designed to be culturally appropriate.

If FUNDAECO lacks of the specific skills, specialized consultants will contacted.

**Efforts with external support:**

Regarding agroforestry systems, specific training will be provided to support project productive activities including agroforestry systems and ecotourism. In addition, will be engaging in technical assistance activities with Special Purpose Vehicle (SPV) partnerships and allied companies that will be in charge of adding value to the crops, through processing at special facilities. These partners and allies (most of this relationships will be generated by product) will also provide formal training to perform tasks such as agriculture techniques, grown harvesting, product processing, and packaging among others.

Other trainings includes PINFOR, PINPEP, protected areas management, Law Enforcement, monitoring and conflict resolution; the Geographic or thematic coordinator is responsible on detecting training need and opportunities and the Regional Director for external support in this trainings.

Finally trainings on Human Rights, Sexual and Reproductive Health and Rights, and other issues covering community rights and empowerment, will be organized by the Social and Gender Director. The project is constantly supporting midwives and health promotors and volunteers in related trainings.

The next table shows partner institutions and organizations that are previously identified to support the implementation of the training programs, other institutions can be included along the project life:

|  |  |
| --- | --- |
| **External organizations supporting training programs** | |
| INTECAP | “Instituto Tecnologico de Capacitacion” supports Agroforestry Systems and Ecotourism |
| AGEXPORT | “Asociación de Exportadores de Guatemala” supports Agroforestry Systems and Ecotourism |
| AGREQUIMA | Agrequima it’s an technical company that’s specializes in Best Practice implementation |
| INAB | "Instituto Nacional de Bosques”with support in agroforestry and forestry |
| INGUAT | “Instituto Guatemalteco de Turismo” supports Ecotourism |
| MSPAS | “Ministerio de Salud Pública y Asistencia Social” Health and Sexual and Reproductive Health |
| OSAR | “Observatorio de Salud Sexual y Reproductiva”Sexual and Reproductive Health and Rights |
| AME Guatemala | “Asociación Movimiento por la Equidad” Fundamental Human Rights, Sexual and Reproductive Health and Rights, Gender |

Table 13. External organizations supporting training programs.

2.4.2 Equal Opportunities for Employment

FUNDAECO requires specialist services in natural resources management, agriculture, forestry, social work, laws and politics, communications, nurses, biology, accounting, administration and finance, educators, rangers, farmers and field workers.

**High value for work stability:**

FUNDAECO maintains a low staff turnover rate; this policy values the interest towards nature and communities, experience, and dedication of the staff. In the case of the REDD+ Project for Caribbean Guatemala, FUNDAECO will retain existing staff in order to harness already acquired experience in: REDD + topic; the knowledge of the project area, and its social and natural conditions and dynamics; and the contacts with local communities and stakeholders. The staff hired by the project are local people with important experience in the area. Additional staff will be hired for areas requiring professional profiles that currently are not counted within the institution.

**Hiring procedures:**

FUNDAECO procedures are stablished in section one of the institutional Manual for Policies, Rules and Procedures, see MANUAL DE POLITICAS NORMAS Y PROCEDIMIENTOS jul 2015.pdf. According to this manual when a new position or task is required, first opportunity is given to existing staff. The Technical Administrative Council or CTA “Consejo Tecnico Administrativo” will report internally in the institution for new opportunities or vacancies by inner communication channels. Employees may submit their aspirations to be reclassified or promoted, once the profiles required have been published and their skills are commensurate with the position available.

When the skills are not founded inside the organization the position is announced trough different channels, such local radios, local newspapers, universities, web page etc.; the resumes will be evaluated following the procedures in the manual.

Hiring additional plant personnel such as consultants, or other professionals, specialized personnel is carried out within the framework of each specific project and according to the Terms of Reference required by the project, which include term, functions, products, fees, or other services.

**Induction process:**

All new and promoted employees, prior to assuming the fulfillment of their responsibilities, must receive from the Administrative Director or administrative assistants an induction on institutional manuals, FUNDAECO mission and vision, policies and other administrative documentation. Procedures aspects, information on monthly salary, delivery of relevant documents and signing of pertinent documentation. The immediate superior will directly give induction on the position tasks.

2.4.2 Worker’s Rights

The rights and obligations of workers are observed and enforced in accordance with Labor Code of Guatemala. These provisions are developed in FUNDAECOs manual of Internal Working Regulation and Procedure which was presented to the Ministry of Labor and Social Security for review and approval by a representative of the employer and two representatives of the workers, having been approved by the Ministry through the 179-2002 resolution, regulating the conditions of working hours, salary payments, holidays, requests and claims, obligations of the employer and employees, safety and health.

In compliance with the established regulations, this manual has to be available to workers at each office in printed form and in digital form. Besides this regulations when hired, the employee receives the institutional Code of Ethics and Values, which contained general and mission related values to be observed by our staff. More recently FUNDAECO has developed it Policy on Gender, No Discrimination and Violations against Fundamental Human Rights. All manual and regulations are to be implemented under the concepts and criteria stated along this Policy.

* On Non-Discrimination:

Every employee has the right not to be discriminated directly or indirectly for employment, or once employed, for reasons of gender, marital status, age within the law limits, racial or ethnic origin, social status, religion or belief, political ideas, sexual orientation, membership or not to a labor union.

* Employment benefits to personal:
* All employees are entitled to benefits prescribed by Guatemalans labor laws. The Technical Administrative Council (CTA) can define additional benefits, if required.
* FUNDAECO recognized as institutional policy the payment of a universal indemnity after 4 years of working with the institution when the employee has accumulated a favorable record of conduct and performance, the termination is on friendly terms and under no circumstances for reasons of serious faults against the rules of the institution or the existing labor law in Guatemala. If any employee resigns before the four years, it will be the Technical Administrative Council (CTA), who will assess whether or not the universal compensation takes place.
* Health Suspension by the Guatemalan institute of Social Security: Any worker can be temporally suspended from his job duties because of illness or accident, remuneration shall be in accordance with the provisions of the organic law of IGSS. A copy of the suspension certificate is sent to the employee's personnel file and payroll manager.
* Life and health insurance.
* FUNDAECO recognized the concept of a "performance bonus", up to a maximum of 25% of the base salary. For the worker to enjoy this benefit, it must be stated in the employment contract.
* Field expenses: allocation of funds will be made for personnel who need to travel outside their workplace as part of their job functions.

2.4.2 Worker Safety

FUNDAECO in fulfilment of Guatemalan law is registered with a patronal number, and compliance with the established benefits covering registered employees with the following social security programs:

* Common disease
* Accidents
* Maternity
* Age Disability

In addition to the benefits of the Guatemalan Social Security Institute, FUNDAECO in a common agreement with employees, hires a collective life and medical expenses insurance coverage. The medical expense coverage can be extended at the request of the employee to his family.

Within the regulations of the Guatemalan Social Security Institute conducted in coordination with the Ministry of Labor, FUNDAECO applies the following regulations:

* The Regulation on Health and Safety at Work, contained in the Government Agreement No. 229-2014 and its amendments contained in No.33-2016, which contains regulations regarding work environment, vehicle driving, handling and operation of machinery, infrastructure and facilities, hazardous substances, infectious diseases and first aid kits.
* Regulation on Accident Protection, published by the Guatemalan Social Security Institute board (Agreement no. 1002) that regulates issues relating to accident prevention and first aid measures.

Specific procedures related to FUNDAECO field work are included in the institutional Policy and Plan for Health and Safety (see reglamento laboral.pdf). FUNDAECO has also adopted the Security and Risk Manual at the Herpetarium from the Guadalajara Zoo Herpetarium, to manage its local herpetarium at Cerro San Gil, this herpetarium is registered at CONAP, and personnel has been trained by the Director of the National History Museum herpetarium (see manual de serpentarios.pdf).

The body responsible for ensuring compliance with all laws and regulations is the Technical Administrative Council or CTA, and at the same time operates as the Health and Safety Committee supplying security protocols and issued several tools for each employee, among some of this tools we can mention the instructive for Safety on Emergency Situations, instructional use of water and land vehicles; Chapter XIII of the Internal Work Regulations containing the Hygiene and Safety at Work guidelines.

## 2.5 Stakeholders (G3)

2.5 Stakeholder Engagement Structure

FUNDAECO has worked in the project region for over twenty years, and during this period, it has designed, promoted and supported different mechanisms and structures that ensure the active participation of all stakeholders – particularly communities- in consultation, decision making, and implementation of field activities across the project region. These formal structures – established both under the Development Councils Legislation, and the Protected Areas Legislation- will ensure the active engagement and participation of all stakeholders throughout the project implementation period. Communities in particular, will participate not only as Forest owners, but also as members of protected area management bodies, as project beneficiaries and as direct participants in the implementation of project activities.

From the local to the regional level, the following structures have been involved in project consultation and planning, and will also ensure project implementation, follow-up and oversight:

* **COCODEs (Comités Comunitarios de Desarrollo),** or Community Development Councils, are the basic unit for consultation, planning and implementation; The General Assembly of each COCODE – in which all community members (both men and women) participate- elects a Board of Directors and a President, who in turn represents his/her community in regional bodies.
* **Local Regional Indigenous and Community Associations and Protected Area Community Assemblies (Asambleas o Consejos Intercomunitarios de Áreas Protegidas):** Local Associations representing a group of communities, usually associated with the management of land and natural resources in a particular region or protected area, are also an important mechanism for community stakeholders engagement. The Associations Aj Rihonel Re li Ch´och in Río Sarstún, Aj Ilol Quiché in Chocón Nacional, San Antonio Aj Awinel in Jalauté, Asociación Cerro 1019 in Sierra Santa Cruz, have been key partners in all FPIC processes, and will also participate in the protection and community development activities throughout project implementation.

These Associations also represent the communities within a particular protected area, and are consulted and engaged in all field activities and key management decisions, including the consultation and implementation of the REDD+ project. These participatory bodies will be strengthened in each protected area during project implementation.

* **Protected Area Executive Councils or Boards of Directors (“Consejos Ejecutivos Locales de Áreas Protegidas”)** will also be a key participatory body for the active engagement of all stakeholders in project implementation. These Councils, which preside over the management of specific protected area, integrate key stakeholders at the local level, including the National Council of Protected Areas, Municipalities, Private Landowners and/or Private Sector representatives, Governor, relevant government agencies, and Local Community Representatives.
* **COMUDEs (Comités Municipales de Desarrollo)** or Municipal Development Councils, are participatory bodies at the Municipal level; Presided by local Mayors, they also incorpórate private landowners, community representatives, local representatives of Government Agencies, and NGOs. The REDD Project has been extensively socialized with COMUDEs, as a key administrative body that ensures wide engagement of all stakeholders in a particular Municipality.
* **Consejo Departamental de Desarrollo (CODEDE), the Development Council for the Department of Izabal,** presided by the local Governor, is the regional body that ensures the engagement of stakeholders at the regional level. The REDD+ project has been submitted for its review during the FPIC process, and the CODEDE will ensure regional level support to project implementation.

Additionally, a wide array of local producer associations, women associations, and other local organized groups have been consulted during the FPIC process, and will be actively involved in project implementation (Please refer to REDD Socialization Plan for a full list of partner community associations).

These different participatory governance structures have been engaged during project preparation and consultation, and will be actively engaged in project implementation by FUNDAECO´s local field teams, deployed across the region in five field offices and three Field Stations. In each office, a Technical Coordinator and a team of environmental educators, social workers, agronomists, naturalists, and field extensionists will ensure a close, intensive and active engagement of communities, forest owners, agroforestry producers, women and youth in the implementation of all project activities. All project implementation activities will be closely coordinated in each level with the appropriate participatory bodies, and a Regional Project Coordinator will ensure regional coordination with the Governor of Izabal, and the Regional Coordinator of the National Council of Protected Areas. FUNDAECO, as project proponent, will ensure administrative support, operational planning, oversight, coordination with all relevant partners and stakeholders for project activities implementation, and Auditing and MRV requirements for the project.

Additionally, a **“General Assembly of Carbon Rights Holders” (“Asamblea General de Tenedores de Derechos de Carbono”)** will be established, in which all landowners within the project area will participate - including community forest owners, private forest owners, and institutional forest owners-. This Assembly of Forest Owners will meet at least once a year, and FUNDAECO will report on project implementation, VCU generation, Sales and Income, and will transparently report on benefit share allocations, as established in the Benefit Share structure in the Carbon Contracts for the Project.

In order to ensure the active integration of Indigenous Peoples, during the consultation period FUNDAECO has worked closely with local Q´eqchí Associations Aj Rihonel Re li Ch´och in Río Sarstún, Aj Ilol Quiché in Chocón Nacional and San Antonio Aj Awinel in Jalauté, and these associations will also be key project implementation partners. Over 72 Q´eqchí Village COCODES participated in the FPIC process, and meetings with women focal groups were organized to guarantee women participation, - representing 13 Queqchi associations within the Project Region-.

During the consultation phase, FUNDAECO´s team of Social workers, Nurses, and Health workers made a focused effort in order to ensure the participation of women and youth in project presentations and consultations, using local Q´eqchí speakers. Using FUNDAECO´s network of “Women Clinics” across the region, over 821 women participated directly in consultation activities. This consultation process will continue during project implementation in order to ensure a gender perspective in follow-up to project activities. This network will also foster the active engagement of women in project activities, particularly in access to sexual and reproductive health services, education and training opportunities, alternative income generating activities (handicrafts and others), and participation in protected areas governance bodies.

A Gender and Non Discrimination Policy will be enacted, socialized, and implemented - based on FUNDAECO´s Code of Ethics- in order to ensure compliance with CCB Standards and in order to avoid discrimination of harassment based on gender, race, religion, sexual orientation and other habits.

Also, FUNDAECO will carry out periodic communications in order to inform on project activities, implementation issues and relevant information for landowners participating in the project and other relevant stakeholders.

2.5 Stakeholder Identification

Through its five regional offices in Izabal and the knowledge and experience of their field technicians, FUNDAECO has identified the key actors (stakeholders) of the REDD+ project.

The Izabal regional offices held identification activities and meetings in which the following key actors were identified:

* Community Development Councils (COCODES) and their Assemblies
* Local Regional Indigenous and Community Associations and Protected Area Community Assemblies (Asambleas o Consejos Intercomunitarios de Áreas Protegidas)
* Protected Area Executive Councils or Boards of Directors (“Consejos Ejecutivos Locales de Áreas Protegidas”)
* Departmental and Municipal Coordination Instances: CODEDE and COMUDES
* Farmers associations
* Local leaders

Please consult Document “*Plan de Comunicacion Final.docx*” for more details of the stakeholders identification.

2.5 Stakeholder Consultation

During the 25 years of working in Izabal, FUNDAECO has succeeded in maintaining a strong relationship with several groups and local associations involved in all the programs implemented in the region. Through this connection efforts FUNDAECO has acknowledged the needs of the local communities. In addition, the Deforestation Agents and Drivers Analysis, developed for the project, has identified the activities of community interest to tackle drivers and threats related to deforestation, including those referred to community needs. (See document “*Informe de analisis de causas y agentes de deforestación.pdf*” and “*Using exploratory factor analysis to explore the drivers of deforestation in the Sarstun-Motagua region of Guatemala.pdf*”). According to both analysis, communities identified lack of access to economic opportunities and lack of employment opportunities, between the main factors for deforestation in the project region. In response, the project includes direct actions to support local communities to cover these needs.

FUNDAECO has implemented different actions such as meetings and assemblies with the organized and unorganized groups, individuals, Departmental Development Councils (CODEDE), Municipal Development Councils (COMUDES), Community Development Councils (COCODES), Women Rights Groups and governmental institutions. These community structures have been used to implement the consultation processes of the project. (See point 3.7 of the document).

The “Social and Gender Participation Assistants” (APSG in Spanish) are the social figure responsible of strengthen the capacities of the organized community groups and accompany the conformation of community groups when needed. For the project design, APSG had helped to identify possible beneficiaries and to socialize the project. (See document “*Base socioeconomica.pdf*”).

2.5 Public Comment Period

The PDD will be published in English at CCB website at the same time that FUNDAECO will make public the project Implementation Plan in Spanish. FUNDAECO will organize socialization activities with associations and community groups, in order to ensure understanding and obtain comments. When needed a Q’eqchi’ translator will participate to guarantee comprehension of Q’eqchi’ communities. All comments will be centralized by FUNDAECO and will presented to CCB and project validator.

2.5 Stakeholder Conflicts and Grievances

Based on its past experience in the Project Region, FUNDAECO will strengthen and expand its existing procedures to ensure access to information, response to complaints and grievances, and conflict prevention and resolution -from the community to the regional level-.

Reception, registration, response, resolution and/or referral of grievances will be executed at different geographical and organizational levels, according to their gravity and urgency, ranging from requests of access to information, operational and administrative complaints, grievances and disputes over rights of access, collective conflicts, and potential violations of Legislation and Fundamental Rights. Different and specific channels of communication and complaint will be used, based on current practices, in order to ensure that all stakeholders, particularly vulnerable populations – such as indigenous women- have rapid access to complaints and grievance redress.

At the community level, the Boards of Directors of Local Community Councils (COCODEs) will act as Grievance and Mediation Bodies, directly receiving operational complaints from community farmers and individual project participants, and channeling them directly to Local Agroforestry Technicians assigned to their villages. Also, at the community level, a separate and specific channel of communication will be established in order to channel requests for information and complaints from local indigenous women, through the network of Social Workers and Nurses assigned to their village, using our “Women Clinics” as “safe spaces” for the expression of concerns and complaints by women and youth. In the past, this network has proven an effective mechanism to receive insightful and honest opinions and complaints that may go unnoticed by male technicians and farmers. At this level, requests for information or complaints related to administrative and operational issues will be addressed within one week.

At the protected area level Presidents of Regional Community Associations and Presidents of COCODEs will directly channel their requests for information and complaints to Protected Area Coordinators.

If the protected area coordinator cannot solve the complaint, Presidents of Regional Community Associations, will directly address the Regional Coordinating Office of the Project, located in Santo Tomas de Castilla. At this level, the Regional Coordinator and FUNDAECO´s Gender and Social Participation Coordinator will receive and register all complaints, and will follow-up on appropriate responses and resolutions to grievances and disputes over rights of access and potential collective conflicts.

If disputes over rights of access and potential collective conflicts cannot be solved by regional staff, three official instances for conflict Mediation that have proven effective in the past will be used: The Local Representative of the Human Righs Ombudsman (“Procuraduría General de Derechos Humanos”); The Local Representative of the Presidential Commission on Human Rights (COPREDEH); ant the Regional Inter-Institutional Roundtable for the Resolution of Agrarian Conflicts. The Governor Office will be used as a Regional Mediation and Arbitration body, particularly in cases were collective conflicts might arise. Complaints related to inequity of resource allocation and/or distribution of benefits will be addressed at the regional level within two weeks.

In the case of conflicts related to lands, project ownership, and other collective rights, claims will be firstly addressed by the Regional Coordinating Office, and will be presented for mediation by regional official bodies if needed, and responses and appropriate actions shall be taken within a month.

If regional staff and regional implementation bodies of the project are themselves subjects of complaints and grievances, or in the cases of grave conflicts or complaints, the Project Directive Committee and FUNDAECO´s Ethics Committee will intervene, and will take appropriate actions in order to correct and redress complaints.

If grievances cannot be resolved through these internal bodies, mediation and arbitration will be referred to Judicial Arbitration in a Court of Law, and to competent courts of relevant jurisdiction, particularly in the case of violations of Legislation and Fundamental Rights, without prejudice to a party´s ability to submit the Grievance to a competent superior national or international body.

Requests for Information, Complaints and Grievances will be received and channeled through the following channels:

* Direct interviews with local Agroforestry Technicians and Social Workers
* Direct Interviews with Protected Area level Coordinators
* Direct interviews with the Regional Project Coordinator and the Regional Gender and Social Participation Coordinator
* Direct Calls to Project Staff
* Direct Participation in Meetings of Protected Area Community Assemblies
* Direct Participation in Meetings of COCODEs, and COMUDES
* Direct Participation in Protected Area Executive Councils
* All institutional communication channels
* Other new channels can include: SMS to project staff, anonymous complaints through a specific Telephone Number and Complaints Box located in each Local Municipality within the Project Region.

A registry of complaints, responses and referrals will be kept at the Regional Level by the Gender and Social Participation Direction, at the National Level by the Project Directive Committee, and at the Institutional Level by FUNDAECO´s Ethics Committee.

In order to improve the Project´s performance as related to proper and effective response to complaints and grievances, the following mechanisms will be implemented:

* Quarterly Monitoring of requests for information, complaints and grievances, in order to identify areas if improvement and correction of procedures and/or operational methodologies
* Annual stakeholder satisfaction surveys, to be carried out by the Gender and Social Participation Direction of FUNDAECO,
* Annual Risk Assessment and identification of Potential Conflicts, and development of a Project Contingency Plan, in order to address issues that might develop into collective conflicts or grievances.

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