AMIGOS DE CALAKMUL COMMUNITY CONSERVATION FORESTRY PROJECT

Project title	Amigos de Calakmul Community Conservation Forestry Project
Project ID	3479
Crediting period	19 May, 2019 to 18 May 2072
Project lifetime	19 May, 2019 to 18 May 2072
(CCB) GHG accounting period	19 May, 2019 to 18 May 2072 (53 years)
Original date of issue	19/07/2022
Most recent date of issue	TBD
Version	V7-0
VCS Standard version	VCS 4.7
CCB Standards version	CCB 3.1
Project location	Calakmul Biosphere Reserve, Yucatan, Campeche, Quintana Roo, Mexico
Project proponent(s)	Terra Global Capital, LLC Leslie Durschinger leslie.durschinger@terraglobalcapital +1 415 400 4491
Validation/verification body	Earthood UK Limited info@earthood.in; kaviraj.singh@earthood +91 124 4204599 +91 9871747771

History of CCB status	Since there are no issuance date(s) of earlier validation statements or dates of previous attempts at verification available, this issue is not applicable.
Gold Level criteria	Climate, Community and Biodiversity Gold Level Criteria*:*
Expected verification schedule	To be determined
Prepared by	Terra Global Capital, LLC

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1 SUMMARY OF PROJECT BENEFITS

1.1 Unique Project Benefits

Anticipated advantages of the project, which are not accounted for in the standardized benefit metrics presented in Table 1, may be detailed in progress updates within project monitoring reports. These benefits should be aligned with the principal outcomes or impacts specified in the project's theory of change (refer to Figure 1)

Table 1. Outcome or Impact Estimated by the End of Project Lifetime

Outcome or impact estimated by the end of project lifetime	Section reference
1) Climate Benefits (adaption and mitigation)	3.4
2) Increase income streams with an inclusive perspective to enhance livelihoods	4.2
3) Increase wildlife conservation in the Project Area and Calakmul Biosphere Reserve	5.2

1.2 Standardized Benefit Metrics

Table 2 displays the metrics representing the standardized benefits targeted for accomplishment throughout the duration of the project.

Table 2. Standardized Benefit Metrics

Category	Metric	Estimated by the end of project lifetime	Section reference
GHG emission reductions or carbon dioxide removals	Net estimated removals in the project area, measured against the without-project scenario	The net estimated removals for the crediting period are 14,230,284 tCO_2e.	3
	Net estimated reductions in the project area, measured against the without-project scenario	The net estimated reductions for the crediting period are 16,757,494 tCO_2e.	3

Category	Metric	Estimated by the end of project lifetime	Section reference
Forest[1] cover	For REDD[2] projects: Estimated number of hectares of reduced forest loss in the project area measured against the without-project scenario	210,000 hectares will be conserved above the baseline (Phase 1-92,076 hectares and Phase 2- 117,924 hectares	3
	For ARR[3] projects: Estimated number of hectares of forest cover increased in the project area measured against the without-project scenario	Not applicable because this is not a ARR Project	3
Improved land management	Number of hectares of existing production forest land in which IFM[4] practices are expected to occur as a result of project activities, measured against the without-project scenario	210,000 hectares of forest land will be protected from logging	2.1.1
	Number of hectares of non-forest land in which improved land management practices are expected to occur as a result of project activities, measured against the without-project scenario	N/A - all areas in the Project will be forest	3
Training	Total number of community members who are expected to have improved skills and/or knowledge resulting from training provided as part of project activities	80% of landowner (ejidatarios) expected to increase knowledge as a result of the Project	4
	Number of female community members who are expected to have improved skills and/or knowledge resulting from training as part of project activities	40% of women landowner (ejidatarias) or female family members of landowner (ejidatarios) with improved skills	4

[1] Land with woody vegetation that meets an internationally accepted definition (e.g., UNFCCC, FAO, or IPCC) of what constitutes a forest, which includes threshold parameters, such as minimum forest area, tree height and level of crown cover, and may include mature, secondary, degraded and wetland forests (VCS Program Definitions)

[2] Reduced emissions from deforestation and forest degradation (REDD) - Activities that reduce GHG emissions by slowing or stopping conversion of forests to non-forest land and/or reduce the degradation of forest land where forest biomass is lost (VCS Program Definitions)

[3] Afforestation, reforestation and revegetation (ARR) - Activities that increase carbon stocks in woody biomass (and in some cases soils) by establishing, increasing and/or restoring vegetative cover through the planting, sowing and/or human-assisted natural regeneration of woody vegetation (VCS Program Definitions)

[4] Improved forest management (IFM) - Activities that change forest management practices and increase carbon stock on forest lands managed for wood products such as saw timber, pulpwood, and fuelwood (VCS Program Definitions)

Category	Metric	Estimated by the end of project lifetime	Section reference
Employment	Total number of people expected to be employed in project activities[5], expressed as number of full-time employees[6]	32 people expected to be employed in project activities (4-Project management, 28-project activities-patrolling)	4
	Number of women expected to be employed as a result of project activities, expressed as number of full-time employees	10% of women landowner (ejidatarias) or female family members of landowner (ejidatarios) expected to be employed	4
Livelihoods	Total number of people expected to have improved livelihoods[7] or income generated as a result of project activities	100% of landowners (ejidatarios/as) are expected to have improved livelihoods	4.2
	Number of women expected to have improved livelihoods or income generated as a result of project activities	100% of women landowner (ejidatarias) expected to have improved livelihoods or income generated	4
Health	Total number of people for whom health services are expected to improve as a result of project activities, measured against the without-project scenario	Not applicable because this project does not look for achievements in this category	
	Number of women for whom health services are expected to improve as a result of project activities, measured against the without-project scenario	Not applicable because this project does not look for achievements in this category	
Education	Total number of people for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario	Not applicable because this project does not look for achievements in this category	

[5] Employed in project activities means people directly working on project activities in return for compensation (financial or otherwise), including employees, contracted workers, sub-contracted workers and community members that are paid to carry out project-related work.

[6] Full time equivalency is calculated as the total number of hours worked (by full-time, part-time, temporary and/or seasonal staff) divided by the average number of hours worked in full-time jobs within the country, region or economic territory (adapted from the UN System of National Accounts (1993) paragraphs 17.14[15.102];[17.28])

[7] Livelihoods are the capabilities, assets (including material and social resources) and activities required for a means of living (Krantz, Lasse, 2001. The Sustainable Livelihood Approach to Poverty Reduction. SIDA). Livelihood benefits may include benefits reported in the Employment metrics of this table.

Category	Metric	Estimated by the end of project lifetime	Section reference
	Number of women and girls for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario	Not applicable because this project does not look for achievements in this category	
Water	Total number of people who are expected to experience increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	Not applicable because this project does not look for achievements in this category	
	Number of women who are expected to experience increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	Not applicable because this project does not look for achievements in this category	
Well-being	Total number of community members whose well-being[8] is expected to improve as a result of project activities	80% of landowner (ejidatarios) are expected to improve their well-being	4.2.3
	Number of women whose well-being is expected to improve as a result of project activities	50% women landowner (ejidatarias) or female family members of landowners (ejidatarios) are expected to improve their well-being	4.2.3
Biodiversity conservation	Expected change in the number of hectares managed significantly better by the project for biodiversity conservation[9], measured against the without-project scenario	210,000 hectares managed significantly better by the project for biodiversity conservation	5
	Expected number of globally Critically Endangered or Endangered species[10] benefiting from reduced threats as a result of project	3 species EN are expected to benefit by the project activities	5.2.3

[8] Well-being is people's experience of the quality of their lives. Well-being benefits may include benefits reported in other metrics of this table (e.g. Training, Employment, Livelihoods, Health, Education and Water), and may also include other benefits such as strengthened legal rights to resources, increased food security, conservation of access to areas of cultural significance, etc.

[9] Managed for biodiversity conservation in this context means areas where specific management measures are being implemented as a part of project activities with an objective of enhancing biodiversity conservation, e.g. enhancing the status of endangered species

[10] Per IUCN's Red List of Threatened Species

Category	Metric	Estimated by the end of project lifetime	Section reference
	activities[11], measured against the without-project scenario		

[11] In the absence of direct population or occupancy measures, measurement of reduced threats may be used as evidence of benefit

2 PROJECT DETAILS

2.1 Project Goals, Design and Long-Term Viability

2.1.1 Summary Description of the Project (VCS, 3.2, 3.6, 3.10, 3.11, 3.13, 3.14; CCB, G1.2)

The Amigos de Calakmul (ACAC) Community Forestry Project (ACAC Project) supports indigenous and rural landowner communities, Ejidos, who live in the zone of influence of the Calakmul Biosphere Reserve (CBR) and in the buffer zones of the CBR, on the Yucatán Peninsula in the states of Campeche, Quintana Roo and Yucatán to preserve their forests from logging. These Ejidos have rights to harvest timber in their Forest Extensions which are defined at the areas under which they have legally recognized tenure under the Mexican Agrarian Law. This legal logged results in the degradation of forests and destruction of habitats in this key biodiversity corridor in Central America. The ACAC Project provides conservation payments and supports other social projects that compensate Ejidos from not harvesting their forests or leasing them to commercial interests for harvesting. The Mexican NGO, Amigos de Calakmul A.C. (ACAC), has been working with Ejido communities in these areas for more than 15 years. This is a grouped project that allows qualifying Ejidos in the Project Area to join the Project if they meet the eligibility criteria specified in Section **Error! Reference source not found.**. By the 2nd verification period the Project targets 210,000 hectares of forest land will be protected from the degradation associated with logging. Phase 1 Ejidos include the Project Activity Instances totaling 92,076 hectares involving 9 Ejidos with Yohaltún and Pustunich being involved with the Project since 2019, the remaining seven ejidos, Manuel Crescencio Rejon, Xkanha, Chanchen, General Francisco Mujica, Chun Ek, Cancabchen and Felipe Angeles, joined the project in 2022.

The Ejido members living in the Project Area have very few livelihood options; the only development activity allowed by land-use regulations inside of Forest Extensions is logging. Over the last 10 years the Mexican Government has promoted community forestry to help Ejidos generate income from harvesting. More than 50% of Ejidos forest owners conduct some form of harvesting to sell round wood and processed logs. However, income derived from logging is often not adequate for subsistence and may be conducted poorly causing forest damage and low yielding poor quality wood products. Poverty often pressures the Ejidos to lease their land to timber companies or other illegally to agro-economic corporations who would convert forests. Most of the Selva Maya outside of the CBR has already been converted to a degraded landscape through agriculture, threatening the biological and cultural richness of this entire region.

To provide a viable income alternative to logging, ACAC has developed binding permanent conservation agreements that it signs with the Ejidos seeking to participate in conserving their forests. Once signed, these agreements commitment Ejidos to refrain from engaging in logging and other destructive activities. In return, the ACAC agreements ensure that Ejidos receive annual conservation payments and support for other livelihood projects (Table 3). However, the on-going success and scaling of ACAC's conservation work depends on the funding to maintain sufficient conservation payments to the Ejidos and ensure that the forest remains protected.

Table 3. Total and Average ERRs

Total Estimated ERRs [tCO2e]	30,987,778
No. of Crediting Years	53
Average Annual ERRs [tCO2e yr-1]	584,675

The CBR is home to more than 60,000 species of flora and fauna, 160 of which are endangered. Some 350 species of birds either inhabit or migrate through the CBR, which is 33% of all bird species in Mexico. Most famously, the CBR is home to 500 jaguars and is one of the only places in Central America large enough to maintain a viable jaguar population. Studies by the National Autonomous University of Mexico (UNAM) demonstrated the importance of the CBR and its zone of influence for jaguars and the risk that logging poses to this very important jaguar population (Ceballos, G., Zarza, H., Gonzales-Maya, J., de la Torre, J.A., et al., 2021)

The ACAC Community Forestry Project will ensure that the communities and the natural resources they govern will be the primary beneficiaries of the conservation payments through signed and legally binding conservation agreements. Incorporated into the project implementation is a special consideration to improve livelihoods and diversify income sources to mitigate the over extraction of forest resources. Providing financial incentives for conservation is a main objective of the Project for Ejidos and by utilizing participatory design methods to gather input from the communities on regional socio-economic goals it will increase long-term success of the Project. Involvement of the communities is essential to reaching goals of biodiversity conservation and generating a sustainable carbon revenue stream. Social and economic projects are related to exploring markets and value chains for Non-Timber Forest Products (NTFPs), as well as improving access to critical agricultural inputs to facilitate higher and more dependable yields of crops in existing agricultural areas. Along with these objectives, improving outcomes for women and their access to economic resources is incorporated into all aspects of the Project, such as including women in the direct management of the CBR and its biological resources. The Project will create a link between biodiversity conservation and human activities and will welcome input and feedback throughout the design and implementation process to make the project sustainable in the long term.

The project is not located within a jurisdiction covered by a jurisdictional REDD+ program.

2.1.2 Audit History (VCS, 4.1)

Audit type	Period	Program	Validation/verification body name	Number of years
Validation/ verification	2024	VCS + CCB	Earthhood	Five years

2.1.3 Sectoral Scope and Project Type (VCS, 3.2)

Sectoral scope	14: Agriculture, forestry, and other land use

AFOLU project category [12]	Improved Forest Management
Project activity type	Logged to Protected Forest

2.1.4 Project Eligibility (VCS, 3.1, 3.6, 3.8, 3.18, 4.1; CCB Program Rules, 4.2.4, 4.6.4)

The ACAC Project is eligible for participation in the VCS and CCB programs, its characteristics are aligned with the requirements outlined in the VCS 4.7 Standard and CCB 3.1 Standard:

1. Sectoral Scope and project type:

The ACAC Project falls under Sectoral Scope 14 of the VCS, which covers Agriculture, Forestry, and Other Land Use (AFOLU) projects. It specifically aligns with the AFOLU project category of Improved Forest Management, focusing on transitioning forest areas from logged to protected status.

2. Public Comment Period and Validation Report Submission:

The project will undergo a public comment period prior to engaging with the validation/verification body, ensuring stakeholder engagement and transparency.

Validation reports and validation statements were submitted within one year of the initiation of the public comment period, adhering to VCS Program requirements: The project started the public comment period on April 18th, 2024, and the opening meeting with VVB was on April 26th 2024

3. Compliance with Relevant Deadlines:

The project adheres to all relevant deadlines specified in the VCS and CCB Programs documentation, including pipeline listing, validation, and public comment period expiration. The closing date for the public comment period is on May 18th, 2024.

4. Methodology:

The ACAC Project utilizes the VM0010 methodology titled "Improved Forest Management: Conversion from Logged to Protected Forest" version 1.3. This methodology is eligible under the VCS Program, aligning with the project's objectives of transitioning logged forests to protected status.

5. Additional Eligibility Information:

The ACAC Project contributes significantly to biodiversity conservation, particularly in the Calakmul Biosphere Reserve (CBR), home to diverse flora and fauna, including endangered species like jaguars.

By providing conservation payments and supporting alternative livelihood projects, the project addresses socio-economic needs while mitigating forest degradation.

The project's approach emphasizes community involvement and gender inclusivity, aligning with the principles of sustainable development and social responsibility outlined in the VCS and CCB standards.

The project has a chosen crediting period from May 19, 2019, to May 18, 2072, spanning 53 years. This duration complies with VCS Program requirements outlined in Section 3.9 of the VCS Standard V 4.6, allowing for initial crediting periods ranging from 20 to 100 years, renewable up to four times.

[12] See Appendix 1 of the VCS Standard

2.1.5 Transfer Project Eligibility (VCS, 3.23, Appendix 2)

This is not a transfer project or a CPA seeking registration.

2.1.6 Project Design (VCS, 3.6)

Indicate if the project has been designed as:

☐ Single location or installation

☐ Multiple locations or project activity instances (but not a grouped project)

☒ Grouped project

2.1.6.1 Eligibility Criteria for Grouped Projects (VCS, 3.6; CCB, G1.14)

To be eligible as a new Project Activity Instance the following criteria must be met:

- Meet the applicability criteria of the Methodology VM0010 - Methodology for Improved Forest Management: Conversion from Logged to Protected Forest
- New area is within the Grouped Project Eligibility Area defined in Section 2.1.14.
- Have legal rights to harvest.
- Adopt similar project activities, including entering into a long-term legally binding conservation agreement ensures the halting of timber harvest to at least the end of the longevity period.
- Demonstrate additionality in a manner consistent with Section 3.1.5
- Defines a Project Zone Instance to meet the CCB requirements.

Areas may apply either a Historical Baseline Scenario or Common Practice Baseline, as defined in the methodology.

2.1.7 Project Proponent (VCS, 3.7; CCB, G1.1)

Organization name	Terra Global Capital, LLC
Contact person	Leslie Durschinger
Title	Founder and Managing Director - Proponent
Address	220 Montgomery Street, Suite 1109, San Francisco CA 94104 USA
Telephone	+1 415 400 4491
Email	Info@terraglobalcapital.com

2.1.8 Other Entities Involved in the Project

Organization name	Amigos de Calakmul, A.C. (ACAC)

Role in the project	Implementing partner
Contact person	Dr. Gerardo Ceballos
Title	Chief Scientist and ACAC Founder – Implementing Partner
Address	Privada Corralitos 7, Col. 14 de Diciembre, Toluca, Mex. 50100, México
Telephone	(52) 722 2642361
Email	ceballos.gerardo58@gmail.com

2.1.9 Project Ownership (VCS, 3.2, 3.7, 3.10; CCB, G5.8)

Project ownership is supported by the laws that grant Ejidos tenure over their Forest Extensions and rights to manage the natural resources that will be managed to generate emissions reductions (See Section **Error! Reference source not found.**). The Ejidos have the legal right to control and operate the project activities, which is logging (under the baseline condition) and protecting (under the project).

The Ejidos, through their legal rights to carbon, demonstrate Project Proof of Right under a statutory, property or contractual right in the land, vegetation or conservational or management process that generates GHG emission reductions and/or removals. Through the execution of conservation agreements, they grant an enforceable and irrevocable agreement with ACAC to act as the Implementing Partner and that the carbon from the project may only be marked by Terra Global. In addition, ACAC and Terra Global execute an Agreement defining the roles, rights, and responsibilities as Project Proponent to develop the Project. Through the conservation agreement and trust agreement the participating Ejidos assign their rights to the Trust which transacts carbon and manages financial resources on behalf of the Ejidos.

2.1.10 Project Start Date (VCS, 3.8)

Project start date	19-May-2019
Justification	The ACAC project's start date was determined following a meeting on April 23, 2019, between Amigos de Calakmul A.C. and the ejido authorities of Pustinish and Yohaltun. In this meeting, both parties agreed on project terms and benefits (payments for forest conservation). Amigos de Calakmul A.C. promptly followed up on these discussions, marking the start date of the project.

2.1.11 Benefits Assessment and Project Crediting Period (VCS, 3.9; CCB, G1.9)

Crediting period	19-May-2019 to 18-May-2072. The project's chosen 53-year crediting period complies with VCS Program requirements outlined in Section 3.9 of the VCS Standard V 4.6. This period aligns with AFOLU project guidelines, allowing for initial crediting periods ranging from 20 to 100 years, renewable up to four times. As the project falls under AFOLU and aims for carbon dioxide removals,

	the selected timeframe adheres to program regulations. Additionally, the project has a robust management plan as per VCS requirements.
Start date of first or fixed crediting period	19-May-2019 to 18-May-2072
CCB benefits assessment period	19-May-2019 to 18-May-2072

2.1.12 Differences in Assessment/Project Crediting Periods (CCB, G1.9)

There are no differences between these accounting periods.

2.1.13 Project Scale and Estimated Reductions or Removals (VCS, 3.10)

☐ < 300,000 tCO_2e/year (project)

☒ ≥ 300,000 tCO_2e/year (large project)

Table 4. Estimated annual GHG emission reductions or removals (Phase 1)

Calendar year of crediting period	Estimated reductions or removals (tCO2e)
19 May 2019 to 18 May 2020	116,675
19 May 2020 to 18 May 2021	122,854
19 May 2021 to 18 May 2022	129,034
19 May 2022 to 18 May 2023	361,549
19 May 2023 to 18 May 2024	376,041
19 May 2024 to 18 May 2025	390,532
19 May 2025 to 18 May 2026	405,024
19 May 2026 to 18 May 2027	419,515
19 May 2027 to 18 May 2028	434,006
19 May 2028 to 18 May 2029	448,498
19 May 2029 to 18 May 2030	462,989
19 May 2030 to 18 May 2031	477,481
19 May 2031 to 18 May 2032	491,972
19 May 2032 to 18 May 2033	506,463
19 May 2033 to 18 May 2034	520,955
19 May 2034 to 18 May 2035	535,446
19 May 2035 to 18 May 2036	549,938
19 May 2036 to 18 May 2037	564,429
19 May 2037 to 18 May 2038	578,921
19 May 2038 to 18 May 2039	593,412

Calendar year of crediting period	Estimated reductions or removals (tCO2e)
19 May 2039 to 18 May 2040	607,903
19 May 2040 to 18 May 2041	622,395
19 May 2041 to 18 May 2042	636,886
19 May 2042 to 18 May 2043	651,378
19 May 2043 to 18 May 2044	665,869
19 May 2044 to 18 May 2045	674,181
19 May 2045 to 18 May 2046	682,493
19 May 2046 to 18 May 2047	690,805
19 May 2047 to 18 May 2048	690,805
19 May 2048 to 18 May 2049	690,805
19 May 2049 to 18 May 2050	690,805
19 May 2050 to 18 May 2051	690,805
19 May 2051 to 18 May 2052	690,805
19 May 2052 to 18 May 2053	690,805
19 May 2053 to 18 May 2054	690,805
19 May 2054 to 18 May 2055	690,805
19 May 2055 to 18 May 2056	690,805
19 May 2056 to 18 May 2057	690,805
19 May 2057 to 18 May 2058	690,805
19 May 2058 to 18 May 2059	690,805
19 May 2059 to 18 May 2060	690,805
19 May 2060 to 18 May 2061	690,805
19 May 2061 to 18 May 2062	690,805
19 May 2062 to 18 May 2063	690,805
19 May 2063 to 18 May 2064	690,805
19 May 2064 to 18 May 2065	690,805
19 May 2065 to 18 May 2066	690,805
19 May 2066 to 18 May 2067	690,805
19 May 2067 to 18 May 2068	690,805
19 May 2068 to 18 May 2069	690,805
19 May 2069 to 18 May 2070	690,805
19 May 2070 to 18 May 2071	690,805
19 May 2071 to 18 May 2072	690,805

Calendar year of crediting period	Estimated reductions or removals (tCO2e)
Total estimated ERRs during the first or fixed crediting period	30,987,778
Total number of years	53
Average annual ERRs	584,675

2.1.14 Physical Parameters (CCB, G1.3)

Location and Geographic Boundaries of the Project Area

The project is located within the State of Campeche and covers part of the Hopelchén and Champotón municipalities. Geographically, the coordinates that surround the multiple areas of the project are located between 23' 54.71" N, 90° 5' 13.56" W 19° at its most northwestern point, 19° 23' 56.62" N, 89° 8' 17.88 W" at its most northeastern point, at the coordinates 17° 48' 18" N, 89° 8' 17 .88" W on its southeastern side and at the coordinates 17° 48' 18.11" N, 90° 5' 13.48" W at its southwestern point (Map 1).

The first project activity instance is composed of the forest area within the following 9 Ejidos: Manuel Crescencio Rejón; Xkanha, Chunk Ek, Chanchen, Pustunich, Yohaltun, General Francisco J. Mujica, Felipe Angeles, and Cancabchen; Ejido land tenure figure is framed in the Mexican legislation in the Agrarian Law of 1992 in the Chapter III, Article 9, where a complete set of rules and regulations are available.

The forests of the Selva Maya, which includes the Calakmul Biosphere Reserve (CBR), are the largest tropical forest extent in Mexico and in Central America. The CBR comprises about 723,185 hectares, roughly one third of the 2.4 million hectares Selva Maya Rainforest that extends into Guatemala and Belize. The Maya Biosphere Reserve in the Petén Region of northern Guatemala, together with the Maya Forest of Belize and Calakmul Biosphere Reserve in Mexico represents one of the largest areas of tropical forest north of the Amazon and the northernmost tropical forest in the Western Hemisphere. The Selva Maya Forest is also the site of three contiguous UNESCO recognized biosphere reserves: the Maya Biosphere Reserve in Guatemala, Calakmul and Montes Azules Biosphere Reserves in the southern Mexico.

The Project Area is defined as the zone of influence of the Calakmul Biosphere Reserve (CBR) and in the Yucatán Peninsula in the states of Campeche, Quintana Roo and Yucatán. CBR is al also a Federal Protected Area, which includes core and buffer areas (See Map 2); In a Federal Natural Protected Area in Mexico, a "zona de amortiguamiento" (buffer zone) is an area surrounding the core protected area that serves to mitigate human activities' impact on the core zone.

It is typically subject to some conservation regulations but allows for more sustainable human activities as

Table 5 shows. The "zona núcleo" (core zone) is the innermost part of the protected area where conservation and preservation efforts are maximized. Human activities are usually highly restricted or prohibited in this zone to safeguard the natural environment and its biodiversity (Diario Oficial de la Federacion, 2023).

Map 1. Location of Grouped Project Eligibility Area and Project Activity Instance 1

The CBR is surrounded by protected natural areas like to Balam ku, Balan kin, and Balam Ka'ax, and three wildlife reserves which contain high and medium lowland forest, inundated savannas, caves and rocky habitats, lakes and lagoons, rivers and wetlands and remnant mangrove forests (

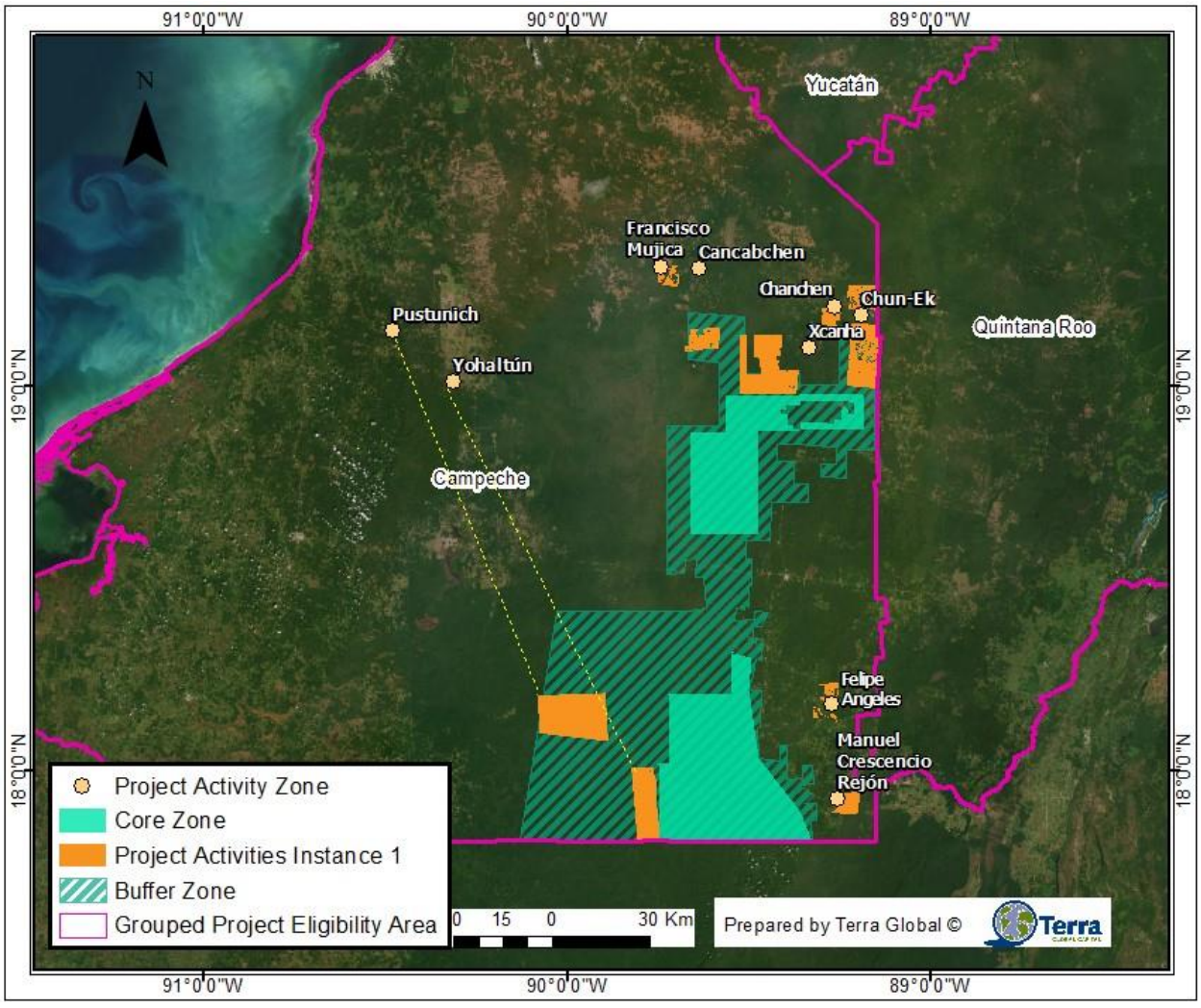
Table 5). The multiple use zone is composed of tropical forest dedicated to the sustainable harvest of date palms, chicle gum, all spice and timber (UNESCO MAB Biospheres Directory, 2011). Its varied vegetation provides shelter, food, and habitat for wildlife. The tropical forest contributes to the purification of air, the regulation of temperature, and the storage of water in the rainy season, thus somewhat regulating the otherwise problematic porous geology of the Yucatán Peninsula for its residents during the dry season. To create a large, protected corridor that Project Area includes the zone of influence around the CBR and connects with la Selva Maya Biosphere Reserve in Guatemala.

Table 5. Allowed activities within the CBR

Zone Type	Permitted activities	Not Permitted Activities
Core zone	• Preservation and conservation of ecosystems and their components • Environmental education • Non-extractive utilization of wildlife	• Polluting the environment • Altering water flows. • Hunting or exploiting wildlife. • Removing soil and vegetation • Introducing harmful exotic species • Handling hazardous materials. • Harming wildlife • Disturbing wildlife habitats. • Changing land use • Using explosives or fire • Mining-related activities • Modifying natural environments • Extracting construction materials
Buffer zone	• Scientific research and collection. • Environmental monitoring. • Environmental education. • Low-impact ecotourism. • Non-extractive use of wildlife. • Extractive use of wildlife. • Forest management (timber extraction). • Agriculture, livestock, and apiculture. • Ecosystem restoration and species reintroduction or repopulation. • Eradication or control of harmful exotic species.	• Disposing of waste and contaminants in soil or water. • Altering aquifers and flood-prone areas. • Discarding waste in unauthorized locations. • Introducing harmful species and genetically modified organisms. • Harming wildlife and their habitats. • Expanding agriculture and removing natural vegetation. • Modifying areas with historical, archaeological, and paleontological significance. • Engaging in mineral-related activities and waste disposal.

Zone Type	Permitted activities	Not Permitted Activities
	• Construction and maintenance of public or private infrastructure.	

Source: (Diario Oficial de la Federacion, 2023)



Map 2. Map of Calakmul Biosphere Reserve Boundary

The majority of the ejidos are in the CBR buffer zone and while many development activities are restricted within the Buffer Zone, sustainable logging is allowed (Map 2).

Topography (slope, aspect, geological features, etc.) (

In the CBR, the karstic development plateaus cover approximately 65% of the total surface, making them the dominant geomorphological unit. They evolve from a bulge in the limestone platform that reaches 380 meters above sea level. On this elevated surface, karst valleys develop above depressions of tectonic origin. The plateaus form a relief of hills and micro-valleys of varied morphology (Herrera, Hernandez, & Guzman, 2011). Considering the surface relief of the plateaus, these were classified into four types, according to the density and height of the hills and the size of the micro-valleys:

High Hills - The plateaus with the greatest relief have hills over 50 m high and are not very extensive in the reserve (4.3%). They are in the center and southeast of the reserve, near the border with the Republic of Guatemala and are in the highest altimetric range, between 300 and 390 meters above sea level (the highest altitude in the Yucatán peninsula). This has favored the formation of ravines between the plateaus that reach 100 m depth. These plateaus are distinguished by presenting symmetrical hills with rounded tops and steep slopes (Herrera, Hernandez, & Guzman, 2011).

Medium Hills - The plateaus with hills 20 to 50 m high are found at an altitude between 300 and 350 meters above sea level. Its relief is characterized by asymmetric hills and of lower density. The micro-valleys have a greater surface area than on the plateaus of the first type described previously. It is frequent the formation of sinkholes, also known as cenote, and uvalas, which are larger in size than a sinkhole. On the slopes, surface runoff or young ravines that are 20 m deep are formed. These types of plateaus are located to the southwest of the reserve and in the north (Herrera, Hernandez, & Guzman, 2011).

Low Hills - The plateaus whose hills are less than 20 m high have scattered hills, are between 200 and 300 meters above sea level, are asymmetrical and with hillsides with little slope that end in micro-valleys of greater amplitude. They are mainly distributed in the center and west of the reserve. The superficial hydrological system is more developed than in the previous plateau types, but without making well-integrated drains (Herrera, Hernandez, & Guzman, 2011).

Plateaus - The level plateaus are reduced to hillocks less than 20 m high, located between 200 and 300 meters above sea level. They have a marked northwest-southeast direction and lack surface runoff, so there is no evidence of river dissection and infiltration predominates. They can be found mainly the south side of the reserve (Herrera, Hernandez, & Guzman, 2011).

Plains - Areas in altitudes less than 100 meters above the sea level are part of the base level structural plain. This surface is characterized by being flat so that surface runoff does not develop, temporary and permanent flood surfaces prevail. The valleys of karst development have a flat bottom crossed by intermittent surface runoff. They are subject to periodic flooding during the rainy season, so they displace large volumes of surface and ground water by gravity. The river valleys (blind valleys) are incipient and are located between plateaus, they are distinguished by having a main surface drainage with seasonal tributaries that create faults and fractures (García Gil, Palacio Prieto, & Ortiz Pérez, 2002).

Soils

The CBR is composed of karstic limestone from the Mesozoic and Cenozoic eras with quick underground drainage, galleries, hollows, poljes and cenotes (sink holes). The weathering of limestone, as a result of dissolution, produces alkaline soils with no new clays and thus the formation of deeper soils is very slow. Water drains away very quickly which leads to a lack of water in the dry seasons, particularly when the forest is removed. As long as the vegetative cover is maintained, the organic matter content is very high, resulting in good soil fertility.

The area is plain with a maximum elevation of 400 msl. Soils in the CBR are mostly shallow, dominated by calcic rendzines, as well as by limestone-derived lithosols and vertisols (10 -30 cm). Below 200 msl, only on top of some extensive platforms (parts of plateaus) in alluvial sedimentation, vertisols and gleysols can be 0.60 to more than 1 m deep. Some soils between 200 and 400 msl in depressions and bog areas or wetlands near the aguadas are variants of calcium gleysols, sálicas, sodium and hísticas, containing more humidity and clay. Isolated patches of soil called akalché are deep and marshy, creating excellent sources of water for wildlife (more details are in (Boege, 1995) and in the (ACAC, 2007).

Precipitation and temperature

Garcia and March (1990) describe the atmosphere of the reserve, according to the modifications of Garcia to the Köppen system (

Table 6).

Table 6. Calakmul Biosphere Reserve: Climate classifications (García G., 1990)

Code	Climate Type	Coverage (%)
Aw2 (x')	Tropical wet and dry (higher humidity)	10%
(Aw1)	Tropical wet and dry	60%
Aw0	Tropical wet and dry (lower humidity)	30%

The average minimum temperature is around 22°C, ranging up to an average maximum of 30°C. The rainfall is very unstable, and with strong seasonal variations. It is larger in the Southern part of the Peninsula, especially during the winter. In an average year it reaches about 1,300 mm in the South and decreases to 1,000 mm in the North. Due to the incidence of hurricanes between August and October rainfall is erratic. The main months of the dry season are December through April.

Hydrology

The Calakmul region is located in three basins: Laguna de Terminos and Cerrada that belongs to the Grijalva Usumacinta hydrological region and the Chetumal Bay that belongs to the Yucatán east hydrological region. Due to the lithological conditions and the permeability of the soil, there are no significant surface currents. The water table is found at a depth that varies from 60 to 300m with a high content of gypsum, which makes much of the groundwater unsuitable for human consumption, irrigation and even animal consumption. The main water bodies are: Laguna de Noh, El Teniente and Alvarado, Río Escondido streams, El Desempeño, Las Pozas, Río Azul and Las Palmas (Herrera, Hernandez, & Guzman, 2011).

The Calakmul Municipality forms a vast recharge zone for underground aquifers forming the paleocene aquifer that feeds the coastal systems of Quintana Roo (Laguna Bacalar, Bahía de Chetumal, such as the Candelaria Basin and the Laguna de Terminos in Campeche). Due to lithological characteristics and of relief in the region there are no bodies of surface water since underground infiltration predominates, the only bodies of perennial water that could be mentioned are to the north the Valerian lagoon, which maintains a

small surface with a water mirror throughout the year and an extensive flood plain and to the south the Alvarado Lagoon from which water is extracted for the towns in the south of the municipality. The elevated topographic position of the municipality and its karst character make it an area for recharging underground aquifers (Herrera, Hernandez, & Guzman, 2011).

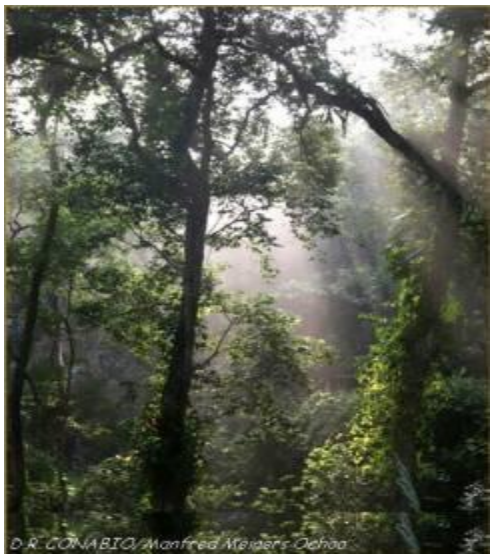


Image 1. Semi-deciduous rainforest

The hydrography of the surface in the CBR is determined by the amount and distribution of rainfall, evapotranspiration of vegetation, water bodies and soils, and surface drainage. The torrents of rain can be intense enough to temporarily transport water in surface current channels. Some of the low areas constitute permanent wetlands. The elevation of the water table is controlled by sea level and its distance from the coast. All the water that infiltrates the soil moves along a slope towards the sea, eventually contributing to the flow of springs (Carabias Lillo, Provencio, de la Maza Elvira, & Bernardo Rodríguez, 2000).

Native Vegetation

The vegetation is predominantly semi-deciduous rainforest (Image 1), with some deciduous forest and smaller swamp forest and other small wetland pockets.

Being the predominant semi-deciduous rainforest in the region we have chosen to use it as a reference for the assumptions of the calculations, the stratification of the project is shown in the climate section.

Semi-deciduous Rainforest

Semi-deciduous rainforests are characterized by tree communities that are less densely packed yet boast a rich and intricate composition (Image 2). These tree types represent the epitome of lush vegetation found in warm-humid climates, sharing numerous components and ecological conditions with tropical rainforests. Typically, this type of vegetation reaches heights of approximately 20 to 30 meters in some parts of the Yucatán Peninsula. In the forest area of the ejidos, which are forest lands governed and managed by the ejido but located away from the ejido population's place of residence, Ejido Pustunich presents this type of vegetation, covering approximately 65% of the total plant canopy. Semi-deciduous rainforests form

extensive stands across the area. In the case of the forest area within Ejido Yohaltún, around 35% of the forest cover comprises this type of vegetation, distributed consistently throughout the site in stands of moderate size.

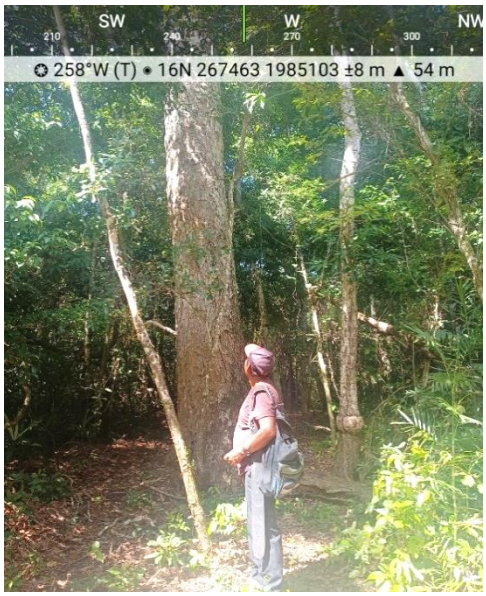


Image 2. Semi-Deciduous Forest.

Deciduous Forest

The deciduous vegetation is characterized by trees with heights of 4 to 15 m, most frequently 8 to 12 m (Image 3). Almost all its species shed their leaves during a long period of the year. Within this classification are the perennial, sub-perennial, deciduous, sub-deciduous, and thorny forests. This vegetation type constitutes the hydrological and thermal limit between the vegetation types of the warm-humid regions (Valera Hernández, 1999). This vegetation type covers approximately 5% of the forest areas of Ejido Pustunich and 15% of Yohaltún. Deciduous forest forms small stands scattered across the entire area with well-defined limits.

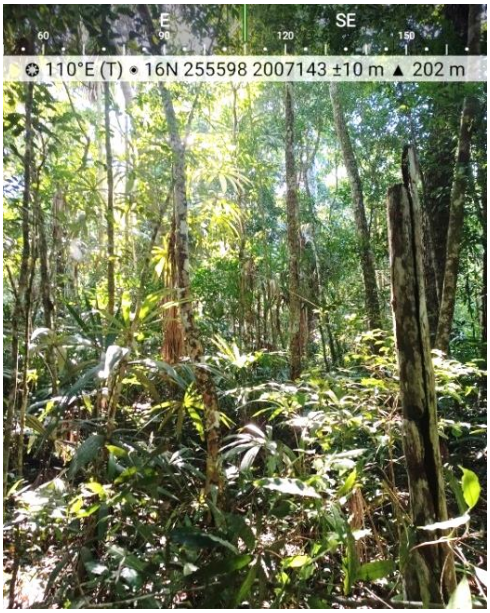


Image 3. Deciduous Forest.

Tropical Rainforest

These complex and dense communities of trees are considered as the dense vegetation type of tropical climates. The upper layer measures around 30 to 45 m, the two lower layers measure around 5 to 22 m. Commonly, not all components are evergreen as some lose their leaves during a short season in the driest part of the year, and this often coincides with the flowering time.

Very small areas with this type of vegetation occur in the south of Campeche State in the Forest Extension of Ejido Pustunich. The few that exist are found scattered throughout the central part of the site forming small patches, but at the same time present a compact definition at the borderline of their stands. The Forest Extension of Ejido Yohaltún presents this type of vegetation only in one stand of regular size near the center of the northern part of the property.

Swamp forest or *ak'alche*

Places with flat or small depressions, *ak'alche*, are bogs with poor drainage and a slope of less than 1% (Image 4). They develop vegetative associations of lowland broadleaf forests, which, in some cases, intermingle with the Montane Rainforest. Generally, due to the limited drainage of the soil, the trees have heights between 10 and 15 m.

This vegetation in lower lying areas, commonly known as *bajos*, may be associated with hydrophilic plants, palms, shrubs, herbs, and some epiphytes, because those areas usually flood during the rainy season. They represent important biodiversity areas due to the presence of diverse genera and the wide variety of flora and fauna. Small bodies of water located within the area are locally known as *aguadas*, some of which are persistent and accumulate water only during the rainy season. These small wetlands are distributed throughout the forest area of Ejido Pustunich, particularly in the East, and in the central area of Ejido Yohaltún.

Image 4. Swamp forest (ak'alche) with shallow pond (aguada) on the Yucatán peninsula

2.1.15 Social Parameters (VCS, 3.18; CCB, G1.3)

The Calakmul Biosphere Reserve (CBR), the largest forest reserve in Mexico is located southeast of the state of Campeche, in the municipality of Calakmul, bordered to the East by the state of Quintana Roo and the South with the Republic of Guatemala. It comprises a total of 723,185 hectares of protected land with some 52 'Ejidos', or local communities (UNESCO, 2018). Its population amounts to 23,740 inhabitants (12,248 men and 11,492 women), of whom a fifth (3,901) live within the limits of the CBR, a quarter (6,495 corresponds to the inhabitants who live around the Reserve, but whose forest areas are located within the Reserve, and a little more than half (13,390) live around it (Carabias Lillo, Provencio, de la Maza Elvira, & Bernardo Rodríguez, 2000).

The Calakmul Municipality was established in 1996, with an area of 1,680,580 hectares, of which 43% is territory of the CBR. The population is mainly settled in Ejidos and the rest in private ranches. The communities are rural, with Xpujil being the largest settlement with a population 6,864 of inhabitants, which also is the municipal seat (Map 3). Three thousand people live within the CBR, of which 10% are irregular settlements (Carabias Lillo, Provencio, de la Maza Elvira, & Bernardo Rodríguez, 2000).

In 2010, 44% of the population living in the municipality was born in another state, which shows that almost half of the population of the municipality has immigrated (11,863 people). The diversity of native languages of the state of Chiapas, Tabasco, and Veracruz, as well as the presence of population born in more than 25 different states are a sample of the strength of migration in the current social configuration of the municipality (Seplan, 2014).

The main access road to the reserve is the federal highway number 186 Escárcega-Chetumal (west-east). This road divides the northern core zone and the buffer zone. Another path that leads to the region is the one that starts from Hopelchén (north south) to the south of Xpujil. This road crosses the southern core area, but there are also secondary roads to get to Zoh Laguna and the archaeological site of Calakmul. Most of the Ejidos are connected by dirt roads (Carabias Lillo, Provencio, de la Maza Elvira, & Bernardo Rodríguez, 2000).

The road infrastructure in southern Campeche has been a determining factor in the distribution of human settlements and is currently the element that can have the greatest impact on the protected area. In all, at least 72 settlements have been detected and their population density is located to the west of the Reserve, along the X'pujil highway to the South.

The Ejidos have undergone a process of depopulation and consecutive repopulation. Once the Ejidos are depopulated, government agencies look for new occupants for the abandoned land. Small populations lack basic services such as electricity, drinking water, health services, education, and the possibility of communication (Carabias Lillo, Provencio, de la Maza Elvira, & Bernardo Rodríguez, 2000).

Map 3. Project Zone Instances for the Project.

Land-Use and Economic Activities

According to the Calakmul municipality's data, of its total extension of 1,680,580 hectares, 20,816 are destined to agricultural use, 77,014 to livestock, 1,574,389 to forestry and 8,361 to other uses (Carabias Lillo, Provencio, de la Maza Elvira, & Bernardo Rodríguez, 2000).

A variety of sources contribute to the economy of the Calakmul Biosphere Reserve (Image 5), however, most Ejido households rely on agriculture for food and economic security, with the main crops being a mix of subsistence crops such as maize (slash and burn corn cultivation, locally called "milpas" with 10,000

hectares), beans and cassava as well as commercial crops such as sorghum, pepper, chili and squash (H. Ayuntamiento de Calakmul , 2014) (Schmook, 2013) (Ybarra, 2012). Agricultural practices used are basic and traditional, the reason why soil fertility and productivity are reduced, thus farmers feel the need to expand to new areas, where they commonly practice slashing and burning forest areas.

Honey production is also an economic alternative in the northern and central areas of Calakmul, making the municipality the fourth largest producer of honey across the state. Honey production is complemented by improved forestry management practices, bringing more attention to conservation of these important natural resources (H. Ayuntamiento de Calakmul , 2014).

Cattle ranching has not spread widely in the area, mainly due to the challenges of water availability. However, in recent years in the northern section of the Reserve (in areas located between the settlements of Xcanha and Bel-ha) various small and medium-scale livestock projects have developed due to the proximity to a river and water availability (Carabias Lillo, Provencio, de la Maza Elvira, & Bernardo Rodríguez, 2000).

Hunting is the support of most of the inhabitants of the area, mainly for consumption and local commercialization. Hunters do not follow permitted seasons and/or limits of possession. Animals are captured with the use of traps or hunted with guns. As the population increases, hunters must penetrate further into the jungle, and hunting becomes a more common activity in both the northern and southern cores. jaguar has special demand and during hunting excursions, other species are captured for consumption or used as bait (Carabias Lillo, Provencio, de la Maza Elvira, & Bernardo Rodríguez, 2000).

Timber extraction this is one of the main extractive activities in the Calakmul region, which focuses on cedar, mahogany, guayacán, chicozapote and other species considered of lower commercial value such as soap, Chaká, Chakté, Chechén, Tzalam and Granadillo (Carabias Lillo, Provencio, de la Maza Elvira, & Bernardo Rodríguez, 2000). The implications of deforestation in the Calakmul Biosphere Reserve have global repercussions due to biodiversity loss and CO2 emissions (Rodriguez-Solorzano C. , 2014). Ensuing rates of deforestation propelled the region to the top of global lists of hotspots of tropical deforestation, and the region soon attracted conservation attention.

Image 5.Mayan ruins inside the Calakmul Biosphere Reserve

In Calakmul, groups of people working on tourism, traditional medicine, and honey production are examples of the great importance that the generation of benefits must provide incentives for conservation (Islebe, et al., 2015). The economic pressure and lack of income alternatives have pushed many Ejidos to consider environmentally destructive activities, such as selling or leasing their land to timber companies or other agribusiness companies, to make a living within the forest.

Alternative approaches to land use, and particularly tropical forest management, have been shaped by on-going work and conservation efforts in the region. Ecologically sophisticated forest management practices have provided a strong foundation for livelihood diversification and conservation efforts to work in unison (IUCN, 2016). The emphasis on the sociocultural and socioeconomic intersection has proven necessary for the sustainability of the ecosystems and agricultural production systems in the area. The detailed knowledge that the Ejido communities bring to conservation efforts makes them ideally placed to protect and monitor the biodiversity of the region, while improving economic stability.

Historic Conditions

Calakmul in Mayan means “the city of two adjacent pyramids.” The archaeologically important ruins from the Mayan era in the middle of the CBR extend over 27 square miles - the remains of a city that was the power base of Tikal’s rival dating back to AD 364 (Image 6). In the wake of timber extraction and then chicle production for chewing gum, the area’s population had slowly but steadily increased. In the mid-1990s, there was significant concern about the probable impact of migrant populations settling in what was quickly becoming a frontier agricultural zone, and there was a growing need to formulate appropriate policy responses (Ericson, 2004). Increasing levels of immigration posed a threat to the long-term economic, social, and ecological viability of the CBR. Ejidos produce and supply cattle, staple crops, raw forest materials, fodder, handicrafts, and services to the national and international markets. Most importantly however, is their critical position to govern, monitor, and maintain invaluable environmental services for biodiversity, carbon sequestration, and land-use practices (Schumacher, et al., 2019).

In the mid-nineteenth century, the Mexican Government began extensive redistribution projects by providing land grants to Ejidos to defuse land pressures in other parts of the country, and address concerns of national security along the country’s southern frontier (Chowdhury, 2006). The establishment of new

Ejidos from the 1960s onwards triggered an agrarian transformation of the forested landscape driven primarily by Ejidos, smallholder farmers with constitutionally recognized land rights (ACAC, 2007).

In general, agrarian policy within Mexico, government forest projects unrelated to forest legislation, and grassroots action have proved pivotal in defining the forestry sector than the law. With four new forestry laws between 1986 and 2003, the social and natural capital surrounding this sector has been instrumental in implementing the new laws and making forest protection and good governance a reality. The agrarian reform that has happened in Mexico has provided a detailed template for community governance and has served as an institutional platform for empowering community forestry management groups to find more sustainable management practices, and deliver organized social, economic, and ecological benefits to communities. Besides the forests being used for timber production, most of the communities use non-timber forest products and live in extreme poverty. Ejido communities that are engaged in commercial logging have found different levels of integration; with roughly 35% selling logs, 11% selling sawn wood and 54% selling standing trees with little effort in the logging activities (Bray, Antinori, & Torres-Rojo, 2006).

Starting in the mid-1980s, Mexican forest laws grew increasingly complex with the introduction of four new laws in a 17-year period. The instability in forest legislation was punctuated by important changes in 1992 to the Mexican Constitution, which regulated rural land tenure. Another major factor was the passing of the North American Free Trade Agreement (NAFTA) in 1992, which also affected forest communities.

- *The 1986 law within the Forestry Department to set an agenda to consolidate institutional changes to the forestry sector. The law was created by forestry reformers with little input from the communities themselves and 1) ended all private concessions and initiated a process of dismantling the parastatals and 2) required more detailed and environmental assessments and studies for logging permits and 3) authorized communities to directly employ their own foresters to create more detailed management plans and technical services.*

- *The New Agrarian Reform of 1992 aimed to provide tools to allow Ejidos to have their land surveyed and dissolved if voted by the majority of the Ejido. The two major objectives were to 1) encourage the option of dividing up Ejido landholdings and 2) encourage the concentration of land holdings by raising the maximize size and creating mechanisms for Ejido-private sector joint ventures. The New Agrarian Reform of 1992 very importantly regulated the disposition of forested lands by forbidding the dividing up of forests (Article 59), and if an Ejido did vote to dissolve, any forest land would become property of the Government of Mexico (Article 29). The new reforms would create incentives to deforest, divide, and sell, but this did not seem to happen. The 1992 Forest Law encouraged forest plantations and turning over forested lands to the market, privatized the technical services of forest management.*

- *The 1997 Law resulted in more public dialogue on forestry practices and land tenure within Mexico. The law regulated the management of natural forests and introduced more pathways of support and technical assistance for community forestry groups. This aimed to regulate and promote new incentives for plantation development.*

The 2003 Law created the National Forest Commission (CONAFOR), a federal level group that directly reports to the Secretary of the Environment and Natural Resources (SERARNAT). CONAFOR became responsible for the preservation of the country's forested lands, including all activities related to forestry except for forest regulation, where SEMARNAT still held responsibilities (Bray, Antinori, & Torres-Rojo, 2006). While forest laws in Mexico have been complex and focused more on top-down agendas rather than bottom-up participation, the laws have created important projects in developing the potential of the forestry sector through subsidies, training services, access to markets, and the creation of governance structures

in community forestry management groups. Legislation has provided an empowered space for communities to take more of the responsibility of the forest and its resources, paving the way for future investment and sustainable management of Mexico's forests.

Socio-Cultural Information

The communities living in and around the Project Activity Instance are diverse, with 42% of the population being indigenous. The Maya Yucatec represents 8.5% of the indigenous population. The remaining 91.5% of the indigenous people are not originally from Calakmul, but from Chiapas, including Cho'ol, Tzeltal, and Tsotsil.

Most of the population in the Project Activity Instance is a young age, with two-thirds being under 35, emphasizing the need for quality education projects. School attendance in 2015 showed an absence rate of 7%, increasing with age to an absence rate of 35% in middle levels and 88% in upper levels, showing a demand for labor and contribution to household income at an early age. There are 54 preschool-level schools, 61 primaries, with 31 being dedicated to indigenous education, and 26 secondary schools in the municipality (H. Ayuntamiento de Calakmul , 2014).

Image 6. Mayan ruins at the CBR

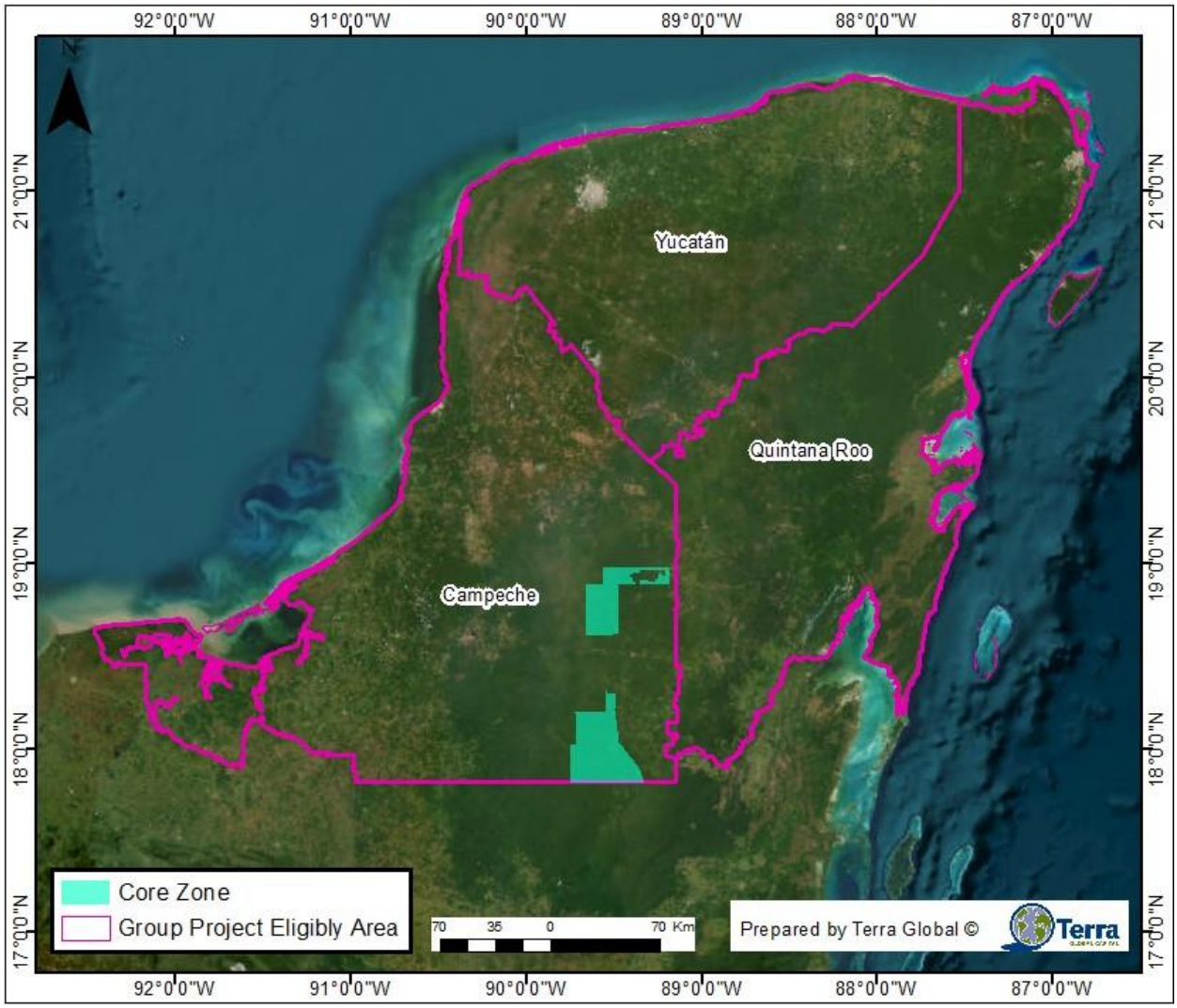
With a third of the population being between 0-14 years, the education and health sectors are under development. Malnutrition, stress, alcoholism, diabetes, heart condition, and chronic liver diseases are the main barriers to health for the Calakmul population. Case studies demonstrate that the main diseases that affect the population of Calakmul are respiratory and gastrointestinal diseases, which are highly correlated with poverty and climate change. (Green, Schmook, Radel, & Mardero, 2020). The centralized health care system in Mexico means that 92% of the total population in the municipality is affiliated with some form of health care. This is caused by the coverage provided by the Popular Insurance (H. Ayuntamiento de Calakmul , 2014). However, Calakmul municipality still has the highest infant mortality rate in the state at 42.25 deaths per thousand births, showing that access to health information or access to care may be limited in some capacity.

2.1.16 Project Zone Map and Project Location (VCS, 3.11, 3.18; CCB, G1.4-7, G1.13, CM1.2, B1.2)

1. Grouped Project Eligibility Area

The Project Area for this Grouped Project is the sum of the Project Activity Instances. The Grouped Project Eligibility Area is the full area where they may be added. The Grouped Project Eligibility Area will be areas in the three states of Yucatán, Quintana Roo, and Campeche that are subject to planned degradation from legal logging. This includes any protected areas that allow legal timber harvesting, such as the buffer zone of CBR. The ejidos are legally permitted to conduct harvesting activities within the buffer areas of state and federal Protected Areas

Map 4 provides the details of the Grouped Project Eligibility Area. All new Project Activities Instances will need to be in this area and meet the grouped requirements set out in Section 2.1.6.1.



Map 4 Grouped Project Eligibility Area.

1. Grouped Project Eligibility Area and Project Zone

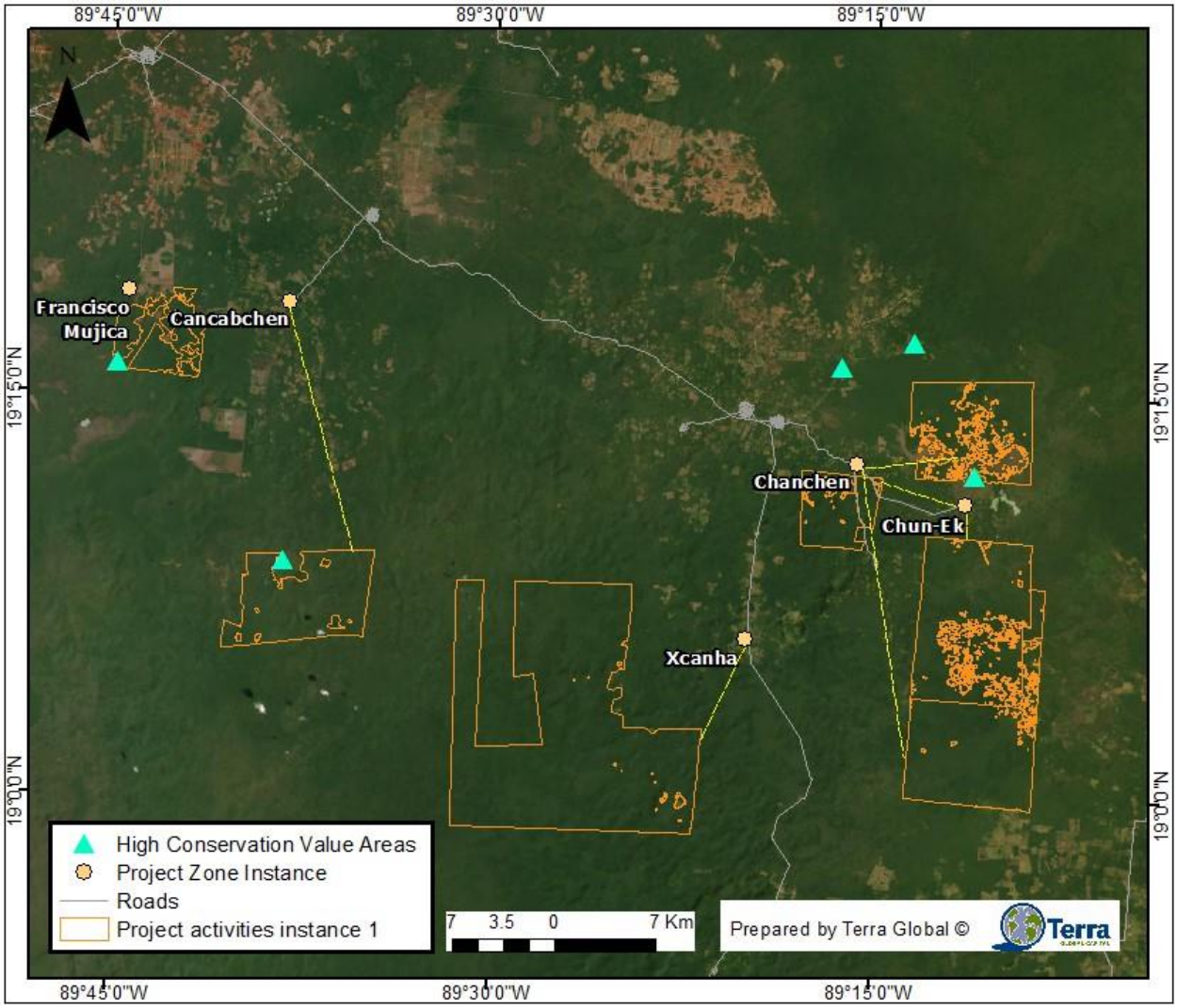
Project Area

This is a grouped project; The definition of the Project Area is the sum of the Project Activities Instances which are areas where the project will be crediting for any given monitoring period. For the PD, this includes the Project Activity Instances that will be included in the first monitoring report, referred to as Phase 1. Table 7, provides the list of Ejidos who part of the First Project Activity Instance is, with the total areas of legal Forest Extensions. For some Ejidos, their Forest Extensions are larger than the area that have been included for conservation as a Project Activity Instance.

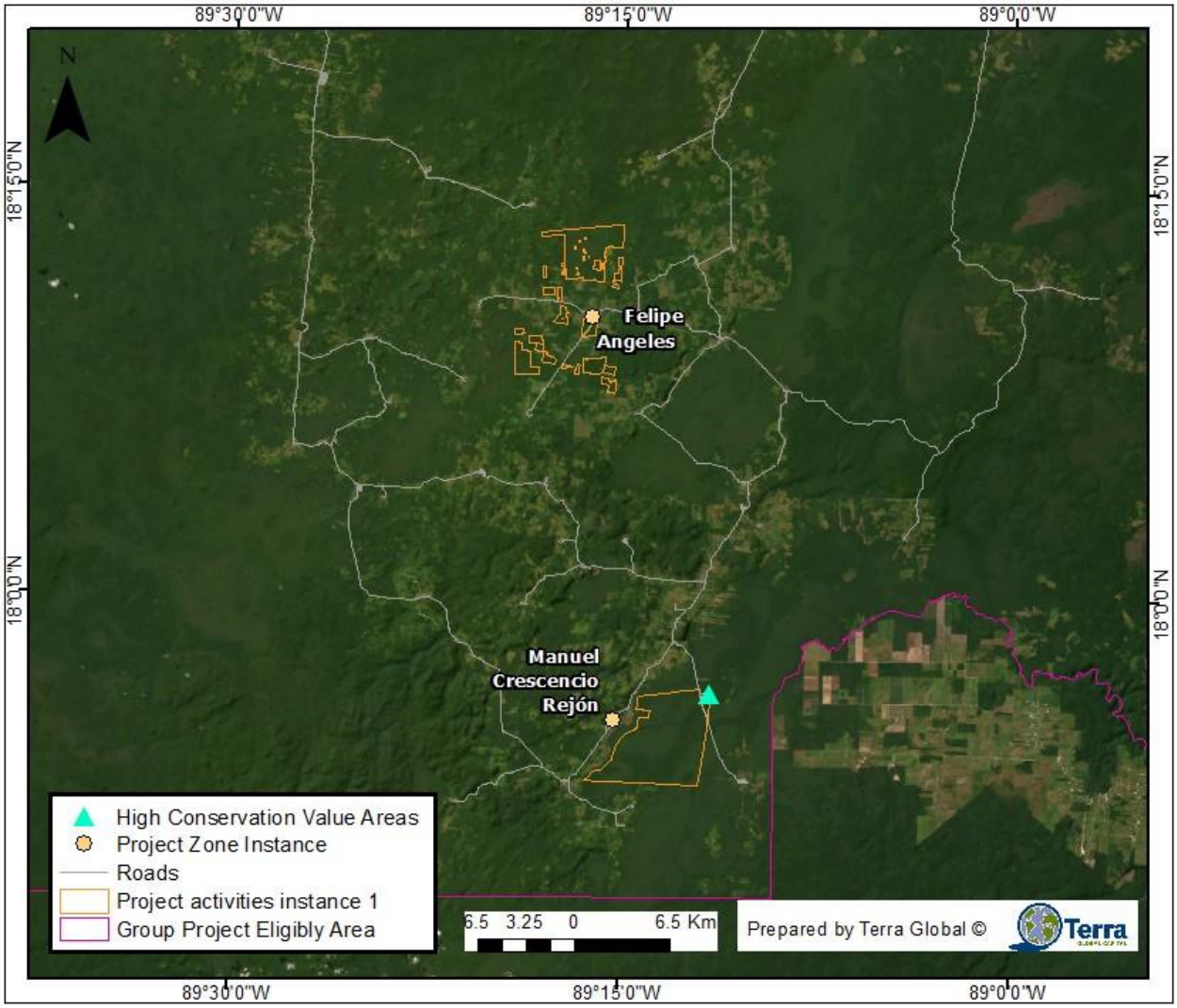
Table 7. Forest Extension Areas, PAI hectares

Ejido	Project Activity Instance 1 (Hectares)
Cancabchen	4,981.5
Chanchen	10,939.7
Chun Ek	9,950.8
Crescencio Rejón	3,494.8
Felipe Ángeles	2,133.9
Francisco J. Mújica	1,967.1
Pustunich	24,640.4
Xcanhá	19,979.4
Yohaltún	13,988.7
TOTAL	**92,076.3**

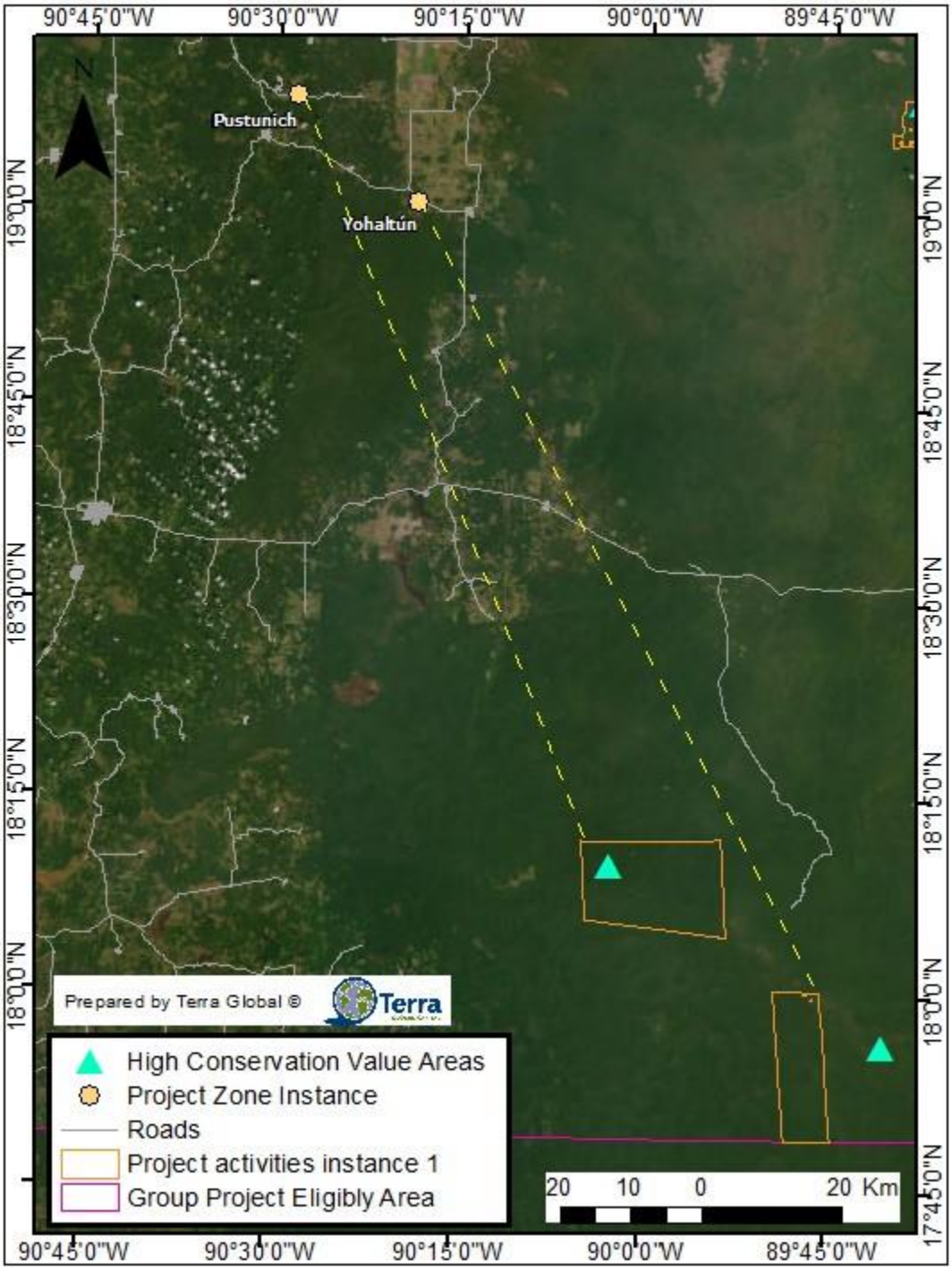
Map 5, Map 6, and Map 7 provide the location of the Project Instance Zones in the Project Area.



Map 5. Ejidos located in the northern zone of the Project Zone Instance.



Map 6. Ejidos located in the of the southern zone of the Project Zone Instance



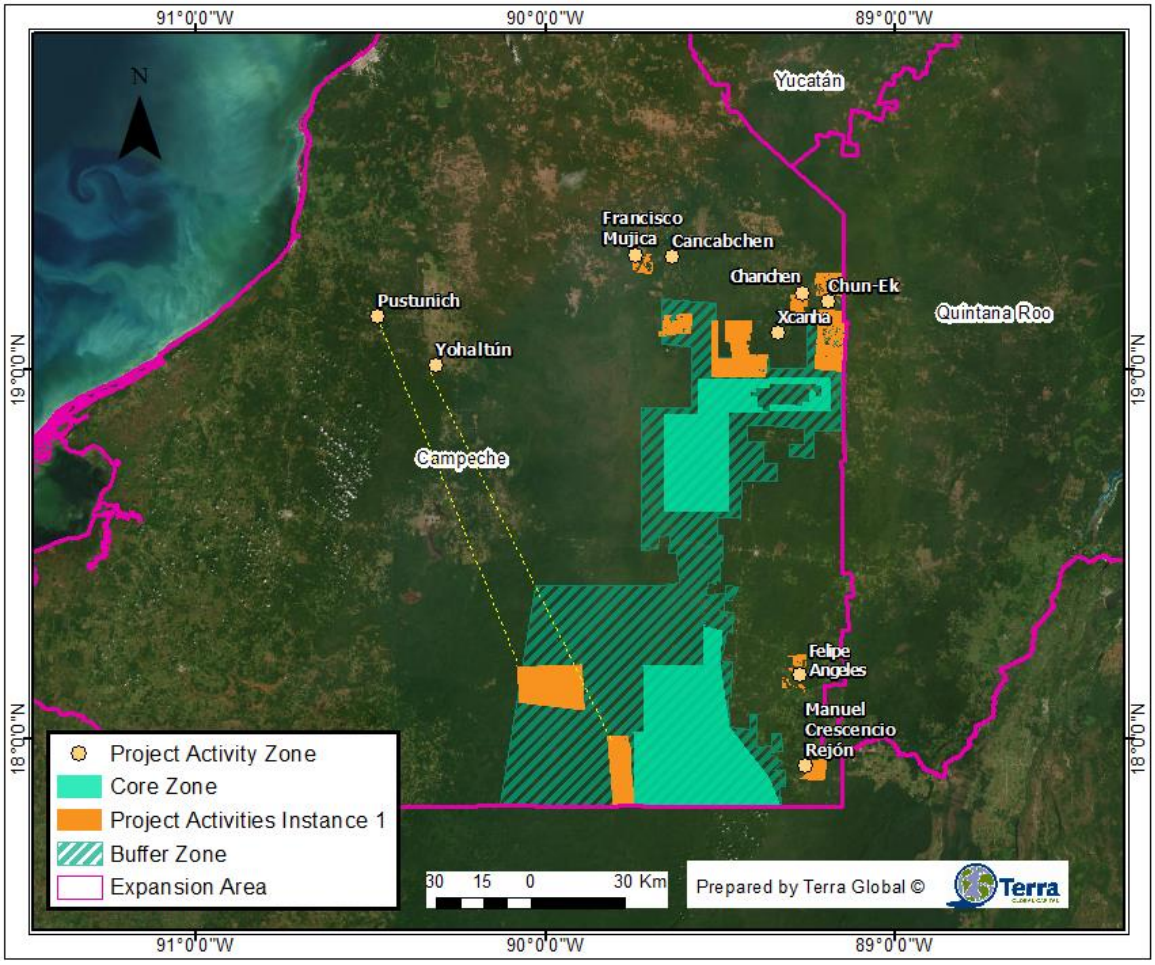
Map 7. Ejidos located in the western zone of the Project Zone Instance

Project Zone Instances

The Project Zone is the sum of the areas around each Project Activity Instance that are part of the Project. As defined by the CCB, is "the area encompassing the project area 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". To meet this requirement for this grouped project, there is a Project Zone defined for each Project Activity Instance.

For the Ejidos who live within their legally recognized Forest Extensions, the Project Zone Instance is defined as the Project Activity Instance and all other areas in their Forest Extension boundaries. For three of the Ejidos, Yohaltún, Pustunich and Chanchen whose communities live outside their Forest Extensions, these Project Zone Instances are defined as the Project Activity Instance and the location of their settlements, where some project activities related to livelihoods may take place. Map 8 provides the Project Zone Instances for the Phase. 1 Ejidos.



Map 8. Ejidos Project Activity Instance 1 (Orange) related to the Calakmul Biosphere Reserve (Green).

HCV Areas

There are numerous biophysical and cultural High Conservation Value (HCV) areas in the Project Area. Part of the Project Area is subscribed as a mixed World Heritage site under UNESCO as the Ancient Maya City and Protected Tropical Forests of Calakmul, Campeche, subscribed for its outstanding natural and cultural values.

2.1.17 Project Activities and Theory of Change (VCS, 3.6; CCB, G1.8)

The Theory of Change (ToC) for the project is shown in Figure 1., outputs, intermediate outcomes and outcomes are linked to define the pathway of change in the short, medium, long term of the project, respectively. The arrows connecting the outputs to intermediate outcomes and outcomes are to signify that the implementation is dependent on one another and how all outcomes are related to achieve the main goal of the project. Outputs are the measure to verify that an activity was successfully implemented. While outcomes are used as impact indicators to measure progress in achieving the project's goal and objectives.

The lighter blue color at the outcome level means that additional activities beyond the primary outcomes will be implemented when capital is available.

The theory of change table reflects the key Outcomes and Outputs that are generated because of implementing the activities included in the Project's Long Term Implementation Work Plan. Theory of Change is included in **Error! Reference source not found.**.

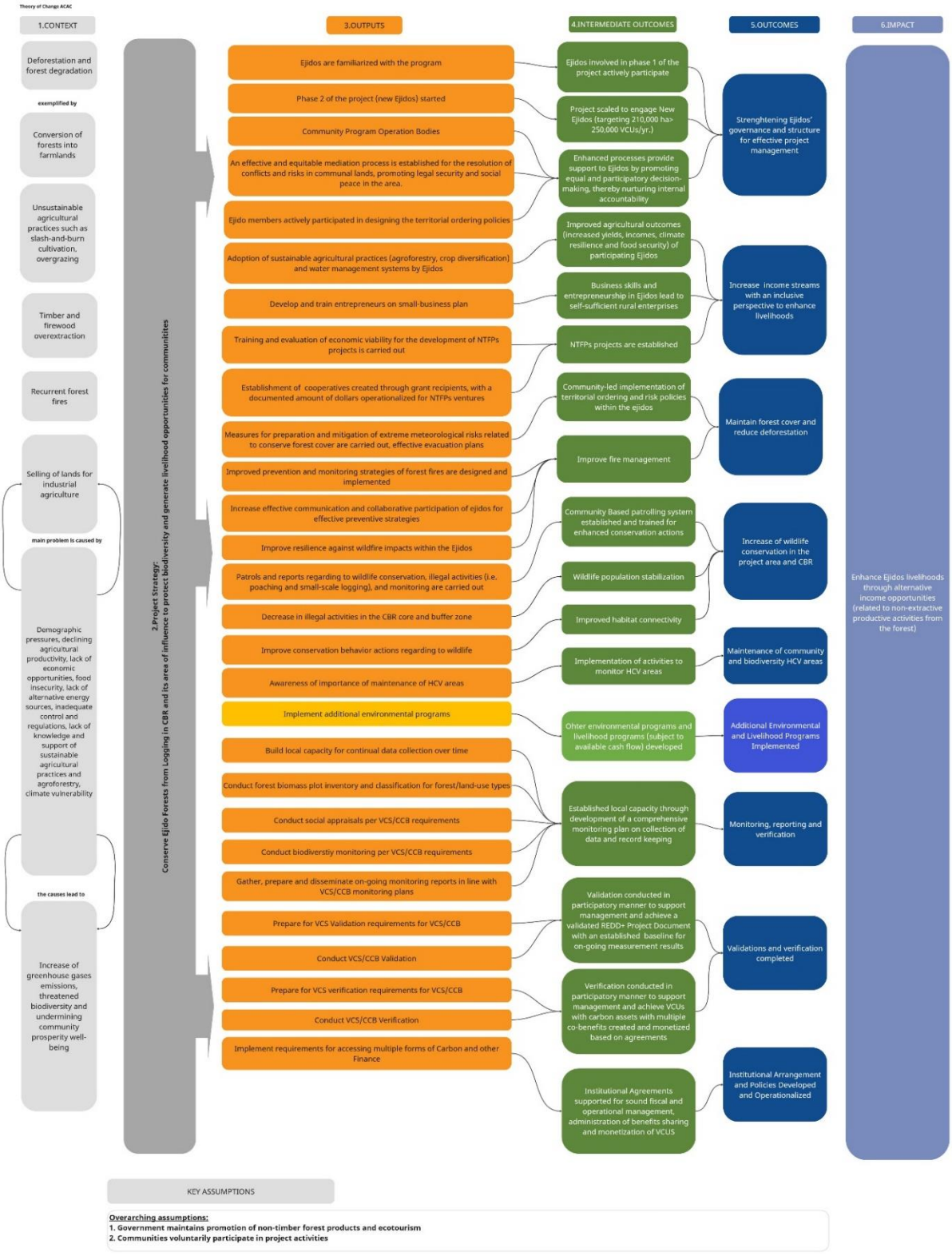


Figure 1. Theory of Change of the Project.

Summary of Project Activities

The core Project Activity is the conversion of forest areas from legal harvesting to permanent conservation. Other activities include the promotion of alternative livelihood opportunities and support to reducing any unplanned deforestation and reducing wildlife poaching. Drawing on Terra Global's adeptness in executing Community Forestry Projects and the extensive groundwork accomplished with this Project over recent years, a implementation workplan and Theory of Change (TOC) have been devised for activities within the Project Activity Instances set to be carried out within the participating Ejidos. It's imperative to clarify that not all Project Activities will unfold uniformly across all Ejidos' territories. Instead, they encompass tailored initiatives slated for implementation across the Project Area, contingent upon suitability for each Ejido. This determination arises from collating input from the Ejidos to discern which Project Activities align best with the land and community needs. Among these activities, particular emphasis will be placed on fortifying patrolling efforts in three specific Ejidos grappling with unplanned deforestation and wildlife poaching. The following are the main Project Activities and a brief description of them.

Strengthening Ejidos' governance and structure for effective project management

Funding sources are required to ensure that the payments to the initial two *Ejidos,* Yohaltun and Pustunich continues and to increase the protected area by adding the seven new Ejidos interested in joining the project, and subsequently protecting a larger area in the CBR and its zone of influence. Without funding, conservation payments are insufficient to compete with the rising costs of living and the opportunity costs of foregoing income from timber extraction, the *Ejidos* will simply begin leasing their areas for timber extraction or potentially illegal conversion to agricultural production. Conservation agreements make a minimum payment based on a per hectare amount each year, and additional conservation payments are made as the Project accumulates capital.

Conservation agreements are enacted only after a vote by registered Ejido members, who together decide on social and livelihood projects that will complement the conservation payments. Legal agreements developed by ACAC's legal counsel in conjunction with the *Ejidos* that own the forest allow ACAC to complete the development of the project and sell carbon on behalf of the Ejidos. The carbon revenue is partially used to make annual conservation payments to Ejidos based on the size and condition of their Forest Extensions. Revenue from carbon is also used to improve livelihoods of local communities by implementing social service and development projects. These funds will be used to fund and implement economically beneficial alternatives to logging in to the CBR. Copies of the conservation agreements for Ejidos participating in the first phase of the Project are included in the Appendix 4: Commercially Sensitive Information**Error! Reference source not found.** E: Ejidos agreements), and are available to the VVB, showing terms and use of funds.

Involvement of communities living in and around the CBR is an integral component of the design of this Project, and strengthening the Ejidos governance is fundamental for the establishment and maintenance of the Project. There will be activities such as training on leadership and decision-making for the community members, workshops to raise awareness of equality of opportunities within the community. Additionally, there will be support for the resolution of conflicts and risks in communal land, and active participation of Ejido members in the design of territorial ordering policies by facilitation community discussion on land use planning, natural resource management, infrastructure development and conservation strategies.

With a more inclusive governance and decision-making activities, the women and vulnerable groups will be represented and active in the implementation of activities cited above. It is fundamental the promotion of gender-responsive policies and inclusive practices in the Ejidos.

Increase income streams with an inclusive perspective to enhance livelihoods

The Ejidos families engaged in the Project will have income generating opportunities both in the Forest Extensions and within their towns. The specific activities will be tailored to the needs and priorities of each Ejido but will focus on improved agricultural production on existing agricultural land and developing new income streams from non-timber forest products (NTFP) within their forest reserves and development of small businesses. The NTFPs include honey, and medical plants. These crops provide new employment and income generating activities for the Ejidos families.

Within the Ejidos towns, which are outside the Forest Extension, the project activities support improved agricultural practices and social projects. Most Ejidos are subsistence-based farms dependent on traditional crops for food security (maize, beans, squash and chili pepper). Activities will include promotion of agroforestry systems, distribution of seeds and bundles, implementation of water farming technology, promotion of NTFPs projects, and conservation agricultural practices to improve yields and diversify production, while increasing climate resilience. In addition to improved agricultural production and subject to available funding, the project will implement other important social projects as needed by each Ejidos, including facilitation access to potable water, facilitation of partnerships to improve clinics access, and facilitation to improve education at the discretion of the Ejidos. Ecotourism projects may also be implemented, but require more training, infrastructure, and capacity building activities to improve the likelihood of this activity being successful.

Gender empowerment and inclusion will be a component in the implementation of Project activities. As studies demonstrate the inclusion of women in conservation and training on improvements in agricultural production techniques lead to lower migration rates, and improved livelihoods overall for Ejidos families.

Maintain forest cover and reduce deforestation

The maintenance of forest cover and reduction of deforestation is also done through the implementation of territorial ordering and risk policies within each Ejidos, which includes creation and update of measures for adaptation and mitigation of extreme meteorological risks; those activities will ensure the definition of areas for agriculture, ranching and conservation.

Improved fire management is also an important focus of this Project, with the development of monitoring strategies of forest fires, improve effective communication between Ejidos for preventive strategies, and improvement of resilience against wildfire impacts within the Ejidos through creation of fire breaks, and creation of a community brigade against forest fires.

Increase wildlife conservation in the Project Area and CBR

While the core protection of the forest is done through the conservation agreements that stop timber harvesting, there is a need to ensure that unplanned and illegal logging is not taking place in the Project Activity Instances. Protection activities focused on safeguarding forest and wildlife resources are strategically conducted within high-risk forest areas. These efforts encompass community patrolling, skillfully executed by trained Ejidos, particularly in areas identified as at-risk—namely, Pustunish, Chanchen, and Yohaltum—following comprehensive training and ongoing support in enforcement practices and the utilization of field-based technology. Moreover, beyond their immediate territories, Ejidos engage in collaborative efforts within the Community-Based Reserve (CBR), involving a spectrum of initiatives such as awareness workshops, Patrol Training, Implementation of Sustainable Hunting initiatives, utilization of SMART (Software) Reports and Queries, establishment of Ejiditario Patrolling Teams and Leads, and advancing into the second phase of Community Patrolling.

2.1.18 Sustainable Development Contributions (VCS, 3.17)

The project encompasses a multifaceted approach to sustainable development, targeting various Sustainable Development Goals (SDGs) through a range of activities.

1. Eradicating Extreme Poverty (SDG 1): The project focuses on decreasing the proportion of the population living below the international poverty line by creating employment opportunities. Thirty-two individuals are expected to be employed in project activities, particularly in project management and implementation roles, thereby contributing to poverty alleviation, especially in rural areas.

2. Skills Development (SDG 4): By enhancing ICT skills among youth and adults, the project aims to increase employability and entrepreneurship opportunities. It is expected that 80% of landowners (ejidatarios) will benefit from increased knowledge, fostering sustainable land management practices and economic empowerment within the community.

3. Gender Equality (SDG 5): Through targeted interventions, the project aims to promote women's participation in decision-making and leadership roles. Forty percent of women, including ejidatarias and female family members, are expected to acquire improved skills, thereby contributing to gender equality and women's empowerment.

4. Economic Productivity (SDG 8): The project seeks to enhance economic productivity through diversification, technological upgrading, and innovation. By providing job and business opportunities, it aims to increase income for ejidos and boost labor productivity growth rates, contributing to sustainable economic development.

5. Climate Action (SDG 13): Measures to reduce greenhouse gas emissions are central to the project's objectives. By removing 451,939 tons of CO2e from the atmosphere, the project significantly contributes to climate change mitigation efforts, aligning with global commitments to combat environmental degradation.

6. Ecosystem Conservation (SDG 5): Sustainable Forest management practices are promoted to ensure the conservation and restoration of terrestrial ecosystems. The project aims to reduce forest loss and enhance biodiversity conservation on 92,076.3 hectares of land, thus contributing to the preservation of ecosystem services and biodiversity.

The project's activities align with nationally stated sustainable development priorities, addressing key socioeconomic and environmental challenges. By targeting poverty eradication, skills development, gender equality, economic growth, climate action, and ecosystem conservation, the project contributes to the national development agenda. Monitoring and reporting mechanisms are in place to track progress and ensure accountability in achieving sustainable development goals.

2.1.19 Implementation Schedule (CCB, G1.9)

A comprehensive implementation workplan has been developed and is included in **Error! Reference source not found.**, and Table 8 provides the timeline for the key milestones for initial implementation.

Table 8. Milestones in Project development and implementation

Date	Milestone(s) in the project's development and implementation
May, 2019	Project Start (two Ejidos start date)

Date	Milestone(s) in the project's development and implementation
June, 2019	Secure funding to fully develop VCS/CCB Project
July 2019	Finalize implementation plan, budget, benefits plan, social plans the Project will support, trust establishment and other conditions for commercial viability
June 2022	Finalize Ejidos to included 1st verification (Phase 1)
January, 2022	Complete study of potential Ejidos in Project Area to join Project and prioritize engagement process
January, 2022	Develop a stakeholder engagement plan
February, 2022	Revise conservation agreements to include any additional requirements (all other Ejidos start date)
May, 2023	Gather field data
July, 2023	Establish procedures for on-going monitoring responsibilities
August, 2023	Develop VCS/CCB PD, risk report, and monitoring plans
August, 2023	Develop 1st VCS/CCB monitoring report
February 2024 – April 2024	Conduct VVB audit
July, 2024	Finalize conservation agreements with Phase 2 Ejidos
November, 2024	Finalize Audit and issue VCUs
January, 2025	Gather field data for Phase 2 Ejidos
March, 2025	Prepare 2nd monitoring report, adding new Phase 2 Ejidos
April, 2025	Conduct VVB audit for second monitoring report
June, 2025	Finalize Audit and issue VCUs from 2nd verification
On-going	Deliver support for social and livelihood projects
On-going (annually)	Administer conservation payments

Date	Milestone(s) in the project's development and implementation
On-going (annually)	Monitor and report performance and impact

2.1.20 Risks to the Project (CCB, G1.10)

The Non-permanence Risk Report developed for this Project details the main components of risk. Beyond the risks detailed in that report, other specific risk for this avoided planned degradation – logged to protected project, that are considered the most significant in terms of a potential loss of carbon are; 1) fire, 2) timber prices create high opportunity costs, and 3) illegal logging (Table 9).

Table 9. Identified risks, impact, and mitigation actions for the project.

Identified Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
Fires	Fires could destroy the forests being conserved which will emit GHG and fail to allow the project to generate carbon revenue to make the conservation payments. Most anthropogenically caused fires are from farmers burning crops and these can include Ejidos in the Program.	Project activities include (section 4.3): Prevention strategies and constant monitoring to forest fires are designed and implemented in collaboration with authorities • Identify key target audiences • Develop new and/or repurpose existing awareness and outreach materials • Map hotspots • Develop and implement a dissemination strategy • Identify/add stakeholders and preferred medium for communication • Collaborate with neighbors and partners on burn plans and safety for agricultural fires to prevent fires • Use existing fire threat models and weather monitoring to determine red flag days and share with neighbors Mitigate impact of wildfires within the ejidos • Within the ejidos open fire lines and practice-controlled burns in fire adapted ecosystems • Purchase fire response equipment for the ejidos • Facilitate fire management training with rangers and community stakeholders

Identified Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
		• Creation of a safety-community brigade against forest fires with the landowners (ejidatarios) Built safety infrastructure like barriers
Opportunity Costs	Ejidos could break their conservation agreements and harvest their forests areas.	An opportunity cost analysis was completed to estimate the revenue from sales of timber primary forest over 25 years vrs. the revenue from carbon credits in the same period of time. Results will be socialized with Ejidos for them to consider this information and make informed decisions.
Illegal Logging	Even with the agreements in place to permanently conserve the Ejidos forests, there is still some risk of illegal logging, mostly small scale and more likely from outside the Ejidos	Project activities include: • Section 2 of the work plan, has numerous planned activities that are designed to build alternative income streams with ejidos to reduce the need do any small-scale illegal logging • Section 4.2 provides for awareness and patrolling to protect against outside forces. Also, identify ejidos in the project activity instance where patrolling is necessary

2.1.21 Benefit Permanence (CCB, G1.11)

The crediting period for this grouped project is 50 years, which can be renewed to generate emission reductions for 100 years. The revenue from the sale of emission reductions is competitive to the revenue they would receive from timber and therefore will allow the Ejidos to forgo the timber harvest.

The Project has established a conservation trust on behalf of the Ejidos with the Ejidos being the sole beneficiary of the trust fund. Excess carbon revenue for the Project will remain in the trust fund which will enable benefits to continue to flow after the Project's crediting periods have been completed.

In addition to annual conservation payments, the Ejidos will also participate in capacity building, they will be provided materials, and resources to aid them in developing alternative sources of livelihoods. The livelihood Project and fund will enable Ejidos to benefit from diversified income opportunities well beyond the lifetime of the project.

2.1.22 Financial Sustainability (CCB, G1.12)

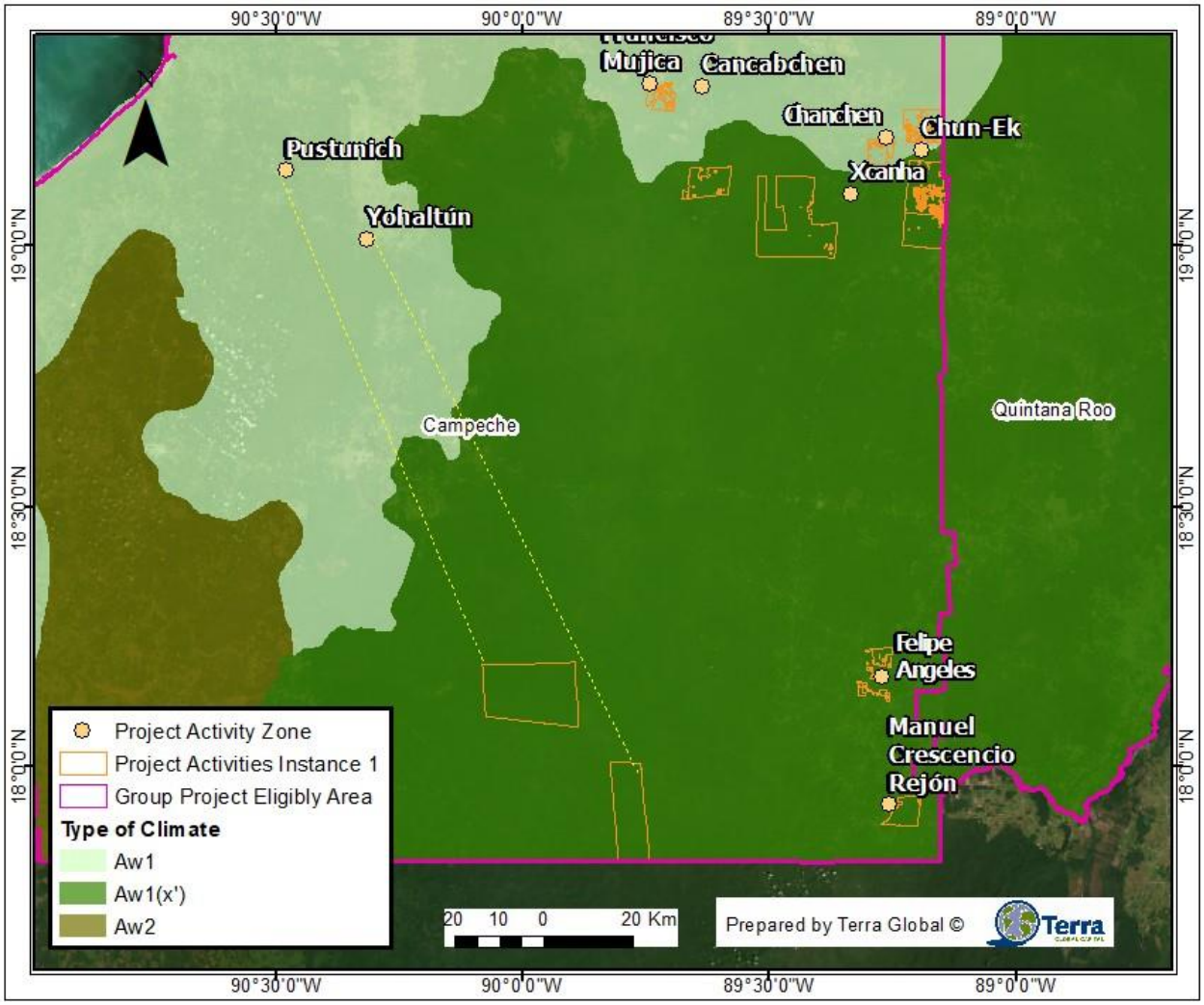
ACAC is an NGO with limited resources and therefore the on-going annual conservation payments to existing (Phase 1) Ejidos and the scaling to new (Phase 2) Ejidos will depend on climate finance. The financial model was developed for the project, that includes the project implementation costs, GHG and impact measurement costs, audit and standard's costs and the projected carbon revenue. This cash flow analysis shows that the Project will need USD $1,016,000 of upfront financing in order to reach break-even, i.e.

positive net cashflows. The project has secured commitment to payment on delivery purchases totaling approximately USD $88 million to finance the conservation payments, social projects and on-going management and monitoring of the Project. Furthermore, 15% of project VCUs have been allotted for sale into the market, which will provide further funding. This upfront funded was secured for the project which will bring the project to breakeven and beyond where it will generate positive cashflow from sale of VCUs.

The conservation trust fund holds all funds on behalf of the Project and the funds are provided directly to Ejidos are the sole beneficiary of the trust fund, where conservation payments are made as well as funds are used to cover the costs of ACAC supporting the project and Terra Global providing technical services. These amounts are based on the collaboratively developed workplan, budget and as agreed in the benefits allocation plan and will allow the Project to be long-term financially, socially, and environmentally sustainable.

2.2 Without-project Land Use Scenario and Additionality

2.2.1 Conditions Prior to Project Initiation and Land Use Scenarios without the Project (VCS, 3.13; CCB, G2.1)



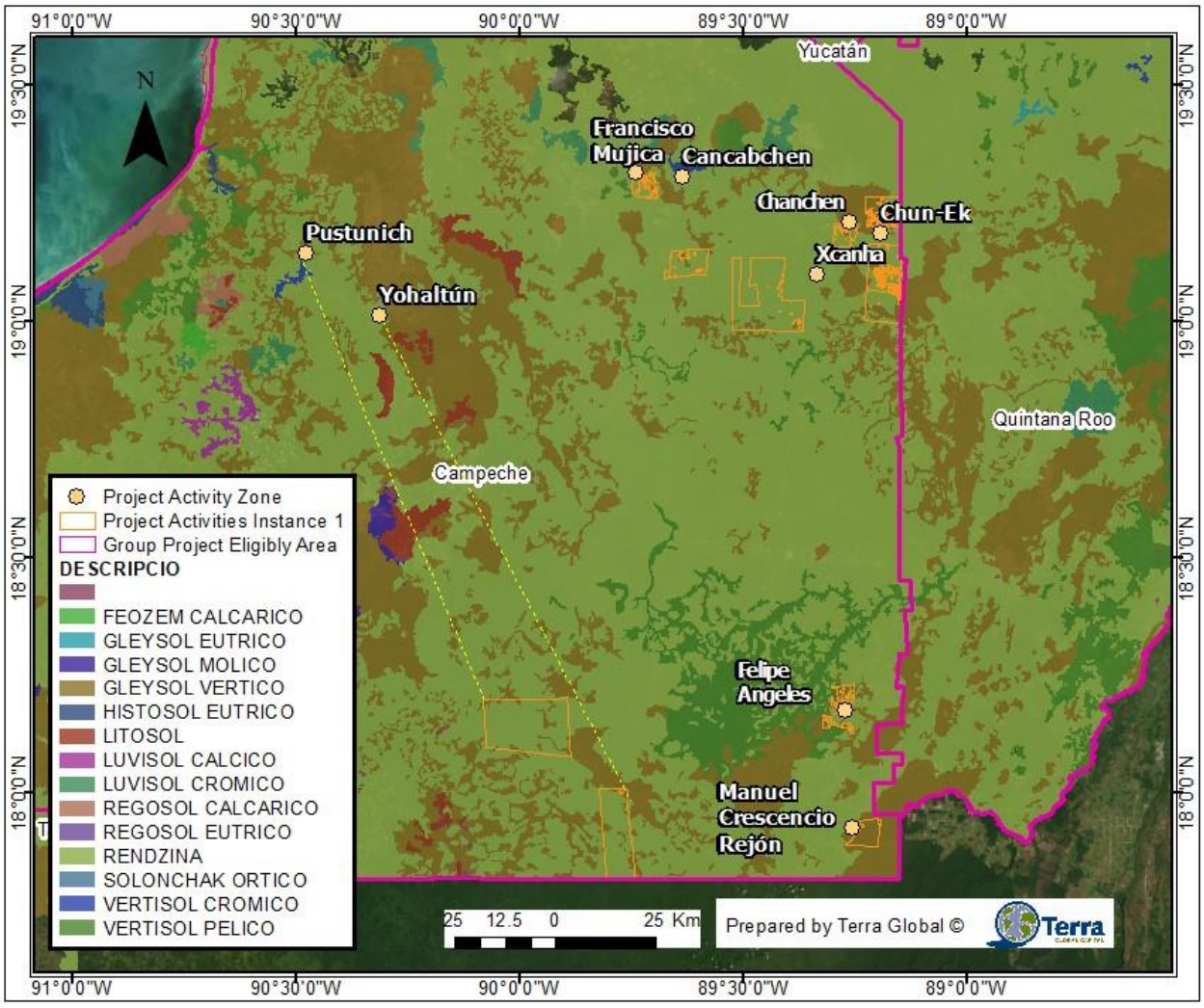
Map 9. Climate distribution

In the climate map, it shows the different types in the region, where the layer has been downloaded from CONABIO, where it uses the Koppen classification. The classes are the following:

- Aw1: Warm subhumid, average annual temperature greater than 22°C and temperature of the coldest month greater than 18°C. Precipitation of the driest month less than 60 mm; summer rains with P/T index between 43.2 and 55.3 and percentage of winter rain from 5% to 10.2% of the annual total.

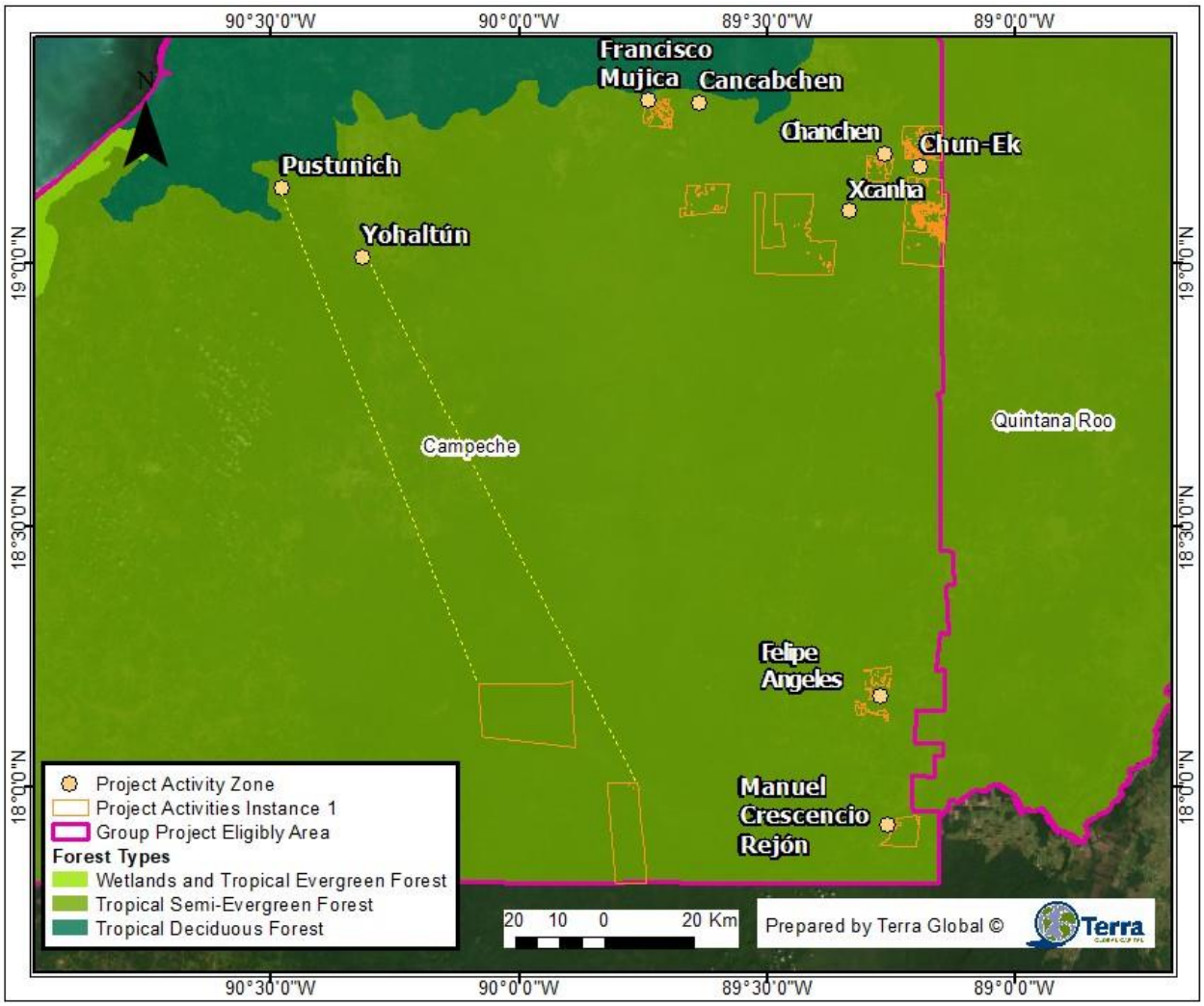
- Aw1(x'): Aw1: Warm subhumid, average annual temperature greater than 22°C and temperature of the coldest month greater than 18°C. Precipitation of the driest month less than 60 mm; summer rains and percentage of winter rain greater than 10.2% of the annual total.

- Warm subhumid, average annual temperature greater than 22°C and temperature of the coldest month greater than 18°C. Precipitation of the driest month between 0 and 60 mm; summer rains with a P/T index greater than 55.3 and a percentage of winter rain from 5% to 10.2% of the annual total.



Map 10. Type of soil distribution

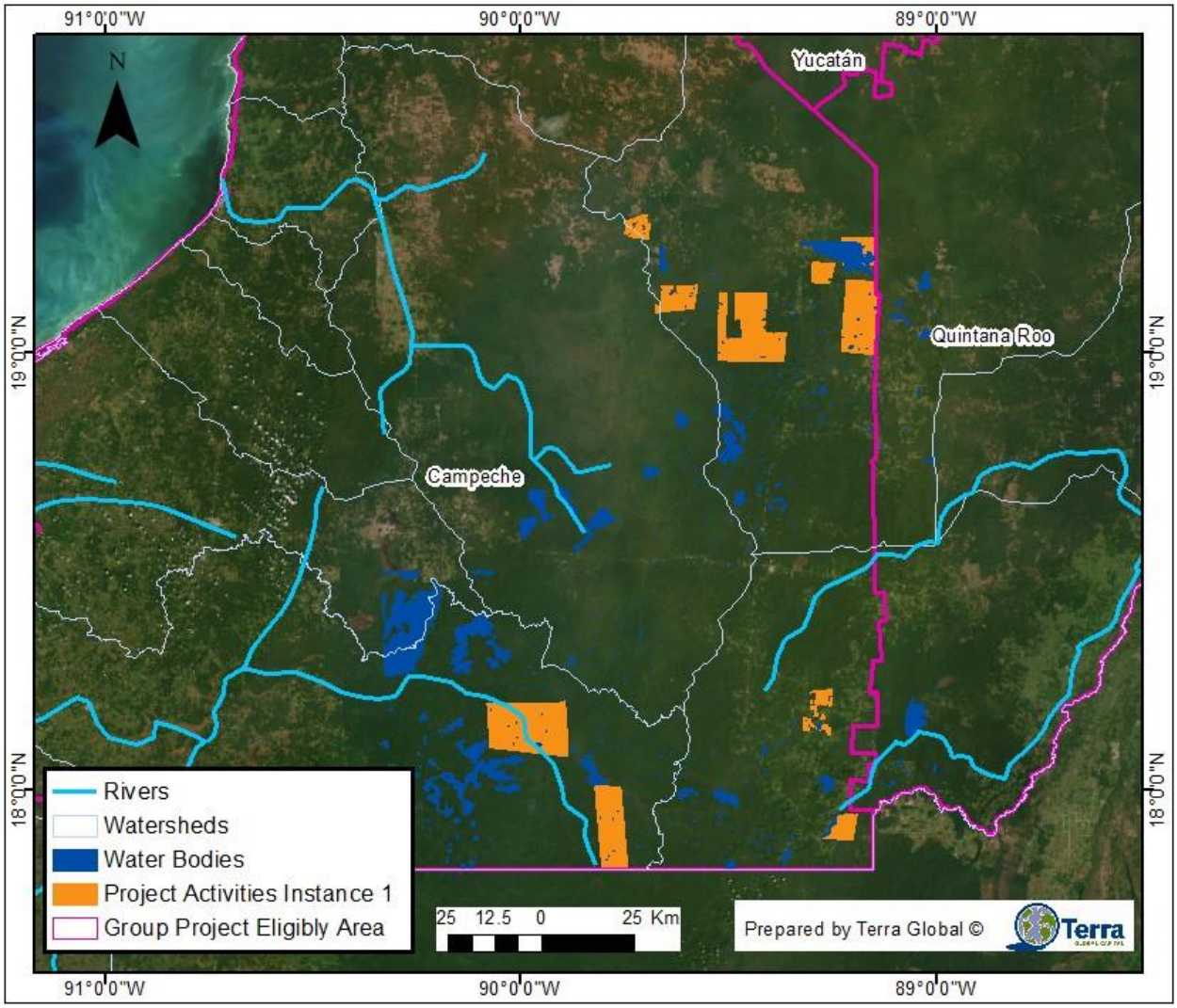
In the type of soil distribution, the soils that we have in the project activity instance are Vertisol pelico, Rendzina and Gleysol vertico basically. This layer is provided by INIFAP and CONABIO (1995).



Map 111. Land use and vegetation

This data set shows Level III ecological regions (ecoregions) of North America and is an update and revision of terrestrial ecoregions released by CEC in 2009. This current cartographic layer consists of an integration of updated ecoregions in Mexico, United States and Canada by the National Institute of Statistics and Geography, the Environmental Protection Agency, and the Government of Canada; Agriculture and Agri-Food Canada, respectively. CEC North American Atlas, 2023.

Hydrology



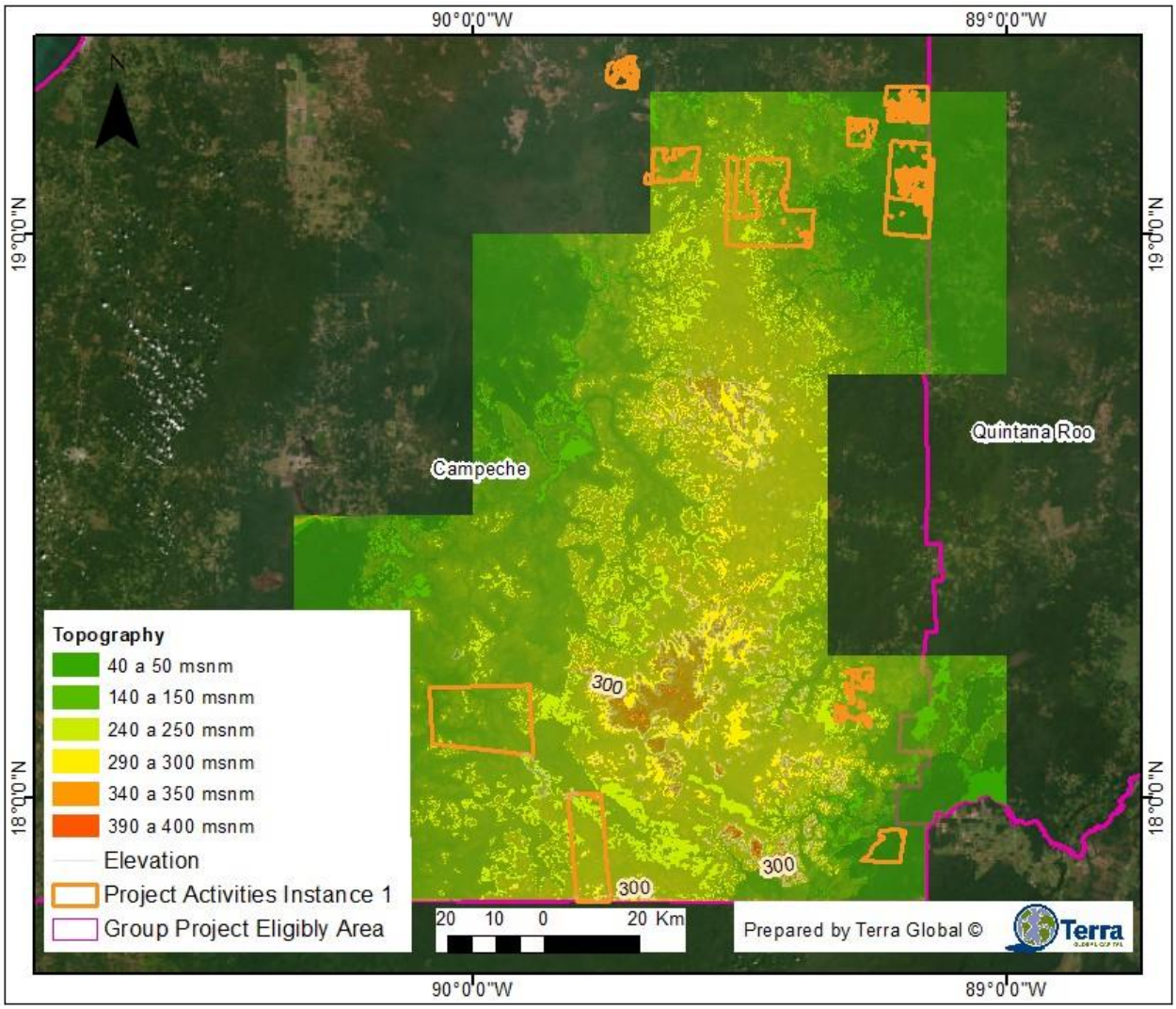
Map 12. Hydrology.

The state of Campeche boasts 4 hydrological regions, 7 hydrological basins, and 2,200 km2 of coastal lagoons. The Palizada River meanders through a low, swampy alluvial plain, adorned with vegetation. It receives the waters of the Blanco stream and eventually merges with the Old River before flowing into the East Lagoon. In the plain, the Chumpán River flows in isolation, formed by the convergence of several streams, notably the Salsituvos, San Joaquín, and Piedad. Its course runs from south to north, culminating in its discharge into the Terminos Lagoon through the Boca de Balchacah. Originating in the Petén region of Guatemala, the Candelaria River traverses Campeche from south to north. Along its path, it joins with the Caribe River on its right bank and ultimately drains into the Pargos Lagoon, which in turn feeds into the Terminos Lagoon downstream. Flowing into the Panlau Lagoon, the Mamantel River presents a modest surface flow during its journey. The Champotón River, positioned north of the Terminos Lagoon, shares a similar terrain to the Mamantel River, coursing over calcareous substrates with a brief trajectory and no tributaries, ultimately emptying into the Gulf of Mexico. Other streams scattered across the central and southwest regions of the state are seasonal, carrying water solely during the rainy season.

In the southern reaches of Campeche, a series of water reservoirs known locally as "aguadas" or "akalches" dot the landscape. These reservoirs are formed during the rainy season, arising from subsoil saturation.

However, most of this water dissipates during the dry season, when evapotranspiration surpasses precipitation, and the vadose zone loses its saturation (Rebolledo, 2010).

Topography



Map 13.Topography.

The sub horizontal plains are strictly flat and only have mounds smaller than 5 m. They are of five types: a) Marine-palustrine depositional; b) fluvio-palustrine depositional; c) fluvial depositional; d) dissolutive-depositional, that is, Karstic-palustrian; and e) karst dissolving.

The undulating plains appear as a transitional relief between the hilly plains and the sub horizontal plains. It has a rough topography due to the irregular succession of elevations (less than 10 m) and depressions. They are of three types: a) marine-wind depositional; b) fluvial-deluvial depositional; and c) karst dissolving.

A hilly plain is one that has hills, that is, positive geoforms of relief between 10 and 20 m with respect to the base level.

A hillock is a set of hills; A hill is a positive form of relief with heights of 20 to 100 m, with respect to the base level. In Campeche there are karst hills with dome-shaped hills, a product of the dissolution of the limestone rock by rainwater, such as the hills around the city of Campeche. They represent 35% of the state surface. There are also other hills with isolated, high hills dissected by ravines, with domes of differential erosion.

The mountain is a blocky fold with domed summits, with an identifiable tectonic-denudative scarp. It is identified as such by the difference in height between the general base level and the maximum height, which is 100 m, occupies 4% of the surface and is located in the municipality of Campeche. (Palacio, Bautista, & Ortiz, 2010)

Mexico has lost almost 7,000 square kilometers of primary forest between 2002 and 2021, amounting to a 7.6% loss over the period. Mexico's primary forests were deforested at an average annual rate of 540 square kilometers from 2017-2022 (Global Forest Watch, 2022). Human-made deserts are growing in Mexico and causing massive biodiversity loss. The commercial timber sector is accessing more remote areas, and the forest frontiers are being pushed up the mountains by pressure from farmers, cattle raisers, fruit orchards, coffee plantations and local landless fieldworkers (Ortiz García, et al., 2022). Logging and creating access to the forest is in the first step of forest degradation that eventually degrades the forest and converts it to other land uses. Although agricultural activities are the main cause of the loss of forests in Yucatán it is closely followed by illegal logging and forest fires (Yucatan Times, March 29, 2019) caused by human activity from slash-and-burn agriculture and cattle ranching (Global Forest Watch, April 9, 2020).

Deforestation and degradation in Mexico are driven by expanding agriculture, illegal logging, government subsidies for livestock grazing which lead to deforestation, forest fires, and ineffective government forest management (Estrategia Nacional Para REDD+ 2017, 2017). As many forest management plans are for selective logging, they end up causing genetic erosion through dysgenic selection, which eventually degrades the forest productivity and sustainability in the long term – though these issues are not usually considered when issuing harvesting permits and creating access into the forest.

The Yucatán region still retains a significant carbon stock, but there are major differences in biomass depending on historical forest disturbance, including timber harvesting. Biomass recovery trajectories were lower than those in many other tropical forest types, emphasizing the importance of retaining old-growth forest stands (Aryal, De Jong, Ochoa-Gaona, Esparza-Olguin, & Mendoza-Vega, 2014). This outlines the importance of conservation strategies explicitly protect remaining old-growth forest stands, as they still retain large biomass stocks and support Ejido management of the intact and high stocked forests including fire-suppression practices. In an all-inclusive study of farmers living in Calakmul Biosphere Reserve and Maya Biosphere Reserve 94% of the farmers interviewed claimed "*el clima ha cambiado*" (the weather has changed) and managed to adapt to a changing climate. (Farmers were not referring to global climate change, but to precipitation patterns that differed from what they were accustomed to). (Rodriguez-Solorzano C. , 2014).

Conditions at project start are those that would happen in the absence of the project. These conditions reflect the baseline scenario, which is legal logging, using common practices for harvest and milling. The project activity is avoiding legal logging and conserving the forest.

The baseline scenario for this Project is derived from the management practices of logging in Mexico, including poor extraction practices that are legally allowable such as not using directional felling when harvesting, processing timber (boards) in the forest- (a practice called "*cuadril*") or conducting wood extraction with inappropriate machinery. Logging within the Project Activity Instances is legally allowed, and the Mexican Government encourages Ejidos to adopt logging as a means to generate income (Diario Oficial

de la Federación, 2022). On paper, allowable harvesting levels cannot reduce the forest biomass below a "sustainable" level, but what constitutes a sustainable harvesting rate is not clearly defined under Mexican law and forests are often over-harvested. CONAFOR lacks the enforcement capacity to verify sustainable practices are met and sustainable harvest rates are used. The expected and realistic scenario is based on common practice harvesting volume typical for the region, taken from literature review, and confirmed with local experts. Without the income associated with carbon from forest conservation, it is expected these Ejidos would harvest themselves or lease their land to timber companies.

2.2.2 Most-Likely Scenario Justification (CCB, G2.1)

The most likely land use scenario in this context centers on timber harvesting, an activity widely practiced throughout the region. The high pressure to carry out timber harvesting is largely since it constitutes the main source of income for local ejidos. These ejidos, recognized as the main timber agents, have legal rights to carry out timber harvesting as part of project activities.

The economic importance of timber harvesting for the ejidos means that it is often the only economic opportunity available. Logging not only represents a livelihood for local communities but is also considered a legally recognized and exploited resource within the project area. However, after the initial logging, there are several unsustainable practices that contribute to the continued degradation of the forest. These practices include cattle ranching, persistent illegal timber extraction and forest fires, all of which intensify the process of forest ecosystem deterioration.

From a conservative perspective, the present project focuses only on modeling the common practice of timber harvesting and associated emissions. This restrictive approach is justified by the significant prevalence of this activity and its central role in the local economy.

2.2.3 Community and Biodiversity Additionality (CCB, G2.2)

The Ejidos who will participate in this Project will receive conservation payments as well as support for other livelihood projects to forgo logging rights. Without this Project, they would not receive these financial and technical assistance benefits. It is only by generating carbon finance that the financing and technical assistance can be provided to the Ejidos, and the community benefits be delivered.

The Yucatán Peninsula contains some of the largest tracts of tropical forests in Mexico and is host to some of the most threatened and studied flora and fauna, including the Central American tapir, the white-lipped peccary, the gray brocket, the jaguar, the pump, the howler monkeys, and spider monkeys. Most of these species face serious threats to their habitat, as it is increasingly fragmented by deforestation, and degradation destroys their habitat. Without the ability to preserve large areas of intact forest and to avoid the disruption from logging, the biodiversity benefit of the Project could not be generated.

2.2.4 Benefits to be used as Offsets (CCB, G2.2)

The Project will validate and verify under the VCS and CCB, to generate VCUs "tagged" with CCB with the goal to achieve triple gold to reflect the positive community, biodiversity, and climate adaptation benefits in addition to climate mitigation benefits. Currently, the market for distinct community and biodiversity credits is under development, with standards such as Verra and Plan Vivo, developing methodologies to measure, quantify and validate biodiversity benefits. However, this project has been chosen to participate in the Verra Nature Credits Pilot program. Being a pilot project in biodiversity credits is an opportunity to pioneer and validate new conservation approaches, engage stakeholders, demonstrate the economic value of nature, and pave the way for broader adoption of market-based mechanisms in biodiversity conservation.

That said, the project retains the right and flexibility to uniquely use the biodiversity and community benefits in the future if it deems it is valuable to delivering on the project objectives. If this occurs, the project will provide rational at the next verification of the additionality of using unique biodiversity and/or community benefits as offsets beyond the VCUs "tagged" with CCB.

2.3 Safeguards and Stakeholder Engagement

2.3.1 Stakeholder Identification (VCS, 3.18, 3.19; CCB G1.5)

Describe the process(es) used to identify stakeholders likely impacted by the project.

The process for identifying the stakeholders and assessing their rights, interests, and relevance to the ACAC Project was based on a combination of local knowledge, geographical information, non-structured interviews with decision-makers, in person meetings, and secondary data research. The detailed process can be consulted in *Appendix 4: Commercially Sensitive Information* (Annex A: Community Engagement Plan).

2.3.2 Stakeholder Descriptions (VCS, 3.18, 3.19; CCB, G1.6, G1.13)

Project Proponent: Terra Global Capital, LLC

Implementing partner: Amigos de Calakmul A.C.

Project participants: Ejidos; Yohaltun, Pustunish, Manuel Crescencio Rejón, Cancabchen, General Francisco J. Mujica, Chun Ek, Chanchen, Xcanhá, Felipe Ángeles.

Other stakeholders: Besides the Ejidos, ACAC and Terra Global other stakeholders involved include

- *Calakmul Biosphere Reserve (CBR)- CONANP: The CBR, managed by the National Commission of Natural Protected Areas (CONANP), is a designated protected area located in the state of Campeche, Mexico. It encompasses a diverse range of ecosystems, including tropical forests, wetlands, and Mayan archaeological sites. CONANP is responsible for the management and conservation of the reserve, implementing measures to protect biodiversity, regulate human activities, and promote sustainable tourism and research. The CBR collaborates with local communities, government agencies, NGOs, and other stakeholders to implement conservation initiatives, promote environmental education, and support sustainable livelihoods.*
- *Agrarian Prosecutor's Office (Procuradoria Agrária): The Agrarian Prosecutor's Office is a governmental agency in Mexico tasked with overseeing agrarian issues and land tenure rights. It is responsible for resolving conflicts related to land tenure, promoting land regularization, and ensuring the legal protection of land rights for rural communities, including ejidos and indigenous groups. The Procuraduría Agraria works to uphold and enforce agrarian laws and regulations, facilitate land distribution, and support sustainable land use practices.*
- *National Forestry Commission (CONAFOR): CONAFOR is a government agency in Mexico dedicated to the conservation, management, and sustainable use of forest resources. It is responsible for implementing forestry policies, programs, and projects aimed at promoting forest conservation, reforestation, and sustainable forest management practices. CONAFOR works with various stakeholders, including local communities, government agencies, NGOs, and private sector*

partners, to address deforestation, combat forest fires, and promote socio-economic development in rural areas dependent on forest resources.

- *CONABIO: The National Commission for the Knowledge and Use of Biodiversity (Comisión Nacional para el Conocimiento y Uso de la Biodiversidad) is a governmental agency in Mexico dedicated to biodiversity conservation and research. It collects, analyzes, and disseminates information about Mexico's biodiversity, promotes scientific research, and supports conservation efforts nationwide.*

2.3.3 Stakeholder Access to Project Documents (VCS, 3.18, 3.19; CCB, G3.1)

The complete PD and MR1 documents and their summaries in Spanish were translated into Spanish and handed to all participating Ejidos' authorities for review. They were given the responsibility of keeping the complete document in a central location, in most cases the *Salon Ejidal* (Ejidos' meeting room) for all members to be able to review it if needed.

During an informational meeting, Ejidatarios was informed that the complete documents will be public and available on the Verra page and will also be available online on Terra's web page.

2.3.4 Dissemination of Summary Project Documents (VCS, 3.18, 3.19; CCB, G3.1)

The summary of the Project Document was generated in Spanish and distributed to all participating Ejidos during informational meetings conducted by Ejido. Additionally, it was shared with ejido members who had access to the internet, using smartphones through a WhatsApp group that was created for all participating Ejidos in the project.

Summary information on monitoring reports will be actively disseminated to communities through a structured approach. Ejidos will convene in meetings where they will receive dissemination material, as outlined in Appendix 5 (Dissemination Material). This material is designed to provide a clear and visually engaging overview of the project, making it easily understandable for all stakeholders. Additionally, the communities will receive the MR1 document fully translated into Spanish, along with summaries tailored to their specific needs for consultation.

The meetings will include a dedicated Q&A section, allowing community members to seek clarification, ask questions, and provide feedback on the monitoring results. This interactive session fosters dialogue and ensures that community voices are heard and addressed. By disseminating information in a comprehensive and accessible manner and facilitating two-way communication channels, the project promotes transparency, accountability, and meaningful engagement with the communities it serves.

2.3.5 Informational Meetings with Stakeholders (VCS, 3.18, 3.19; CCB, G3.1)

The types and purpose of the different informational meetings with participating Ejidos is described below:

1. *Initial Approach: First meeting between ACAC and the Ejido to introduce the project's concept and objective and determine interest in participating in the project.*
2. *Presentation of Conservation Agreement: ACAC and Terra Global present an agreement to the ejido that outlines their commitment and collaboration for Project's design and implementation.*
3. *Ejidal General Assembly: A general assembly is held in each of the Ejidos, with proper legal procedures and the presence of a notary, to obtain free consent from ejido members for participating in the project. This assembly is witnessed by the Mexican federal authorities of the National Agrarian Registry.*

Table 10 lists the informational meetings that have been conducted between ACAC, Terra and Ejidos divided by types and dates when they were conducted.Appendix 4: Commercially Sensitive Information (Annex B: Ejidal General Assembly minutes), shows the evidence of the project consent.

Table 10. Schedule of informational meetings with Participating Ejidos in the First Project Activity Instance.

No.	Ejido	First approach ACAC-Ejido	Presentation of Agreement between ACAC/TGC for project implementation	Ejidal General Assembly of consent
1	Yohaltun	July, 2000	Feb 28, 2022	March 13, 2022
2	Pustunish	June, 2006	Feb 28, 2022	March 12, 2022
3	Francisco J. Mujica	May, 2022	May02,2022	May23,2022
4	Manuel Crescencio R.	May, 2022	May21,2022	Jun03,2022
5	Chun Ek	Feb02/2022	Feb27,2022	Mar17,2022
6	Cancabchen	May, 2022	May02,2022	May23,2022
7	Chanchen	Feb02,2022	Feb27,2022	Mar16,2022
8	Felipe Angeles	Feb02,2022	Mar09,2022	Mar22,2022
9	Xcanha	Feb 02,2022	Feb27,2022	Mar18,2022

Informational meetings are coordinated between ACAC and the Ejido authorities thought a WhatsApp chat that has been established per Ejido for this purpose. In this chat the day, time and purpose of the meeting is communicated and agreed. Then Ejido authorities will call/announce the meeting to the landowners (*ejidatarios*), and will decide if the topic is covered in a ordinary or extraordinary assembly.

Ejidos hold two types of assemblies with their members, ordinary and extraordinary. Ordinary assemblies happen monthly to discuss general coordination topics, this assembly is held the last Sunday of every month. As for extraordinary assemblies, they are called to discuss/agree on specific topics, for example participation/implementation of the project. Authorities announce/invite members to the meeting 15 days ahead through megaphones located in the Ejido populated area, and by posting an invitation outside the Salon Ejidal (Ejido meeting room). The Ejidos can hold the general assembly just if at least 50% or more of the Ejido members are present, if not they need to cancel and reschedule.

2.3.6 Risks from the Project and No Net Harm (VCS, 3.18, 3.19)

Communities themselves identified risks, listed in Table 11, with the Project during the Social Assessments which were conducted at project start and will be conducted with each verification.

Table 11. Human-induced risks and measures designed to mitigate these risks.

Identified risk	Potential impact of risk	Mitigation or preventative measure(s)
Lack of communication between project stakeholders	Hindered coordination and cooperation, leading to inefficiencies and misunderstandings	The project will Implement regular communication channels between stakeholders, including meetings, emails, and collaborative platforms. Also, there will be established clear protocols for sharing information and decision-making processes.
Unilateral decision-making with ejidos	Decreased trust and engagement from ejidos, potentially leading to resistance or non-compliance	The project will ensure all decisions are made collaboratively with ejidos, with their input and consent. A participatory decision-making process to ensure ejidos' voices are heard and respected will be implemented.
Lack of accountability in project socialization with ejidos	Decreased transparency and credibility of the program, potentially leading to resentment or mistrust	The project will Implement robust accountability mechanisms, including regular reporting on project progress and outcomes to ejidos. It will establish clear channels for ejidos to raise concerns or grievances and provided avenues for redress.
Limited understanding of project dynamics and project finances	Hindered program effectiveness and stakeholder engagement	Ccomprehensives meetings and capacity-building activities for ejidos and program partners will be conducted. Ongoing support and resources for continuous learning and understanding will be provided.
Communication gaps between project partners and ejidos	Increased likelihood of misinformation or misunderstandings, leading to conflict or misalignment	Established clear communication protocols and channels between program partners and ejidos, ensuring timely and accurate information sharing. Provided regular updates and feedback loops to ensure mutual understanding and alignment of goals and expectations.
Involvement of external agents in ejido socialization process causing misunderstandings	Erosion of trust and credibility, potential disruption of program activities	Implemented strict protocols for external engagement with ejidos, ensuring alignment with project objectives and values.
Lack of crisis communication management	Increased vulnerability to reputational damage and escalation of conflicts	Developed and implemented a crisis communication plan outlining roles, responsibilities, and protocols for addressing and resolving potential crises. Conducted

Identified risk	Potential impact of risk	Mitigation or preventative measure(s)
		training and simulations to ensure preparedness and effective response to crisis situations.
Unclear understanding administrative responsibilities	Increased risk of financial mismanagement and conflict	Provided comprehensive training and resources on financial and administrative procedures and responsibilities to program partners and ejidos. Established clear guidelines and protocols for financial management and accountability, including regular audits and reporting.
Absence of accountability policies and transparency in resource use	Decreased trust and confidence in the program, potential legal and reputational risks	Developed and implemented robust accountability policies and transparency measures, including reporting, and public disclosure of programmatic information. Established mechanisms for stakeholders to access information and provide feedback on program operations and outcomes.

2.3.7 Community Costs, Risks, and Benefits (CCB, G3.2)

The Project will ensure that relevant and adequate information about potential costs, risks, and benefits to communities will be provided to communities in a simple way and in a timely manner prior to any decision-making process related to their participation in the project.

To achieve this, the Project will conduct comprehensive consultations with the ejidos, to identify their priorities, concerns, and aspirations related to the project. Transparent communication channels and protocols will be established for sharing information with the communities, including regular meetings, WhatsApp, and phone calls.

Localized and accessible materials will be developed to present information about potential costs, risks, and benefits in a clear and understandable manner. These materials will be tailored to the local context and language preferences of community members.

Timely dissemination of information will be prioritized, allowing sufficient time for review and consideration before any decision-making processes. Regular updates and feedback sessions will be conducted to ensure that community members remain informed throughout the project lifecycle.

Additionally, the Project will organize workshops and capacity-building sessions to enhance community members' understanding of project-related issues, including financial implications, potential risks, and anticipated benefits. These interactive sessions will facilitate in-depth discussions and clarification of any concerns raised by community members.

Mechanisms for ongoing consultation and feedback will be established, allowing community members to express their opinions, ask questions, and raise concerns about the project. Feedback received from the communities will be carefully considered and addressed in a transparent manner.

2.3.8 Information to Stakeholders on Validation and Verification Process (VCS, 3.18.6, 3.19; CCB, G3.3)

Ejidos and other stakeholders are informed of the process for CCB validation and verification through in person and or telephone communication with the ejido authorities, including reminders via text messages, telephone calls and WhatsApp groups (for ejido stakeholders). A schematic design in Spanish simplifying the validation and verification process can be provided/ disseminated to all stakeholders through WhatsApp groups and in person sessions.

2.3.9 Site Visit Information and Opportunities to Communicate with Auditor (VCS, 3.18.6; CCB, G3.3)

Ejidos and other stakeholders will be informed of the auditor's site visit using telephone calls, text messages, WhatsApp, email messages, or in person by ACAC and Terra. It is suggested that at least the Ejido Coordinator speak English and Spanish to facilitate the direct and independent communication and avoid potential miscommunication. To ensure that meetings between the VVB and stakeholders will work best for Ejidos, the project will facilitate hiring a venue and transportation if needed. Meetings will be scheduled weeks in advance and respecting any work-related, cultural, or religious commitment (e.g., no meetings scheduled during worship time or holidays).

2.3.10 Stakeholder Consultations (VCS, 3.18; CCB, G3.4)

The following tables summarizes the stakeholder consultations conducted with ejido members and the outcomes of those consultations.

Date of stakeholder consultation	Febreuary-2022 to May-2022
Stakeholder engagement process	Initial Approach: First meeting between ACAC and the Ejidos authorities to introduce the project and objective and determine interest in participating in the project. Initial discussion with Ejido authorities to determine interest in the project, followed by a General Assembly where project parameters were reviewed with participating Ejido members.
Consultation outcome	The outcome of the consultation was positive, with the ejidos expressing interest and providing consent for project participation. Risks, costs, and benefits were discussed, with stakeholders expressing concerns about potential disruptions to their access to forest resources. Ejidos authorities voiced support for the project but highlighted the importance of preserving traditional land use practices and ensuring equitable distribution of benefits. Also, they expressed concerns about potential impacts on their livelihoods and access to resources.
Stakeholder input	Due account was taken of all input received during the consultation by incorporating feedback into the project design where feasible. Updates to

	the project design included adjustments to mitigate potential disruptions to community access to forest resources.

Date of stakeholder consultation	Febreuary-2022 to May-2022
Stakeholder engagement process	Presentation of Conservation Agreement: ACAC and Terra Global Capital presented an agreement to the ejido that outlines their commitment and collaboration for Project's design and implementation.
Consultation outcome	Ejidos expressed enthusiasm for the project but raised concerns about potential conflicts with existing land use practices and resource access.
Stakeholder input	Stakeholder input was integrated into the project design by refining activities to minimize conflicts and ensure compatibility with existing land use practices.

Date of stakeholder consultation	March 2022- June 2022
Stakeholder engagement process	Consent Ejidal General Assembly: A general assembly is held in each of the Ejidos, with proper legal procedures and the presence of a notary, to obtain free consent from ejido members for participating in the project. This assembly is witnessed by the Mexican federal authorities of the National Agrarian Registry.
Consultation outcome	Free consent obtained from Ejido members with legal procedures followed. Notary and Mexican federal authorities witness the assembly.
Stakeholder input	Stakeholders express the need for transparent benefit distribution.

Date of stakeholder consultation	20 March 2023
Stakeholder engagement process	Project update meeting with ejidal authorities: ACAC and TGC convene a meeting with Ejidal authorities to provide updates on the project's progress, discuss any developments, and address any concerns or questions raised by the authorities. The meeting was characterized by direct and blunt communication, although productive outcomes were achieved.
Consultation outcome	Ejidal authorities' express satisfaction with project progress but seek clarification on the timeline for specific activities and the allocation of resources.

Stakeholder input	Ejidal authorities emphasize the importance of timely communication and transparency in project management.

Date of stakeholder consultation	*April 2023*
Stakeholder engagement process	Social Assessments, including household surveys and Participatory Rural Appraisals, will continue at each verification. Specifically, during the Participatory Rural Appraisal (PRA) conducted by Ejido, communities identified and proposed activities based on their needs that were reviewed and considered to design the outcomes for the project.
Consultation outcome	Social assessments identify key community needs and priorities for project implementation. Participatory approach ensures community ownership and involvement in project design.
Stakeholder input	Community members highlight the importance of sustainable resource management and equitable distribution of project benefits.

Table 12 presents a summary of how all comments received during stakeholder consultations have been duly considered in the project design. It also outlines any updates made to the project design or justifies the insignificance or irrelevance of comments. Additionally, future public comment periods will be taken into consideration for project adjustment.

Table 12. Stakeholder Consultation Summary and Project Design Updates

Summary of comment received	When comment was received	Actions taken
Concerns about potential impacts on traditional land use practices and transparent benefit distribution.	March 2022 - June 2022	Conducted additional stakeholder engagement sessions to address concerns and clarify project objectives. Updated project documentation to include provisions for transparent benefit distribution and mitigation measures for potential impacts on traditional land use practices.
Request for clarification on project timeline and resource allocation.	20 March 2023	Provided detailed project timeline and resource allocation plan to Ejidal authorities. No updates to project design were deemed necessary as existing plans adequately addressed concerns.
Emphasis on sustainable resource management and	April 2023	Implemented a faith payment of USD $1.00 per hectare corresponding to the first-year payment, funded by Terra Global Capital. No further updates to

Summary of comment received	When comment was received	Actions taken
equitable benefit distribution.		project design were required as community priorities were already aligned with project objectives.
Comments on the effectiveness of communication and transparency in project management.	April 2023	Implemented regular communication channels between ejidos and established transparency mechanisms. No changes to project design were necessary as comments were addressed through ongoing project management practices.

2.3.11 Continued Consultation and Adaptive Management (VCS, 3.18; CCB, G3.4)

The ACAC Community Forestry Project recognizes the importance of adaptive management in navigating the evolving social dynamics and climate factors that influence the success of IFM initiatives. Given the changing forest and community needs influenced by climate change, continuous engagement with communities and stakeholders is paramount. Throughout the project's lifespan, the Participatory Rural Assessment (PRA) process will serve as a cornerstone for soliciting community input. Communities will not only identify new and effective activities over time but also assess the risks associated with project implementation. These insights will be integrated into project planning and management to ensure relevance and effectiveness. Regular consultations, involving TGC, ACAC, and Ejido communities, will complement the PRA process. These sessions will foster meaningful dialogue on the project's progress and its impact on livelihoods, forest management, and community well-being. Drawing on Terra Global's participatory action research (PAR) approach, these consultations will prioritize community involvement and empowerment. PAR emphasizes collective inquiry and encourages participants, including Ejidos, to contribute actively to project objectives, outcomes, and activities. By treating Ejidos as co-researchers and co-contributors, the project aims to foster a sense of ownership and empowerment among stakeholders. Continuous reflection and adjustment based on community feedback will ensure that the project remains responsive to local needs and aspirations throughout its lifecycle.

2.3.12 Stakeholder Consultation Channels (CCB, G3.5)

ACAC has regular phone calls, typically once per month, to check in on conservation efforts and receive feedback from the Ejidos. There are many consultations by phone, and one or two in person meetings per year. Within each Ejido, the General Assembly (GA) includes all Ejido members authorized to participate in shared decision-making forums. This group is responsible for debating community issues and decisions, including natural resource management to the Ejido membership. Ejidos also have a commission, made of a president, secretary, treasurer, and administrative council elected by the GA for three-year terms. This commission carries out and enforces the decisions made by the GA and provides internal audits and conflict resolution (Ellis, et al., 2015). Consequently, the Assembly is an organizational structure that corresponds to the landowners (*ejidatarios*) with full rights, but it is not an organ of political government; in such a way that confusion can be created when it is considered an adequate vehicle for democratic government of the entire community, when rather it is the representation of people linked to each other by land tenure. Currently the agrarian legislation contemplates the constitution of the Junta de Pobladores as the instrument that allows the Ejido and the residents to join forces to achieve objectives oriented primarily to

well-being.Figure 2 shows the high-level decision-making bodies that govern Ejido communities and affect how the stakeholder consultation process will be channeled.

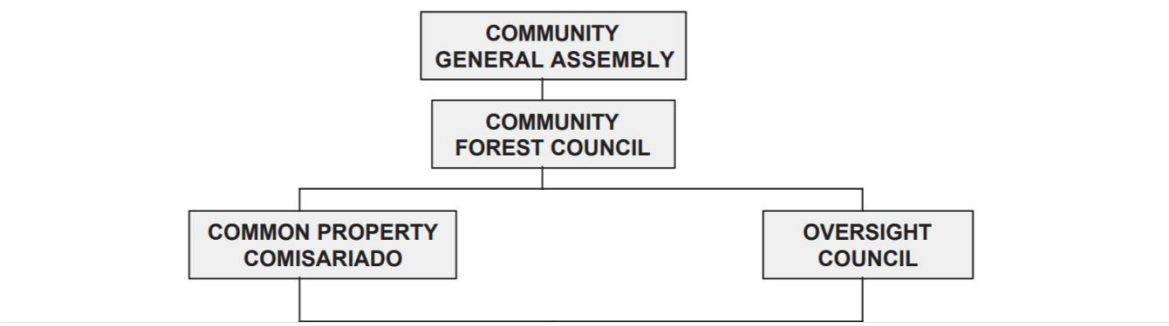


Figure 2. Ejido decision-making hierarchy.

2.3.13 Stakeholder Participation in Decision-Making and Implementation (VCS, 3.18, 3.19; CCB, G3.6)

Ejidatarios (men and women) have a right to vote in the matters, provide input and their opinion during the assembly. Ejido leaders and ACAC are in regular communication allowing for their concerns and suggestions to be readily incorporated into decision-making and implementation of the project. ACAC views this project as an Ejido-led project, ACAC is simply facilitating its existence for the conservation of the forest and the protection of the biodiversity in the region. Ejidos are also to be consulted throughout the social assessments to the impact of the project on their livelihoods and there are key questions utilized to source input from Ejidos on best practices for moving forward with Project implementation.

The ACAC Community Project is designed to address problems that Ejido communities face in the region, and the Ejido communities are involved in the project from the start. During informational sessions and through the Participatory Rural Appraisal (PRA) process local communities in the Project Zone Instance will be involved in decision making of project activities that work best for them and will be reflected in the Project Implementation Plan. As the Project moves forward on-going community engagement and by conducting PRA at least once per verification, communities will continue to have their ideas incorporated into project design and implementation. As a community-based Project is only successful if communities' needs are met, it is imperative to keep them actively involved in the project. To secure that women and underrepresented groups are involved in the Project design, implementation and decision making, women and underrepresented groups have a permanent seat at the meetings and will continue to be included in access to Project resources and training. These positions are reserved for people who are not employed directly by the Project. This allows them to provide valuable feedback on Project success or failure to include project benefits beyond direct employment.

2.3.14 Anti-Discrimination Assurance (VCS 3.19; CCB, G3.7)

Terra's non-discrimination policy emphasizes equal employment opportunities based on merit and qualifications. It prohibits discrimination based on various factors such as race, color, religion, sex, national origin, sexual orientation, age, or disability. The company commits to provide reasonable accommodation for individuals with disabilities and ensures that this policy governs all aspects of employment. Staff are encouraged to report any concerns about discrimination without fear of reprisal, and disciplinary action, including termination, will be taken against those found engaging in unlawful discrimination.

ACAC does not interfere with Ejido structures. ACAC follows the Mexican Law "Federal Law to Prevent and Eliminate Discrimination" (Diario Oficial de La Federacion, 2023) and are not discriminated against in the project design and implementation process and Ejido determines this. ACAC prohibits discrimination based on various factors and ensures equal opportunities for all employees and candidates. It adheres to laws concerning workplace discrimination and provides a channel for reporting incidents anonymously. These channels are e-mail ceballos.gerardo58@gmail.com or mail to the address Amigos de Calakmul A.C.,Calle Priv. Corralitos 7 - Col. San Mateo Oxtotitlán, C.P. 50100 - Toluca, State of Mexico., Mexico. The ACAC Anti-discriminmation policy can be consulted in Appendix 4: Commercially Sensitive Information, (Annex C).

2.3.15 Feedback and Grievance Redress Procedure (VCS, 3.18.4; CCB, G3.8)

	Terra Global Capital, LLC	Amigos de Calakmul A.C.
Development process	TGC engaged in a collaborative process with stakeholders to develop a grievance redress procedure. This involved integrating robust environmental and social risk identification and mitigation policies, strategies, and procedures to avoid causing harm to participants in funded projects and programs. TGC ensures accountability by responding to and resolving grievances linked to funded activities	ACAC has established a dedicated policy and procedure for handling complaints related to the projects and programs it supports. The organization prioritizes biodiversity protection and sustainable practices, integrating community perspectives and values while addressing complaints or claims associated with funded activities.
Grievance redress procedure	Grievances related to environmental, social, community health, safety, and security, procurement of goods and services, gender bias and harassment, labor, compensation, and resettlement will be addressed. TGC emphasizes culturally appropriate conflict resolution methods. The procedure includes multiple stages for receiving, hearing, responding to, and attempting to resolve grievances within reasonable timeframes, integrating traditional conflict resolution methods where applicable. The full TGC Grievance redress procedure can be consulted in https://terraglobalcapital.com/feedback-and-grievances	ACAC's procedure allows any negatively affected individual or entity to file a complaint, with representatives of groups or communities required to provide evidence of authority. Complaints can be anonymous, and confidentiality is assured. ACAC is committed to resolving grievances within a reasonable timeframe and ensures that complaints filed more than two years after project completion or awareness of negative impacts are not considered. The full ACAC Grievance redress procedure can be consulted in Appendix 4: Commercially Sensitive Information (Annex D).

2.3.16 Accessibility of the Feedback and Grievance Redress Procedure (VCS, 3.19; CCB, G3.8)

At TGC, the Feedback and Grievance Redress Procedure is published at Feedback and Grievances | Terra Global Capital, where any community or group (at least two or more people) that believes it is or may be

negatively affected by a failure on the part of Terra Global to follow its safeguards in the design or implementation of a Terra Global funded project may file a complaint. Representatives filing a complaint on behalf of a group or community must provide concrete evidence of authority to represent them.

The process to submit a complaint is the following:

- Fill out a complaint in the native language. The complaint should include the following information in order to be complete, a. Complainant's full name and contact information. If not filed directly by the complainant, proof that those representing the affected people have authority to do so, b. Name of the project or program of concern and type of grievance, c. The harm that is or may be resulting from the project, d. Time frame that the reported complaint occurred, e. Attach/include supporting documents, f. List any actions taken so far to resolve the problem, including contacting Terra Global or other local project partners or implementers, g. Proposed solutions; and h. Whether confidentiality is requested (stating reasons).
- The complete complaint should be submitted by email to the following address grievances@terraglobalcapital.com or by mail to the following address:

Terra Global Capital, LLC

6114 La Salle Avenue, Suite 441

Oakland, CA 94611

The review process starts when Terra Global receives the complaint (via email or mail). The complaint is recorded in Terra Global's Grievance Redress Mechanism Tracker, and the complainant is notified of receipt and informed of next steps.

Terra Global will assess the eligibility of the complaint and provide a response as to whether it is eligible within 15 days, ineligible complaints will be recorded in the Tracker with rationale for ineligibility.

The complaint is assessed by the Terra Global Compliance Team as it is made. This may involve interviewing additional parties to collect more information or bringing in third parties to support the investigation and assessment. The investigation is conducted by a Compliance Team member, independent of the Project Team. A response/resolution is decided on by the Terra Global Founder & CEO, Terra Global Ethics Committee, or other decision bodies named under specific policies. The decision is made by someone independent of the Program Team.

Response is communicated to the complaining party (where possible) and to any involved parties. Resolution is recorded in the GRM tracking mechanism. Any lessons are applied internally as appropriate (e.g., updating policies or processes).

As an implementing partner, Amigos de Calakmul A.C. has a structured process for handling complaints, ensuring transparency and accountability. Once a complaint is received, it undergoes thorough evaluation within a defined timeframe. The investigation is conducted by an independent Compliance Unit member, and the response or resolution is made by a decision-maker external to the Program Team. The outcomes are communicated to the complainant and other involved parties, and lessons learned contribute to internal improvements, such as policy or process updates. The full Feedback and Grievance Redress Procedure can be consulted in the **Error! Reference source not found.**. Anonymous complaints can be reported either through email or by mail to the specified address of Amigos de Calakmul A.C.

Email: ceballos.gerardo58@gmail.com •

Address:

Amigos de Calakmul A.C. Calle Priv. Corralitos 7, Col. San Mateo Oxtotitlan Toluca, Estado de México. C.P. 50100

2.3.17 Worker Training (VCS, 3.19; CCB, G3.9)

ACAC will work to ensure that those who participate in the Project or are in some way engaged in project activities related to conservation and site visits undergo training to outline potential hazards and risks. Project Activities will be another avenue to engage with the Ejidos and provide them with basic training on monitoring and discouraging harmful forest activities. Basic training will always be provided as requested by Ejidos. Ejidos are trained in how to utilize equipment such as camera traps, and how to conduct research on biodiversity efforts in the region. Training is typically provided through workshops utilizing participatory approaches, along with extensive field training in the sites where activities are to occur.

2.3.18 Community Employment Opportunities (VCS, 3.19.13; CCB, G3.10)

ACAC does not view Ejido participation based on an employer/employee relationship basis, but on the reimbursement for the time and expenses occurred from forest conservation activities. Based on ACAC's experience, Ejidos are regularly hired for field work and other conservation activities are always provided to the communities. Ejidos obtain revenue from the agreements and some people in the community are also working from jobs derived from the conservation agreements, such as monitoring camera traps and research, and those who wished to engage more with these activities are paid extra for those activities.

Selection of community members for formal employment will be based on their capacity, ability to expand their own capacity and if they are from an underrepresented or marginalized group it is preferred. These current positions need little formal education, but community members will receive training on the activities to be carried out. The Project also helps promote community members to increase capacity building skills and have management positions within the Project.

2.3.19 Occupational Safety Assessment (VCS, 3.19; CCB, G3.12)

Both the Amigos de Calakmul Staff and the Ejido Communities are engaged in field activities where they are exposed to various risks. Some of those risks include vehicle accidents due to travelling to Project sites, risks associated with field activities such as forest patrols, biomass measurements, and forest management. Field staff may also be at risk of possible dangerous wildlife such as venomous snakes, and rough forest conditions etc. To minimize these identified risks, the Project includes safety training, especially around wildlife and encountering poachers. Generally, the Project will encourage patrolling in the forest to be done with at least two people; and that anyone going into the forest carry a phone. When community members are engaged in forest patrolling, they will be trained in first aid and safety.

2.4 Management Capacity

2.4.1 Project Governance Structures (CCB, G4.1)

Main Entities

The following entities are involved in the implementation of the project. **Error! Reference source not found.** goes in detail as well.

Entity	Governance and Role in Project
Amigos de Calakmul A.C. (ACAC) – Implementing partner	On November 22, 2000, ACAC was constituted as a civil association, in accordance with the laws of Mexico, whose corporate purpose is to promote the conservation, restoration and rational management of flora and fauna, as well as the other natural resources and ecosystems present in the Calakmul Biosphere Reserve. Amigos de Calakmul has worked for 12 years to protect the tropical rainforest of the Calakmul Biosphere Reserve in southeast Mexico and its adjacent area of influence. Their work centers on providing legal and environmental advisory services to the local communities that own these areas and who are entitled to supply wood to logging companies until, with the help of the organization, they organized a new scheme to address Ejido needs. Through the new scheme, the organization collected enough donations to start what is known as a capital fund, which would replace the fees Ejidos would be receiving from logging companies in exchange of the Ejidos protection of their forest. These payments to Ejidos for forest protection depend on the availability of funds to make on-going conservation payments and manage the Project. The expertise and focus of the work performed by ACAC will be overall Project coordination and design, secure participation from Ejidos, facilitate field visits; facilitation of stakeholder dialogues and negotiations; identification of any in-country third party partners (as needed for any field data collection); obtaining the required stakeholder and government approvals (as needed), developing on-the-ground implementation of work plans; developing budgets for Project actions. ACAC will be responsible for engaging the Ejidos in the Project with the aim of securing their approval for the terms and conditions detailed in this Agreement, subject to their previous, informed advice and written consent.
Ejidos	These are the landowners who have through formal processes elected to voluntarily participate in the Amigos de Calakmul Project and to forego logging rights to protect the forest and biodiversity habitat. Each Ejido that joins will become part of Project Activity Instance 1 and will support the conservation through, signing Conservation (Cooperation) Agreements, signing the Trust documents, participating in the governance to the Project, receiving support for livelihoods activities, receive education and employment opportunities in forest protection and participate in the on-going monitoring of Project results.
Terra Global Capital, LLC	Founded in 2006, Terra Global is a woman-run, for-profit social enterprise and small business. Terra Global's mission is to facilitate financially, socially, and environmentally sustainable forestry and agricultural land management practices. Terra Global is now the leader in sustainable forest and agriculture project development, land-use greenhouse gas quantification and finance, and providing technical expertise and investment capital to their global client base in a collaborative and innovative manner. Terra's overall role is to support the design and structuring of the Project. Manage the initial investments in the Project and to perform the development and on-going verification of the VCS/CCB carbon credits. Support and oversee the

Entity	Governance and Role in Project
	implementation of activities with ACAC, provide fiscal management, be part of the trust fund governance and provide performance reporting on the Project.

Supporting Entities

The following supporting entities will be involved in the project.

Entity	Governance and Role in Project
Calakmul Biosphere Reserve (CBR)-CONANP	The CBR, managed by the National Commission of Natural Protected Areas (CONANP), is a designated protected area located in the state of Campeche, Mexico. It encompasses a diverse range of ecosystems, including tropical forests, wetlands, and Mayan archaeological sites. CONANP is responsible for the management and conservation of the reserve, implementing measures to protect biodiversity, regulate human activities, and promote sustainable tourism and research. The CBR collaborates with local communities, government agencies, NGOs, and other stakeholders to implement conservation initiatives, promote environmental education, and support sustainable livelihoods. Its efforts are essential for preserving the unique ecosystems and cultural heritage of the area while also contributing to local economic development and the well-being of surrounding communities. They have several projects that contribute both to the sustainable management and preservation of the jungle and to improve the livelihoods of communities.
Agrarian Prosecutor's Office	(Procuradoria Agrária): The Agrarian Prosecutor's Office is a governmental agency in Mexico tasked with overseeing agrarian issues and land tenure rights. It is responsible for resolving conflicts related to land tenure, promoting land regularization, and ensuring the legal protection of land rights for rural communities, including ejidos and indigenous groups. The Procuraduría Agraria works to uphold and enforce agrarian laws and regulations, facilitate land distribution, and support sustainable land use practices. They work closely with agrarian communities, government agencies, and legal institutions to resolve land disputes, protect land rights, and promote equitable access to land resources. Its efforts are essential for fostering social stability, economic development, and environmental sustainability in rural communities, contributing to overall national development goals.
National Forestry Commission	(CONAFOR): CONAFOR is a government agency in Mexico dedicated to the conservation, management, and sustainable use of forest resources. It is responsible for implementing forestry policies, programs, and projects aimed at promoting forest conservation, reforestation, and sustainable forest management practices. CONAFOR works with various stakeholders, including local communities, government agencies, NGOs, and private sector partners, to address deforestation, combat forest fires, and promote socio-economic development in rural areas dependent on forest resources. CONAFOR collaborates with other entities to implement strategies for forest conservation, reforestation, and sustainable land management. Its efforts are essential for

Entity	Governance and Role in Project
	protecting biodiversity, mitigating climate change, and enhancing the livelihoods of forest-dependent communities. Additionally, CONAFOR's work contributes to national and international commitments to sustainable development and environmental conservation.
CONABIO	The National Commission for the Knowledge and Use of Biodiversity (Comisión Nacional para el Conocimiento y Uso de la Biodiversidad), is a governmental agency in Mexico dedicated to biodiversity conservation and research. It collects, analyzes, and disseminates information about Mexico's biodiversity, promotes scientific research, and supports conservation efforts nationwide. CONABIO works collaboratively with government agencies, academia, NGOs, and local communities to develop and implement strategies for biodiversity conservation and sustainable use. CONABIO provides valuable data and expertise to inform decision-making processes, supports the implementation of conservation policies and programs, and promotes public awareness and education about biodiversity.

2.4.2 Required Technical Skills (VCS, 3.19; CCB, G4.2)

Table 13 details the technical skills of all partners involve in the project.

Table 13. Technical skills delivered by project implementers and partners

Core Project Component	Amigos de Calakmul (ACAC)	Ejido Communities	Terra
Project authorization, design oversight and financing	√√	√	
Project design and planning	√√	√ √	√
Overall project implementation management and partner coordination	√	√ √	√
CBR management	√√	√√	
Community engagement and support for implementation of community project	√√	√	
Field data collection and on-going monitoring	√√		√
VCS/CCB project development and GHG quantification	√		√√
Design and oversight of project's institutional arrangements (fiscal, legal and contractual)	√		√√

Core Project Component	Amigos de Calakmul (ACAC)	Ejido Communities	Terra
On-going funding of project management and REDD+ activities	√√		√

√√ = *Technical Lead*

√ = *Technical Support*

2.4.3 Management Team Experience (VCS, 3.19; CCB, G4.2)

- ***Amigos de Calakmul A.C. (ACAC)***

Amigos de Calakmul has worked for 18 years to protect the tropical rainforest of the Calakmul Biosphere Reserve in southeast Mexico. They work on scientific issues regarding the impact of habitat loss and fragmentation in ecosystem function and species conservation. Regarding the Ejidos, their work centers on providing legal and environmental advisory services to the local communities that own these areas. Those communities used to supply wood to logging companies until, with the help of the organization, they organized a new scheme to meet their needs without finishing the resources of their subsistence. Through the new scheme, the organization collected enough donations to start what is known as a capital fund, which sum is enough to secure that the interests it yields are given to the farmers in replacement of the fees they were receiving from logging companies in exchange of their protection of the forest, securing, at the same time, that the fund itself is not touched - thus reducing the need to search for additional funds annually.

Gerardo Ceballos, President ACAC

Professor Ceballos is a globally known distinguished environmental scientist. That status is the result of (1) his pioneering and extraordinarily diverse ecological and conservation research, (2) his unparalleled efforts to bring ecological knowledge to bear on crucial societal issues, (3) his building of bridges between ecology and conservation to humane find paths to ecological sustainability, and (4) his untiring efforts to increase the ecological literacy of the general public. Ceballos is a major figure in global conservation science, carrying out strenuous field work testing ideas in countryside biogeography and doing important theoretical/practical work on the global distributions of mammals and their significance for mammal conservation as well as on global rates of extinction as humanity triggers the sixth great extinction event. Ceballos also has been responsible for enormous direct contributions to the preservation of the biodiversity of Mexico - a global "hotspot helping to create protected area equivalent to 2% of the Mexican land mass and the first Mexican endangered species act. His scientific production is extremely remarkable, especially for a scientist from a developing country, where resources for conducting research are extremely limited. He has published 500 scientific and outreach articles, and 52 books. He is the ecologist and conservationist with more books published in Mexico and Latin America. He was elected as a foreign member of the American Academy of Arts and Sciences in 2014 and a member of the US National Academy of Science, an honor shared by less than 10 scientists from Latin America.

Alberto Szekely, Legal Director

Perhaps, the most important environmental lawyer in Mexico. Alberto Székely obtained his law degree from the University of Mexico and went on to earn a Master of Arts and a Master of Arts in Law and Diplomacy degrees from the Fletcher School at Tufts University, a Ph.D. in International Law at the University of London and an Honorary Doctorate in Law from the University of New Mexico. His academic career has included

teaching international law at the University of Mexico, El Colegio de Mexico, Arizona State University, Johns Hopkins and the University of Houston. His diplomatic work led him to become a Career Ambassador in the Mexican Foreign Service, where he was in charge of Mexico's legal affairs at the United Nations and at the Organization of American States, performing for 8 years as the Chief Legal Advisor of the Mexican Foreign Ministry. He participated in the negotiation of the U.N. Law of the Sea Convention and of many multilateral and bilateral environmental treaties, after which he opened a legal and consulting firm where he has practiced environmental and natural resources law for the last 25 years, including mostly work on conservation and preservation of resources and ecosystems, as well as the creation of various natural protected areas, particularly in costal and transboundary environments. He has published books and articles extensively in those areas, mostly in the United States, was elected by the U.N. General Assembly as a member of the International Law Commission, serves as member of the Permanent Court of International Arbitration at The Hague and has served as ad hoc judge and arbitrator in international tribunals. For the last decade, he has undertaken extensive work for the protection of forests in the context of climate change issues.

Heliot Zarza, Projects Director

Heliot is a biologist by National Autonomous University of Mexico (UNAM). In the last 20 years, his research projects were focused on the ecology and conservation of Mexican mammals, specifically he works with mesocarnivores and large felids in fragments environmental in Central and Southern of Mexico. He published 12 papers in scientific journals, 4 books, 15 chapter of books, and several divulgation manuscripts. He is a founder member of Jaguar National Conservation Alliance. Currently, He is professor in the Universidad Autónoma Metropolitana (UAM) Unit Lerma. His research lines are conservation biology, mammal ecology, landscape ecology, disease ecology and climate change.

Ángel Zuñiga, Field Coordinator

Born in Tuxtla Gutiérrez, Chiapas, on December 13, 1994, and residing in Zoh-Laguna, Calakmul, Campeche since 2008. Holds a degree in Economics and Finance from the Autonomous University of Quintana Roo. Over 10 years of community engagement experience in Calakmul, Campeche. Since 2013, dedicated to voluntary work in Calakmul, collaborating with the Fondo para la Paz A.C. Involved in data collection and field analysis, contributing to community projects such as financial viability studies for beekeeping initiatives and pepper utilization in the region. Engaged in generating, analyzing, and integrating information on economic-productive factors of communities affected by the Tren Maya (Mayan Train) in section 7, in collaboration with Fonatur S.A de C.V. Experience includes designing, implementing, and developing a youth alternative tourism network project with JUEGAS A.C, in coordination with the United Nations Development Programme's Small Grants Programme. Currently actively collaborating with Amigos de Calakmul A.C. in implementing the Community Conservation Project. Responsibilities include field support, assistance in polygon information gathering, forest expansions, and ejido records. Also, involved in planning agendas and informative meetings in project-area ejidos.

- *Terra Global Capital, LLC*

Founded in 2006, Terra Global is a woman-run, for-profit social enterprise and small business. Terra Global's mission is to facilitate financially, socially, and environmentally sustainable landscapes. Terra Global is a global leader in sustainable forest and agriculture project development, land-use greenhouse gas quantification and finance, and providing technical expertise and investment capital to their global client base in a collaborative and innovative manner. Having worked in 31 countries, Terra Global has designed and supported the implementation of REDD+ and other sustainable landscape projects from the project to national scale.

Since Terra Global's founding, they have led the development of ground-breaking GHG quantification methodologies, Project Documents, and Monitoring and Implementation Reports under Verra, American Carbon Registry, Climate Action Reserve, and Carbon Fund Methodological Framework. From the project design through monetization of verified emission reductions, Terra Global has developed innovative financial structures and transactions to create commercially viable sustainable landscapes projects. Using its proprietary software and standard operating procedures, Terra has conducted greenhouse quantification in a spatially explicit manner and established pathways for crediting from project to national scale.

Leslie L. Durschinger - Founder, CEO, CIO, Climate Finance

Leveraging 20 years of experience and a proven track record in the financial services industry, Leslie Durschinger founded Terra Global Capital in 2006 to promote results-based approaches to sustainable landscape management through reducing deforestation, increasing tree cover, and adopting climate-smart agricultural practices. She brings technical expertise in sustainable landscape project design and deployment of investment capital in a collaborative and participatory manner to Terra Global's client base, which consists of governments, NGOs, and private companies. Leslie is recognized as a pioneer and innovator in aligning development values and financially viable approaches to sustainable landscape management. Terra Global is a global leader in nature-based solutions project development, greenhouse gas quantification, and community-based business model development that provides technical expertise and investment capital to its global client base. Under Durschinger's leadership, Terra has launched numerous commercially viable sustainable landscape management projects, designed new risk mitigation instruments, and developed trust funds and climate finance investment vehicles that drive investment capital to produce sustainable landscapes with climate and community benefits. Prior to Terra, Leslie held senior management positions in OTC derivatives trading, investment management, algorithmic trading, risk management, and securities lending. She is on the Board of ACDI-VOCA, Co-chair of the International Emission Trading Associations Natural Capital Solutions Working Group and is a member of the Verra VCS Project Advisory Group, REDD+ Social & Environmental Standards Committee, and Verra - VCS JNR Expert Working Group. Her previous employers are JP Morgan, Merrill Lynch, Barclays Global Investors, and Charles Schwab.

Erica Meta Smith, M.F., R.P.F. Managing Director, Natural Resource Management and GHG Quantification, Team Lead

Erica Meta Smith, M.F., RPF. Forest Carbon Field Development Specialist joined Terra Global Capital in 2009. She provides technical forestry knowledge, on-ground carbon quantification expertise, and specializes in forest mensuration projects. Erica manages the NRM and GHG Quantification team. She has firsthand knowledge of forestry-based income and the experience of depending on natural resources as a livelihood. Before working with Terra Global Capital, Erica worked in forest policy and forestry technical operations. Erica has worked extensively in the REDD+ sector training communities and with in-country experts for excellence in MRV across Africa and Asia. She received her undergraduate degree in forestry and Master of Forestry from the University of California-Berkeley in 2005 and 2007. Her master's work reviewed the California Climate Action Registry's Forestry Protocols and the implications of carbon markets in California. Erica is a Certified Ecologist through the Ecological Society of America and a Registered Professional Forester in the State of California.

Gregory Ives, M.B.A. Principal, Climate Finance

Greg Ives is a natural resource management and conservation finance specialist. He brings eight years of experience in sustainable land management, place-based conservation project design, and impact

investing. At Terra, Greg leverages his expertise in conservation-oriented forestry, regenerative agriculture, and environmental markets to support sustainable land use and rural development projects. Greg was an independent consultant before Terra Global, working with partners to channel investment and philanthropic capital to sustainable landscapes. He also served as the founding Director of Conservation for the Reserva Ecologica Panamaes in Panama. During his time as Director, Greg managed conservation, restoration, forestry, and agriculture projects and contributed to the reserve's organizational development and growth strategy. Greg supports the management of climate finance investment projects, carbon eligibility assessments, and investment readiness development. Greg holds a bachelor's in environmental management from the University of Pennsylvania and a master's in business administration from the University of Oxford.

David Montoya González, M.S. Director, Remote Sensing/GIS, Team Lead

David Montoya brings 8 years of extensive experience in Remote Sensing and GIS. David has worked with multiple Colombian government entities, such as The National Department of Statistics (DANE), the 3rd National Agricultural Census, and the National University of Colombia (UNAL). His research at UNAL was based in the Andean Region of South America and focused on geomorphometry. Specifically, David worked in the Sibundoy Valley with the indigenous Inga and Kamentsá communities, analyzing the land cover changes and natural resource sustainability. David's role at Terra Global is leading the Remote Sensing and GIS team, where the team delivers pragmatic and innovative software and tools that meet carbon market and impact standards and support community-based geospatial community monitoring. Prior to Terra Global, David worked in the private sector, developing GHG assessments and quantification in Latin America, Australia, and the United States. He holds a bachelor's degree in Forest Engineering from the National University of Colombia and a Master's degree in Remote Sensing from the Federal University of Rio Grande do Sul (UFRGS) in Brazil.

Angelica Garcia, Ph.D. Principal, Biodiversity

Angelica Garcia brings 15 years of experience in academic and non-academic settings related to natural resources management and applied research. At Terra Global, Angelica manages projects and supports the development of biodiversity benefits and quantification, as well as monitoring and other co-benefits. Angelica's extensive background includes holding key positions at renowned biological stations in the Peruvian Amazon, where she served as a resident manager and researcher. Her hands-on experience in these positions, along with her expertise as a wildlife supervisor and environmental consultant, has allowed her to bring her knowledge of biodiversity to her work at Terra. Angelica holds a Bachelor of Science degree in Biology, specializing in Ecology, which laid the foundation for her academic journey. She was awarded a Fulbright Scholarship, leading her to pursue a Master of Science degree in Forest Resources and Conservation, as well as a Ph.D. in Interdisciplinary Ecology from the University of Florida. During her doctoral studies, Angelica conducted in-depth research on the ecological and socioeconomic factors influencing palm management and its sustainability among indigenous people and local communities in the Peruvian Amazon.

Javier Valdivia Navarro, M.S. Principal, Rural Community Development

Javier brings five years of environmental work to Terra Global with expertise in climate change mitigation, data analysis on tropical landscapes and project strategy coordination. At Terra Global, Javier leads efforts to reduce greenhouse gas emissions and promote environmental benefits in agriculture and land use through multidisciplinary Nature-based Solutions, managing projects, partnerships, data, and community engagement for impactful outcomes. Before Terra, he worked on climate change adaptation and mitigation projects in international organizations and has led Natural Climate Solutions initiatives in the Caribbean

region. Javier has contributed to the development of advocacy strategies and facilitated capacity-building initiatives for youth delegations participating in UNFCCC conventions. Javier received his undergraduate degree in Renewable Natural Resources Engineering from the Chapingo Autonomous University in Mexico. He also studied Environmental Sciences at the University of Extremadura, Spain. And he got a master's degree in forestry sciences at Chapingo.

- *Ejidos*

Ejidos formal governance has three bodied 1) the General Assembly of Ejidatarios (*Asamblea general de Ejidatarios*), 2) the Ejidal Commissariat (*el Comisariado Ejidal*), and the 3) Supervisory Council (*el Consejo de Vigilancia*).

The amended Agrarian Law retains many of the features of agrarian governance and established after the Mexican Revolution. The most important body of governance is the Assembly, with wide authority on governance and land use matters (Article 23) with each registered member of the community (*ejidatario or comunero)* having one vote. Voting can be by consensus or majority rule and elections to office are usually held every three years. Common property management responsibilities fall to the *Comisariado Ejidal (*Ejido Supervisory Body) or *Comisariado de Bienes Comunales (*Supervisory Body of Community Assets), and is composed of a President, Secretary, Treasurer, and their seconds. A second governing organ is the Oversight Council (*Consejo de Vigilancia*) composed of a President and two Secretaries and their seconds and serves in a check and balance and auditing function (Article 36). These offices are typically unsalaried and unspecialized towards forestry or any other management skill. Assemblies meet monthly to twice a year, depending on needs. Although not legally required, Assemblies also frequently establish multiple committees to carry out civic duties

General Assembly of Ejidatarios (*Asamblea general de Ejidatarios*)

The Ejido General Assembly is made up of all the Ejidatarios who had not been deprived of their rights. The Assembly, in addition to electing and removing the members of the Ejidal Commissariat and the Supervisory Council, has the power to 1) authorize, modify, or rectify the decisions of the Ejidal Commissariat and 2) to issue agreements regarding the way in which Ejidos should use/enjoy community assets. The General Assembly of Ejidatarios was theoretically the nucleus of Ejido democracy, recognized to discuss and make decisions regarding the activities and property of the Ejido. However, in practice it often happened that the General Assembly does not function satisfactorily, leaving the Ejidal Commissariat to make both routine decisions and, sometimes, the important decisions. This is not the case if it is in the kind of assembly that requires the participation of the Procuraduria Agraria.

Ejidal Commissariat (*Comisariado Ejidal*)

The Ejidal Commissariat is constituted by a President, a Secretary, and a Treasurer. The function of the Ejidal Commissariat is to execute the agreements of the Assembly, the representation and administrative management of the ejido, making use of the powers that a general representative has for acts of administration, lawsuits and collections, he may call an Assembly; It is also obliged to report to the Assembly on the work carried out and the movement of funds and to report on the work of exploitation of the lands for common use and the state in which they are located, in addition to the applicable provisions set forth in the Internal Regulations. or the Communal Statute.

Vigilance Council (*Consejo de Vigilancia*)

The Supervisory Council is constituted by a President and two Secretaries, owners and their respective alternates and will operate according to their powers and in accordance with the internal regulations; If nothing is agreed regarding the above, it will be understood that its members will work together.

The powers and obligations of the supervisory board are:

1. To monitor that the acts of the commissariat conform to the precepts of the law and the provisions of the internal regulations or the assembly.
2. Review the accounts and operations of the commissariat to make them known to the assembly and denounce before it the irregularities that the commissariat has incurred.
3. Call an assembly when the commissariat does not document the management team's expertise and prior experience implementing land management and carbon projects at the scale of this project.

2.4.4 Project Management Partnerships and Team Development (VCS, 3.19; CCB, G4.2)

The Project Partners (ACAC and Terra Global) have a strong capacity for implementation. As the Project adds new participating Ejido groups, it will be determined whether other partners are needed. The Project will, however, use short-term technical experts as needed to supplement the core team and bring specialized expertise.

2.4.5 Financial Health of Implementing Organization(s) (CCB, G4.3)

ACAC is a small NGO based in Mexico that depends on grants and climate finance to deliver on their mission. Through developing the ACAC Community Conservation Forestry Project, they are securing the financial resources to promote the engagement in Ejidos in the conservation project and finance the support they provide for local project implementation and on-going monitoring for results.

Terra Global who provides both the technical support for the project and has arranged the upfront private sector climate finance, has adequate resources to initially support the Project during the phase in which it starts to produce VCUs. This is evidenced by the ability to delay receiving its technical fees, while the project was delayed. Terra Global will be able to support the project over the long-term through the budget allocation provided by the Project that covers the costs of the services Terra Global provides.

2.4.6 Avoidance of Corruption and Other Unethical Behavior (VCS, 3.19; CCB, G4.3)

Terra Global Capital, LLC, and its subsidiaries are committed to upholding the highest legal and ethical standards in their business operations. To ensure compliance with the Foreign Corrupt Practices Act (FCPA), the company has implemented a comprehensive FCPA Policy. This policy applies to all personnel, including directors, officers, employees, contractors, and third-party representatives. The FCPA is the key legislation governing interactions between U.S. businesses and foreign officials. It prohibits bribery of foreign officials and mandates accurate financial record-keeping and internal accounting controls. The company's policy emphasizes compliance with the FCPA, and any failure to adhere to it may result in severe consequences, including civil and criminal liabilities. The policy outlines anti-bribery provisions, defining what constitutes illegal practices, including payments to third parties that are intended for corrupt purposes. The definition of "foreign official" is broad, encompassing employees, agents, or instrumentalities of foreign governments, political parties, and international organizations. Specific guidelines are provided regarding meals, entertainment, and gifts, emphasizing that any such offerings to foreign officials must be of nominal value, lawful, and in line with local customs. Advance authorization from the Founder and Managing Director is required for such expenditures, with exceptions based on monetary thresholds. The policy extends its compliance requirements to local partners, agents, and third-party contractors, emphasizing the company's liability for their actions. Due diligence, proper documentation, and periodic audits are stressed to mitigate FCPA risks. For fund management, the policy outlines pre-investment and post-acquisition actions to

manage FCPA risks, especially in high corruption risk countries. The company's employees are expected to understand and comply with the FCPA policy, and potential violations are subject to investigation by relevant committees. Penalties for FCPA violations are severe, including fines, imprisonment, and potential disciplinary actions by the company. Whistleblower protection is highlighted, encouraging reporting of any violations without fear of retaliation. The policy also emphasizes the importance of record-keeping to ensure accurate financial reporting, in line with FCPA requirements. The Founder and Managing Director is available for targeted compliance support, and the company expects all representatives to share its commitment to FCPA compliance. The full policy can be consulted in TGC Anticorruption Policy Appendix 4: Commercially Sensitive Information (Annex F)

The implementing partner, Amigos de Calakmul, employees engaged in the project will not be involved in, or complicit in, any form of corruption such as bribery, embezzlement, fraud, favoritism, cronyism, nepotism, extortion, and collusion.

As some Ejido communities have been involved in illicit timber trade and corruption in the past, there will have to be measures in place to select Ejidos to join the project who have proven background and to monitor anti-corruption policy. There are government agencies in Mexico including CONAFOR and SEMARNAT that will be engaged with the Project as they have enforcement powers of laws that impact the Project Area. This will support the reduction of risk related to corruption/forest crime.

The anti-corruption law in Mexico applies to forest crimes and wildlife crimes, and are governed by the Federal Criminal Code, Articles 417 and 419, and wildlife crimes by Article 420.

The anti-corruption policy of ACAC and what is required from the Ejidos as part of the conservation agreement has entered only contracts or agreements governed by civil, not criminal law. The ACAC Anticorruption Policy can be consulted in Appendix 4: Commercially Sensitive Information (Annex G)

2.4.7 Commercially Sensitive Information (VCS, 3.5.2 – 3.5.4; CCB Rules, 3.5.13 – 3.5.14)

The commercially sensitive information which has been prepared and provided to the VVB is listed in **Error! Reference source not found.**.

2.5 Legal Status and Property Rights

2.5.1 National and Local Laws (VCS, 3.1, 3.6. 3.7, 3.14, 3.18, 3.19; CCB, G5.6)

Table 14 presents all relevant laws related to land use and tenure laws in Mexico, and how the project is complying with them.

Table 14. Relevant Land-Use and Tenure Laws and Compliance

Law	Relevance / Project's Compliance
Presidential Decree, 1989	Formally established the Calakmul Biosphere Reserve: The Project recognizes the CBR limits, the different zones (Core and Buffer Zone) and adheres to its regulations. The Project also collaborates with local authorities to reinforce the regulations related to forest conservation in the Ejidos' forest areas according to their location in the different zones of the CBR.

Law	Relevance / Project's Compliance
Constitution of Mexico (Art 27, 1994 Amendment)	Gives the Ejidos the right to divide and title land for individual ownership: The project recognizes each of the Ejidos' land tenure set up, acknowledging communal and individual tenure types. The project will apply the principle of Free, Prior and Informed Consent (FPIC) to guarantee Ejidos the right to give or withhold their consent for any activity that would affect their lands or rights.
SEMARNAP, 2000 (Article 47); General Act on Environmental Equilibrium and Environmental Protection	Sets ground rules for conservation of protected areas. Restricts usage rights of the Project Area and CBR Buffer Zones. No conversion of native forest land is allowed, extraction is limited to timber, and volume must maintain the sustainability of flora and fauna: The project will promote the participation of the landoweners (*ejidatarios*), public and private organizations in the administration and management of the natural protected areas (forest areas) to encourage integral development of community and guarantee the protection and preservation of ecosystems and their biodiversity.
CONANP (*Comisión Nacional de Áreas Naturales Protegidas*) 2005	Conservation and management guidelines for the Calakmul Biosphere Reserve: The project will apply and reinforce the conservation and management guidelines stated by the CONANP related to sustainable use of resources of the broader Calakmul Biosphere Reserve and surrounding areas. The project will follow the zonation (Buffer zone includes a Traditional Use zone and a Zone of Sustainable Use of Ecosystems) and its regulations,
Agrarian Law (February 26, 1992)	Ejidos now own the land granted to them under the provisions of the old law. Article 9 of the law states that Ejidos own all real property granted to them as well as any property that they may have acquired title to by any other means. The project recognizes Ejidos and their members as the tenure holders of the forest areas, and will engage, inform and get their FPIC completed as part of the design process.
Article 5 of the New General Law for Sustainable Forest Development of 2018	Article 5. Ownership of forest resources within the national territory corresponds to Ejidos, indigenous communities, towns and communities, individuals or moral, the Federation, the Federal Entities, Municipalities and Territorial Demarcations of the City of Mexico that are the owners of the land where they are located. The procedures established by this Law shall not alter the property regime of said lands. The project acknowledges Ejidos as the sole owners of the land and natural resources in it and will properly engage them to participate in forest and biodiversity conservation and improve livelihoods activities.
First Amendment of 2020	The previous definition of 'forestry land' excluded terrain that despite holding the defining traits of forestry land (i.e., covered by forest vegetation and producing environmental assets) was located within a 'population center', as defined under the General Law for Human Settlements, Territory Ordinance and Urban Development. This exception has been removed from the Forestry

Law	Relevance / Project's Compliance
	Law, meaning that any land covered by forest vegetation and producing environmental assets is considered forestry land. The definition of 'land other than forestry' has been adjusted to cover any land that does not qualify as forestry land (as defined above). The previous definition included the concepts of 'forest vegetation' and 'forest ecosystems'. The amendment will make it simpler to classify land as 'forestry land' or 'land other than forestry'. The project acknowledges the definition of land other than forestry and updates made under the First Amendment (2020) to design activities that will support the participants' livelihoods.

2.5.2 Relevant Laws and Regulations Related to Worker's Rights (VCS, 3.18.2; CCB, G3.11)

Workers that are formally employed by the Project receive a copy of the relevant employment laws in the local language. These laws can be found at Juridicas.unam.mx and will be listed below.

Additional to the Federal Act on Forest Sustainable Development, the Federal Agrarian Act and the Federal Labour Act govern these matters, to secure respect for constitutionally guaranteed rights, workers are provided by Article 123 of the Mexican national constitution, ACAC does diligent review of these laws as they are amended, and as they concern Ejido communities and projects.

Article 123: Every person has the right to have a decent and socially useful job. Therefore, job creation and social organization of work shall be encouraged according to the law. The Congress of the Union, without contravening the following basic principles, shall formulate labor laws, which shall apply as following:

Part A: Workers' Rights/Working Hours: The maximum working day is eight hours. Night work is limited to seven hours, and certain jobs are prohibited for those under sixteen.

- *Child Labor: Use of labor of minors under fifteen is prohibited. Children aged fifteen to sixteen have a maximum working day of six hours.*
- *Rest and Leave: Workers are entitled to one day of rest for every six days of work. Pregnant women are entitled to disability leave before and after childbirth.*
- *Minimum Wage and Profit Sharing: Minimum wage is established nationally. A commission sets the percentage of profits for worker distribution.*
- *Equal Pay and Wage Payment: Equal wages regardless of gender or nationality. Wages must be paid in legal tender.*
- *Overtime: Overtime salary is 100% more than regular hours. Overtime work is limited to three hours a day and not three consecutive times.*
- *Housing and Services: Employers must provide comfortable housing for workers. Companies contribute to a national housing fund. Establishments outside villages must provide essential services.*
- *Training and Safety: Employers must provide training for workers. Employers are responsible for labor accidents and occupational diseases.*
- *Right to Strike and Dispute Resolution: Workers have the right to join unions and strike. Strikes are legal when aimed at attaining equilibrium between labor and capital.*

- *Social Security: Social security covers various aspects, including work accidents, retirement, and health services.*

Part B: Powers of the Union, Federal District Government, and Employees Working Conditions: Maximum working hours and overtime rules apply. Employees are entitled to rest days and annual vacations. Wage Regulations: Wages are fixed and cannot be lower than the minimum wage. Equal pay for equal work, regardless of gender. Job Security: Workers may be suspended or fired only for justified cause. Employees have the right to reinstatement or compensation for unjustifiable dismissal. Social Security for Government Employees: Social security includes work accidents, retirement, and housing. Government authorities implement complementary social security systems. Dispute Resolution: Conflicts are submitted to a Federal Court for Conciliation and Arbitration. Special provisions exist for military personnel, Foreign Service, and legal experts. Trusted Positions: Trusted position holders are entitled to social security and wage protection. The Constitution outlines comprehensive labor laws, emphasizing workers' rights, fair wages, and social security, with provisions for dispute resolution and special considerations for government employees.

2.5.3 Human Rights (VCS, 3.19)

The project demonstrates a commitment to recognizing, respecting, and promoting the protection of the rights of Indigenous Peoples (IPs), Local Communities (LCs), and customary rights holders in accordance with international human rights law, including the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and the International Labour Organization (ILO) Convention 169 on Indigenous and Tribal Peoples.

This commitment is evidenced through various aspects of the project, including:

1. Stakeholder Engagement: The project engages IPs, LCs, and customary rights holders in a participatory manner, ensuring their active involvement in decision-making processes regarding project design, implementation, and monitoring. The engagement process respects their autonomy, cultural practices, and traditional knowledge.

2. Free, Prior, and Informed Consent (FPIC): The project follows the principles of FPIC as outlined in international human rights instruments. Before undertaking any activities that may affect IPs, LCs, or customary rights holders, the project seeks their consent in a culturally appropriate manner, ensuring they have access to relevant information and are empowered to make informed decisions.

3. Respect for Land Tenure Rights: The project respects the land tenure rights of IPs, LCs, and customary rights holders, recognizing their rights to own, use, and manage their lands, territories, and resources. It ensures that project activities do not infringe upon these rights and, where applicable, seeks to strengthen and support their tenure systems.

4. Protection of Cultural Heritage: The project acknowledges and respects the cultural heritage of IPs, LCs, and customary rights holders, including their languages, traditions, and customary laws. It incorporates measures to safeguard and promote cultural diversity, ensuring that project activities do not undermine their cultural identity or integrity.

5. Conflict Resolution Mechanisms: The project establishes grievance redress mechanisms that are accessible, transparent, and culturally appropriate for IPs, LCs, and customary rights holders. These mechanisms enable them to raise concerns, seek remedies for any adverse impacts, and resolve disputes in accordance with their customary practices and legal frameworks.

By adhering to these principles and incorporating them into its policies, procedures, and practices, the project demonstrates its commitment to upholding the rights of IPs, LCs, and customary rights holders in alignment with international human rights standards and relevant conventions.

2.5.4 Indigenous Peoples and Cultural Heritage (VCS, 3.18, 3.19)

The project's commitment to preserving and protecting cultural heritage is ingrained in its activities, by leveraging the rich cultural tapestry of the Ejido communities, the project not only fosters sustainable development but also ensures the preservation of cultural traditions and knowledge for future generations

1. Organizing meetings to engage with community members, understand their cultural values, and integrate them into project planning processes.
2. Ensuring cultural inclusivity and respect by fostering an open and inviting environment where all voices are heard through participatory decision-making processes.
3. Integrating traditional knowledge and practices into project activities to enhance economic opportunities and preserve indigenous knowledge systems. For example, promoting sustainable hunting practices and allowing hunting for self-consumption or survival, while understanding reasons and patterns for hunting in ejidos.
4. Implementing community-led territorial ordering and risk policies within the ejidos, considering local cultural practices and environmental knowledge for effective risk management while preserving cultural heritage.
5. Incorporating translation in ejidos where Spanish is not the first language, ensuring that information is accessible in the spoken Maya dialects.
6. Respecting and supporting small-scale sustainable extraction of wood from the forest for self-construction of Mayan housing, as well as collecting dry wood on the ground for traditional food preparation.

2.5.5 Statutory and Customary Property Rights (VCS, 3.18, 3.19; CCB, G5.1)

2.5.5.1 Land Tenure and Ownership

The Project Activity Instances to be included in this Project are Ejido lands, called Forest Extensions, in the Grouped Project Eligibility Area.. Ejidos rights to land is governed under the under the Agrarian law and constitution, there are three types of land within an ejido; lands intended for (1) common use, (2) human settlements, or (3) individual of Ejidos use or ownership. The internal ejido regulation established by the assembly determines the use, conservation, and access to lands for common use. The 1994 law, which amended the original provisions set forth in Article 27 of the Constitution, gave *Ejidos* the right to divide and title land for individual ownership and sale (Busch, 2006). Vast forest extensions in particular have been designated to remain commonly owned and managed by Ejidos. The assembly may also transfer the ownership of common lands to business associations in which the ejido or its members participate, provided they receive approval from the Agrarian Attorney General (*Procurador General Agrario*). In addition, ejido lands may be contracted out temporarily to third parties for a period not to exceed thirty years.

2.5.5.2 Rights to Harvest and Rights to Carbon

The following demonstrates the Ejidos' rights to carbon from activities where they are avoiding legal logging in the forest areas for an avoided planned degradation project under the VCS:

2. *Article 5 of the "General Act for Forestry Sustainable Development" ("Forestry Act") clearly provides that "The property of the forest resources within the national territory belongs to agrarian organizations (Ejidos, communities and indigenous groups), as well as to physical o juridical persons, and to the Federation, Federal Entities, Municipalities, and territorial divisions of Mexico City, that are the owners of the lands where those resources are located. The procedures established in this Act do not alter the property over those lands".*
3. *Article 54-77 define Ejidos rights to harvest and the process for securing timber harvesting permits.*
4. *Article 7/XLVII provides that "forest resources" comprise the vegetation of forest ecosystems, their services, products, and residues, as well as the soils of the forest lands…"*
5. *Article 7/XXXIX provides that environmental "services" are those provided by forest ecosystems naturally or through sustainable management of forest resources, including the provision of water in quantity and quality; the capture of carbon, of pollutants and natural components, the generation of oxygen; the buffering of impacts from natural phenomena; the modulation or regulation of climate; the protection of biodiversity, of ecosystems and forms of life; the protection and recovery of soils, the landscape and recreation, among others".*
6. *Article 30 establishes that the guiding principles of forestry policy include I. "to ensure that the sustainable use of forest ecosystems becomes a permanent source of income and to improve the life conditions of owners and legitimate landholders…".*
7. *Article 134 bis (in the Chapter dealing with environmental services), provides that "The owners and legitimate landholders of forest lands that, as a result of a sustainable forest management conserve and or improve environmental services.*
8. *Article 134 bis/III adds that the "legal and environmental policy instruments that regulate and promote conservation and improvement of environmental services, shall guarantee the respect for safeguards recognized by international law", as well as "certainty and respect for property and legitimate landholding rights, and access to the natural resources of the owners and legitimate landholders".*
9. *A detailed review of the "General Act on Climate Change" ("CC Act"), shows that it contains no provisions that contradict the above provisions of the "Forestry Act", requiring only that (Art. 3/XXXIII) "reduced emissions" be "certified" by an authorized entity; Article 7/IX and XVIII gives powers to the federation to "create, authorize and regulate the trade of emissions" as well as to "establish the basis and instruments to … participate in the trade of emissions and in national and international financing mechanisms". Art. 44 provides that the "National Climate Change System" will be created through the Regulations to be adopted for this Act, (Article 47/VIII) empowering the Inter-ministerial Climate Change Commission to propose alternatives to regulate the market instruments provided by the Act, considering the participation of the sectors involved; Article 89 merely provides that the physical or juridical persons that undertake activities that result in the mitigation or reduction of emissions, "may" register that*
10. *Information in the Registry of Emissions created by this Act, and "in accordance with the regulations that may be put into effect to that end", including information regarding transactions*

in the national or international trade of certified emissions, the resources obtained and the source of financing, adding only that those provisions shall avoid the

11. *Duplication of the accounting of reduced emissions. Articles 91 to 95 of the Act, which refer to the "economic instruments" to promote the national policy on climate change, do not contradict the above Forestry Act provisions. Moreover, Article 92 provides that those instruments include market instruments through which "persons assume the benefits and costs related to mitigation and adaptation", that give incentives to reduction emission actions.*

Table 15 shows the administrative procedure for authorization of timber forestry exploitation, as well as the summary of the ejidos in administrative terms for logging. The gray shading means that the ejido had said legal procedure prior to signing the agreement for this project.

Table 15. Summary of legal procedures for the authorization of logging in each ejido

Legal Procedure	EJIDO								
	Pustunish	Yohaltum	Xcanha	Chun-Ek	Francisco J. Mujica	Manuel Crescencio	Chanchen	Gral. Felipe Angeles	Cancabchen
Forest management program (*Programa de manejo forestal*)	√		√	√			√		√
Unified forestry harvesting procedure (*Trámite unificado de aprovechamiento forestal*)	√		√	√			√		√
Forestry referrals to prove the legal origin of forestry raw materials (*Remisiones forestales para acreditar la legal procedencia de materias primas forestales*)			√						
Subsequent forestry referrals to prove the legal origin of forest raw materials (*Remisiones forestales subsecuentes para acreditar la legal procedencia de materias primas forestales*)			√						

Legal Procedure	EJIDO								
	Pustunish	Yohaltum	Xcanha	Chun-Ek	Francisco J. Mujica	Manuel Crescencio	Chanchen	Gral. Felipe Angeles	Cancabchen
Use of timber resources in tropical forests larger than 20 hectares, species that are difficult to regenerate and protected natural areas in ejidos and/or agricultural communities (*Aprovechamiento para recursos maderables en selvas tropicales mayores a 20 hectáreas, especies de difícil regeneración y zonas naturales protegidas en ejidos y/o comunidades agrarias)*			√						
Subsequent forestry reshipments (*Reembarques forestales subsecuentes*)			√						
Authorization of storage and transformation centers for forest raw materials (*Autorización de centros de almacenamiento y transformación de materias primas forestales*)			√						
Annual forestry harvesting report (*Informe anual de aprovechamiento forestal*)			√						

2.5.6 Recognition of Property Rights (VCS, 3.7, 3.18, 3.19; CCB, G5.1)

To recognize, respect, and support the property rights of the Ejidos, all the contracts and agreements must be supervised by the Ministry of Agriculture, the Agrarian Attorney's Office, and the Agrarian Reform Office. The law in Mexico is very strict on these issues, so to get a proper contract or agreement with the Ejidos, those institutions must agree. Amigos de Calakmul has plenty of experience now on those issues, because of the past involvement with the conservation agreements with the Pustunich and Yohaltún Ejidos.

Article 5 of the federal act for forest sustainable development clearly recognizes that the owners of forested lands are the owners of the forests and of the forest resources therein.

2.5.7 Free, Prior and Informed Consent (VCS, 3.18; CCB, G5.2)

Description of process for obtaining consent	The process for obtaining consent to implement the project activities was conducted with utmost transparency, inclusivity, and respect for the rights and concerns of all stakeholders, including Indigenous Peoples (IPs), Local Communities (LCs), and customary rights holders. Here's how the consent was obtained: 1. **Stakeholder Identification:** The project team identified and engaged with all relevant stakeholders, including IPs, LCs, and customary rights holders, through community mappings, consultations with local leaders, and participatory assessments to ensure no voices were marginalized or excluded. 2. **Information Dissemination:** Comprehensive information about the project's objectives, scope, potential impacts, and benefits was disseminated to stakeholders in accessible formats and local languages. This information was shared through community meetings, and printed materials, ensuring that all stakeholders were well-informed. 3. **Consultation and Dialogue:** Meaningful consultations were held with stakeholders at various stages of the project planning process. These consultations provided opportunities for stakeholders to express their concerns, ask questions, and provide feedback on project proposals. The project team actively listened to and addressed the concerns raised by stakeholders, demonstrating a commitment to genuine dialogue and partnership. 4. **Consensus Building:** Through iterative consultations and dialogue, consensus was built among stakeholders regarding the project's activities, timelines, and implementation modalities. The project team facilitated negotiation processes to address divergent interests and ensure that the consent obtained was based on mutual understanding and respect. 5. **Documentation of Consent:** The consent obtained from stakeholders, including IPs, LCs, and customary rights holders, was documented in writing to ensure clarity and accountability. A transparent agreement outlining the terms and conditions of the consent, including safeguards against potential risks and impacts, was developed and signed by all parties involved.
Outcome of FPIC process	The outcome of the FPIC process was a transparent agreement that reflects the collective consent and commitment of all concerned stakeholders. This agreement encompasses the following key elements: 1. **Non-Encroachment on Land:** The agreement unequivocally states that the project will not encroach on any land or territories. All

	project activities will respect the territorial rights and land tenure systems of IPs, LCs, and customary rights holders. 2. **No Relocation:** It is guaranteed in the agreement that no people or communities will be relocated or displaced. 3. **Protection Against Forced Displacement:** The agreement includes provisions to prevent any form of forced physical or economic displacement resulting from the project activities. Measures will be implemented to mitigate and address any adverse impacts on livelihoods, cultural practices, and community well-being. 4. **Compensation:** Appropriate measures for compensation have been allocated to parties whose lands, territories, or resources have been or will be impacted by the project. Fair and equitable compensation mechanisms have been established through consultations with the ejidos, ensuring that their rights and interests are upheld.

2.5.8 Benefit Sharing Mechanisms (VCS, 3.18, 3.19;)

Process used to design the benefit sharing plan	The design process of the Benefits Allocation Plan for the ACAC Project involved a comprehensive and participatory approach to ensure the full and effective participation of smallholders and community members in decision-making regarding benefit sharing. Here's a breakdown of the process: 1. **Stakeholder Identification:** All relevant stakeholder groups were identified through participatory assessments, community mappings, and consultations with local leaders. 2. **Inclusive Consultations:** Meaningful consultations were conducted with identified stakeholder groups at various stages of the project planning process. These consultations provided opportunities for stakeholders to voice their preferences, concerns, and aspirations regarding benefit sharing. 3. **Facilitated Discussions:** Facilitated discussions were held to facilitate dialogue and consensus-building among stakeholders on key aspects of the benefit-sharing plan. This included discussions on the allocation of carbon revenue, prioritization of benefits, and transparency measures. 4. **Feedback Mechanisms:** Feedback mechanisms such as surveys, focus group discussions, and feedback forms were employed to gather input and feedback from stakeholders throughout the design process. This ensured that the benefit-sharing plan accurately reflected the needs and preferences of affected communities. 5. **Iterative Refinement:** The benefit-sharing plan was iteratively refined based on feedback received from stakeholders, with adjustments made to address concerns or suggestions raised during the consultation process.

Summary of the benefit sharing plan	The Benefits Allocation Plan outlines the allocation of carbon revenue to finance program implementation, base conservation payments, ongoing monitoring, and additional benefits for project communities. Key elements of the plan include: • **Program Implementation and Ongoing Monitoring:** Funds are allocated to cover program management, base conservation payments to communities, and costs related to maintaining climate, social, and biodiversity benefits. • **Conservation Payments:** Initial payments are made to communities for protecting their forests and natural resources in the Calakmul Biosphere Reserve. • **Climate Social and Biodiversity Benefits and MRV:** Funds are allocated to maintain VCS/CCB status through monitoring social assessments, biodiversity, and biomass surveys, with direct involvement of local communities. • **Benefits Waterfall Structure:** Net income is allocated to additional benefits for project communities based on a structured waterfall approach, including Performance and Program Reserve Pool, Add-On Conservation Payments, Investment in Other Income Generating Activities, and a Trust Fund for Long Term Conservation.
Approval and dissemination of benefit sharing plan	The benefit-sharing agreement was unanimously agreed upon by all stakeholders. To ensure cultural appropriateness, the agreement was disseminated through community meetings and assemblies. Additionally, the agreement is readily accessible to all stakeholders, with copies available at ejidal offices. Stakeholders are encouraged to review the agreement at any time and provide feedback or seek clarification as needed, demonstrating the project proponent's commitment to transparency and accountability.

2.5.9 Property Rights Protection (VCS, 3.18, 3.19; CCB, G5.3)

The Project Activities have not and will not involve the resettlement of any communities or households. Resettlement is not a component of the Project design, nor would it be acceptable under Mexican Law.

Nor will the Project encroach uninvited on private property, community property, or any other government property. The Project is operated in the Project Area with explicit permission from the participating Ejido community or other eligible land tenure holder.

2.5.10 Illegal Activity Identification (VCS, 3.19; CCB, G5.4)

The illegal activities that could impact the Project results relate to illegal logging taking place in the Project Activity Instances. While the first threat to these forests is legal logging, there is also risk of encroachment from outside actors who could illegally deforest and degrade the forests. The Project reduces this risk by implementing forest patrolling supported by ACAC, the Ejidos and the government in areas of high risk in the Project Activity Instances.

2.5.11 Ongoing Disputes (VCS, 3.18, 3.19; CCB, G5.5)

There are no on-going disputes.

2.5.12 Approvals (CCB, G5.7)

The Project Activities Instances which have Ejido tenure do not require government approvals as they are granted rights under Mexican Law to develop and sell carbon credits (see Section 2.5.1). However, all Ejidos Forest Extensions follow the legally specified process to secure approval to enter into the Conservation Agreement. While for Ejidos government approval is not required, the Project will work closely with SEMARNAT and particularly the CBR to ensure the Project is supported by the government, i.e. the federal government institutions supervising the management and conservation of the Calakmul reserves and the Ejidos reserves.

For all Project Activity Instances, prior to joining the project, there will be a comprehensive engagement process to educate the Ejidos about the opportunities and requirements of participating in the Project and abide by the high standards of Free Prior and Informed Consent. The Ejidos will then, in accordance with the processes required by law hold a general assembly to approve their participation in the Project.

The agreements signed by the Ejidos are then recorded, as required, in the Registro Agrario Nacional - Gobierno de México (RAN). In addition, if required they will be registered in the Mexico Forest Registry, which has been developed within the framework of the General Law on Climate Change (LGCC), the Procuraduria Agraria, and the National Forestry Commission.

2.5.13 Double Counting and Participation under Other GHG Programs (VCS, 3.23; CCB G5.9)

2.5.13.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program, or any other form of community, social, or biodiversity unit or credit?

☐ Yes ☒ No

2.5.13.2 Registration in Other GHG Programs

Is the project registered or seeking registration under any other GHG programs?

☐ Yes ☒ No

2.5.13.3 Projects Rejected by Other GHG Programs

Has the project been rejected by any other GHG programs?

☐ Yes ☒ No

2.5.14 Double Claiming, Other Forms of Credit, and Scope 3 Emissions (VCS, 3.24)

2.5.14.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the *VCS Program Definitions* for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

2.5.14.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the *VCS Program Definitions* for definition of GHG-related environmental credit system.

☐Yes ☒ No

2.5.14.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

If yes:

Is the project proponent(s) or authorized representative a buyer or seller of the product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

If yes:

Has the project proponent(s) or authorized representative posted a public statement on their website saying, "Carbon credits may be issued through Verified Carbon Standard project [project ID] for the greenhouse gas emission reductions or removals associated with [project proponent or authorized representative organization name(s)] [name of product(s) whose emissions footprint is changed by the project activities]."?

☐ Yes ☒ No

If yes to all:

Provide evidence of the public statement. Evidence must be provided in this section or in an appendix.

2.6 Additional Information Relevant to the Project

There is not relevant additional information

2.6.1 Leakage Management (VCS, 3.11, 3.15)

Where applicable, describe the leakage management plan and implementation of leakage and risk mitigation measures.

No leakage management plan was developed, because there is no activity shift in leakage.

2.6.2 Further Information

Include any additional relevant legislative, technical, economic, sectoral, social, environmental, geographic, site-specific and/or temporal information that may have a bearing on the eligibility of the project, the GHG emission reductions or carbon dioxide removals, or the quantification of the project's reductions or removals.

No additional relevant legislative, technical, economic, sectoral, social, environmental, geographic, site-specific and/or temporal information will be included.

3 CLIMATE

3.1 Application of Methodology

3.1.1 Title and Reference of Methodology (VCS, 3.1)

Type (methodology, tool, module)	Reference ID (if applicable)	Title	Version
Methodology	VM0010	VM0010 Improved Forest Management: Conversion from Logged to Protected Forest	1.3
Tool	VT0001	VT0001 Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other land Use (AFOLU) Project Activities	3.0
Tool		CDM Tool for Calculation of the Number of Sample Plots for Measurements within A/R CDM Project Activities	2.1.0
Tool	N/A	AFOLU Non-Permanence Risk Tool	4.2

3.1.2 Applicability of Methodology (VCS, 3.1)

Reference ID/Title	Applicability condition	Justification of conformance
VM0010	Forest management in the baseline scenario must be planned timber harvest.	a) Legal Right to Harvest: The Ejidos are considered the logging agent and have a legal right to harvest timber in the Project Area as described in section 2.5.5 b) Intent to Harvest: All Ejidos have intent to harvest, 3 of them currently have a valid Timber Harvest Plan and the reminding 7 have harvested and the past. In addition, most of the Ejidos involved in this project have been approached by timber companies, with promises of high returns.
VM0010	Under the project scenario, forest use must be limited to activities that do not result in commercial timber harvest or forest degradation.	This is an Improved Forest Management (IFM), logged-to protected forest (LtPF) project, where forests that were to be harvested are conserved. Project activities stop logging - including the common unsustainable logging practices - and ensure forest protection. Project Activities are further described in Section 2.1.17 and do not include commercial timber harvesting or other activities that cause forest degradation.
VM0010	Planned timber harvest must be estimated using forest inventory methods that determine allowable off take as volume of timber (m^3 ha^{-1}).	Forest inventory methods were used along with allometric equations to estimate timber volume (m^3 ha^{-1}) available for harvesting in each Ejido.
VM0010	The boundaries of the forest land must be clearly defined and documented.	The boundaries of each Ejido Forest areas are clearly defined and described in Section 2.1.14. The project area comprises 9 Ejidos. All land within the project area is forest land.
VM0010	The baseline scenario cannot include conversion to managed plantations.	The baseline scenario does not include conversion to managed plantations.
VM0010	The baseline scenario, project scenario and project case cannot include wetland or peatland.	There are no wetlands or peatlands included in the baseline scenario or in the project scenario.
VM0010	All applicability conditions of VCS and CDM tools used in	All applicability of the VCS Standards and CDM tools used in conjunction with this methodology are met.

Reference ID/Title	Applicability condition	Justification of conformance
	conjunction with this methodology must be met.	
VM0010	Legal Right to Harvest	According to the Forest Law for Sustainable Forest Development, Ejidos or indigenous and rural communities are owners of the forest lands they occupy, granting them the right to enjoy all environmental goods and services provided by the forest, including the right to harvest wood. However, this law also safeguards natural resources by establishing guidelines for appropriate wood harvesting. All forest owners must apply for a forest utilization permit, presenting a precise and reliable forest inventory to the authorities. Additionally, the development of a forest management program, supervised by a forest technical advisor, is required to guide the owner during the wood harvesting period. In our project, not all Ejidos have records of obtaining legal harvesting permits: There are three ejidos with active forest management programs: Ejido Chanchen, Ejido Chunk Ek, and Ejido Xkanha. Ejido Chanchen has a total harvested area of 4,037 hectares and is authorized to harvest 102,831 cubic meters of merchantable timber. Ejido Chunk Ek has a larger harvested area of 4,899 hectares but is authorized to harvest slightly less timber at 79,794 cubic meters. Finally, Ejido Xkanha has the largest harvested area of 5,323 hectares but the lowest authorized timber harvest at 65,394 cubic meters. Nevertheless, the law acknowledges that all have the legal right to harvest to meet their self-sufficiency and commercial needs.
VM0010	Intent to Harvest	The project area comprises 9 Ejidos of varying sizes. Three of these have active forest management programs (**Error! Reference source not found.**), while the remaining 7 have harvested in the past and are located within the productive forest zone of the State of Campeche. Furthermore, all project areas are either adjacent to or included in the transport network for the sale and processing of tropical wood. This area is known as UMAFOR (Forest Management Unit No. 0404 Calakmul), spanning 1,400,000 hectares.

Reference ID/Title	Applicability condition	Justification of conformance
		The purpose of Forest Management Units is to implement strategies for developing short, medium, and long-term operational plans and programs. This aims to achieve organized planning of forestry activities and efficient management of these resources. According to the General Law of Sustainable Forest Development, the Commission, in coordination with federal entities, will delineate forest management units, primarily based on hydrological-forest basins, sub-basins, and micro-basins. Similarly, Article 62 of the same law stipulates that holders of commercial forest exploitation rights must collaborate in the preparation of the forest management plan for the Forest Management Unit to which their land belongs. As a result, the foresters in the Calakmul region have chosen to organize themselves into a Forest Management Unit following the guidelines established in the Forest Strategic Program and the General Law of Sustainable Forest Development **Invalid source specified.**.
VT0001	AFOLU activities the same or similar to the proposed project activity2 on the land within the proposed project boundary performed with or without being registered as the VCS AFOLU project shall not lead to violation of any applicable law even if the law is not enforced;	

Reference ID/Title	Applicability condition	Justification of conformance
VT0001	The use of this tool to determine additionality requires the baseline methodology to provide. for a stepwise approach justifying the determination of the most plausible baseline scenario Project proponent(s) proposing new baseline methodologies shall ensure consistency between the determination of a baseline scenario and the determination of additionality of a project activity.	
CDM Tool for Calculation of the Number of Sample Plots for Measurements within A/R CDM Project Activities	This tool has no internal applicability conditions.	

3.1.3 Project Boundary (VCS, 3.12)

The geographic boundaries of the project area are described in detail in section 2.1.14vthe geographic boundaries for leakage from market effects are those of the country in which the project area occurs (Mexico). The temporal boundaries are defined by the project start date and length of the project crediting period. Therefore, the temporal boundaries vary across Ejidos which is shown in Table 16.

Table 16. Project Start Date for Each Ejido

Ejido	Project Start Date
Ejido Pustunich	May 19. 2019
Ejido Yohaltun	

Ejido	Project Start Date
Ejido Cancabchen	May 19, 2022
Ejido Chanchen	
Ejido Chun Ek	
Ejido Felipe Angeles	
Ejido Gral. Francisco J. Mujica	
N.C.P.E. Lic. Manuel Crescencio Rejón	
Ejido Xkanha	

Relevant GHG sources, sinks and reservoirs included and excluded are listed in Table 17.

Table 17. Relevant GHG sources, sinks and reservoirs.

Source		Gas	Included?	Justification/explanation
Baseline	Carbon stocks in extracted timber	CO_2	Yes	The carbon in merchantable timber is calculated per hectare for Ejido. Regrowth is accounted for after a logging event and acts as a carbon sink.
		CH_4	No	
		N_2O	No	
		Other	No	
	Emissions from wood product retirement	CO_2	Yes	After a logging event has taken place the carbon in the biomass is stored in wood products. The proportions of sawlogs and pulpwood created by each harvesting event are calculated. The lifetime of the products is then used to calculate the length of time carbon is stored in these products.
		CH_4	No	
		N_2O	No	
		Other	No	
	Decomposition of dead wood	CO_2	Yes	The increase of deadwood from each logging event is calculated as damage and is immediately emitted. The volume of dead wood

Source		Gas	Included?	Justification/explanation
	from harvested trees			is then used to calculate the change in carbon stock of dead wood resulting from timber harvest per hectare.
		CH_4	No	
		N_2O	No	
		Other	No	
	Combustion of fossil fuels (in vehicles, machinery, and equipment)	CO_2	No	Emissions from the combustion of fossil fuels from vehicles, machinery and equipment were conservatively omitted.
		CH_4	No	
		N_2O	No	
		Other	No	
Project	Fire *Disturbance*	*CO_2*	*No*	CO_2 equivalent is used for fire disturbance which considers both CO_2 and CH_4. It is conservatively omitted in the baseline scenario, as fires will be reduced by project activities.
		CH_4	*No*	
		N_2O	*No*	
		Other	*No*	

Maps for the geographic boundary of the Project Area are found in Section 2.1.14. As per the methodology the geographical boundary for leakage from market effects is the national boundary of Mexico.

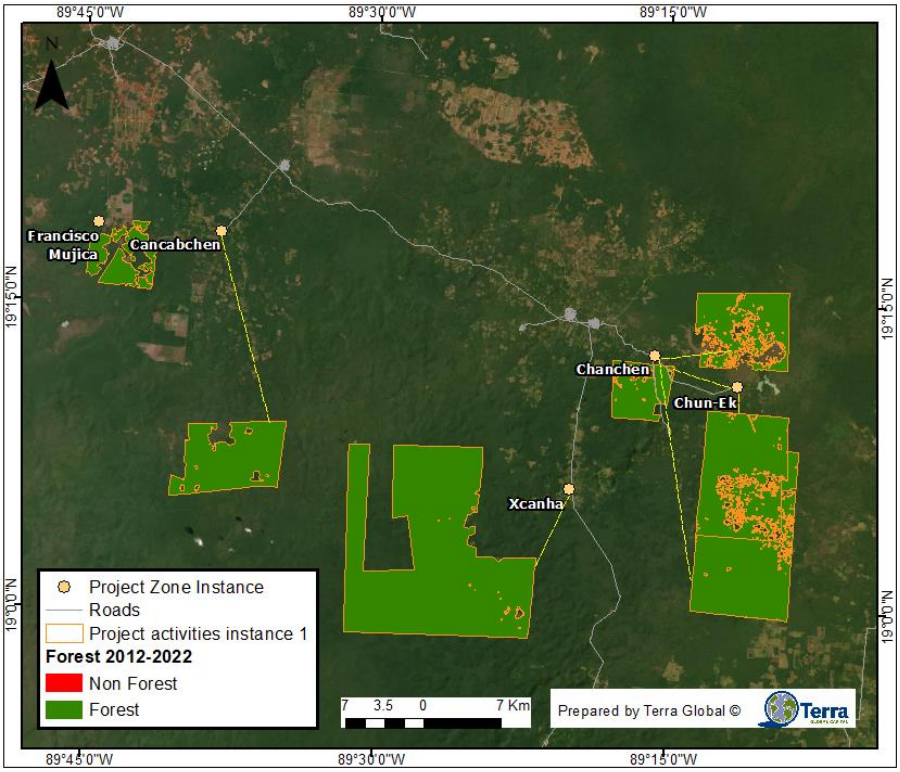
A supervised classification of the ejidos was carried out at project start and 10 years before the project start date to guarantee that the forest remained intact during that period. The Pustunich and Yohaltun ejidos have the project starting in 2019, and the rest of the ejidos (Manuel Crescencio, Chanchen, Cabcabchen, Chun Ek, Francisco Mujica and Xkanha) have the project starting in 2022 (See Map 14, Map 15, and Map 16).

For the ejidos that began in 2019, the supervised classification was carried out using the period 2009-2019 (analysis of 10 years before the project to guarantee that the forest remained intact during that period).

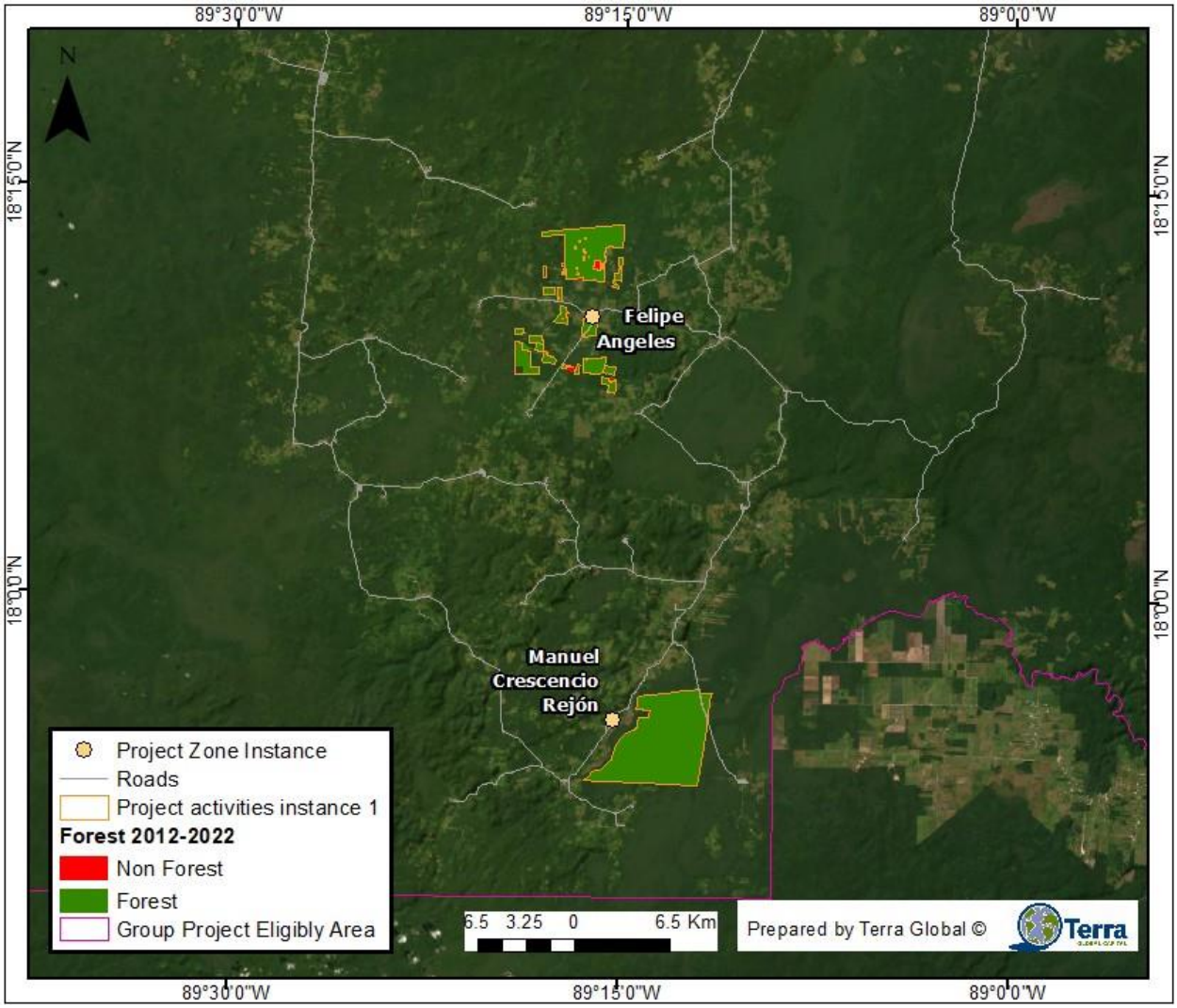
For the ejidos that began in 2022, the supervised classification was carried out for the period 2012-2022 (analysis of 10 years before the project to guarantee that the forest remained intact during that period, where some deforested areas were removed).

The supervised classification was carried out using the Spectral Angle Mapper algorithm for all periods, the images from 2009 and 2012 that were used were Landsat 7 of 30 meters spatial resolution, created through a cloud-free mosaic with average dates of 18 June 2009 and June 28, 2012 respectively. The

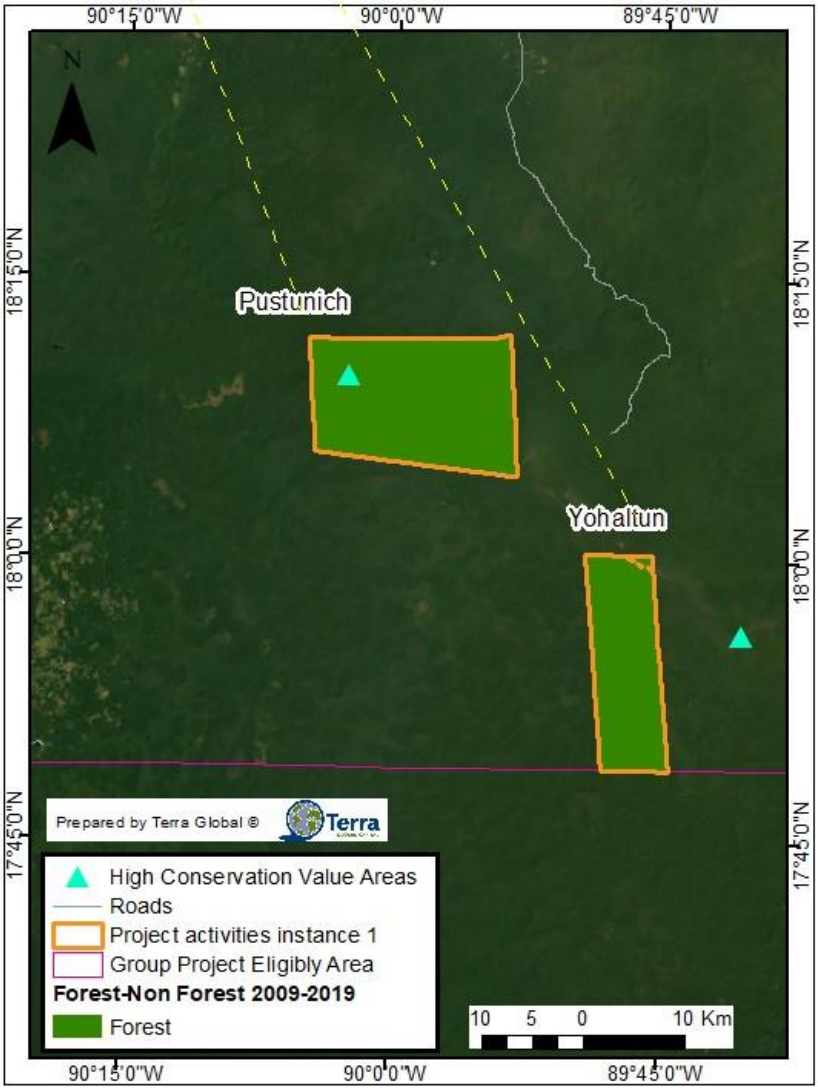
images within the period 2019-2022 were Sentinel 2 with 20 meters spatial resolution between the month of October and December.



Map 14. Forest– non-Forest map 2012-2022



Map 15. Forest – non-Forest map 2012-2022



Map 16. Forest – non-Forest map 2009-2019

3.1.4 Baseline Scenario (VCS, 3.13)

Selection of baseline

The most recent version of the VCS tool, VT0001 Tool for the Demonstration and Assessment of Additionality in AFOLU Project Activities, has been used to evaluate which baseline alternatives should be excluded from additional considerations. According to the applicability conditions of this methodology, the project has demonstrated a planned timber harvest baseline scenario. It has been considered that the planned timber harvest events in the baseline scenario can occur in any year of the project activity, not exclusively in year 0.

Modeling the baseline scenario

According to the VM0010 methodology, once the baseline scenario of planned timber harvest is demonstrated, the project proponent must determine how to model the baseline management scenario.

There are two options available: the Historical Baseline Scenario and the Common Practice Baseline Scenario.

Under the historical baseline scenario, historical data on timber harvesting is used to determine the values of many parameters used in the validation. On the other hand, if the common practice baseline scenario is chosen, other data sources, such as information from other forestry companies in the region, regional default values, legal requirements, etc., are used to determine the parameter values in the validation. For this project, we have chosen the Common Practice Reference Scenario, following the guidelines of customary practices.

Common practice baseline scenario

Common practice is defined as timber harvesting that complies with legal requirements for forest management. This approach was determined through a timber harvesting plan developed from:

a) Modelling scenarios considering the application of legal requirements in the project area.

b) Reference areas already managed for timber exploitation, meeting the legal requirements for forest management, and selected to represent the usual local practices of timber exploitation.

In this project, we have employed scenario modelling based on real field data obtained from reference areas. This data stems from information collected from 20 forest management programs in the Quintana Roo and Campeche States where Project Activity Instances are located. Reference data encompasses relevant information such as: 1) commercially important tree species, 2) minimum cutting diameter, 3) volumetric equations, 4) proportions of forest products (roundwood, sawn wood, wood for wood-based panels, and paper or paperboard), 5) residual deadwood left in the forest, 6) rotation periods, as well as 7) road, clearing, and timber loading areas construction.

The methodology dictates that common practice should not contradict the management of the reference agent, except when common practice implies a lower harvesting intensity (in m^3/ha) compared to the reference agent's management. In this scenario, we have adjusted the wood extraction criteria to align with local common practices.

The common practice in the region involves 25-year rotations of selective logging of individual or grouped trees. The main harvested species include Caoba (Swietenia macrophylla), Cedro rojo (Cedrela odorata), Zapote (*Manilkara zapota*), Guayabillo (*Vitex gaumeri*), Tzalam (*Lysiloma bahamensis*), Ramón (*Brosimum alicastrum*), Katalox (*Swartzia cubensis*), Amapola (*Pseudobombax ellipticum*), Chaka rojo (*Bursera simaruba*), and Chechen negro (*Metopium brownei*).

According to the region's practices, the harvesting methods categorize commercial species into four groups (Table 18), each with a specific minimum commercial diameter that trees must reach before being felled.

Table 18 Minimum diameters of species groups

Commercial species groups	Minimum commercial diameter (cm)
Hardwoods	> 35 cm
Softwoods	> 35 cm
Regional importance	> 35 cm

Commercial species groups	Minimum commercial diameter (cm)
Precious woods	> 35 cm
Roundwood poles	> 5 cm and < 15 cm

The forests in the Ejidos are harvested annually. For this project, the forest areas are estimated to be divided into management units corresponding to each year of the rotation (i.e., 25 years equal 25 management units) meeting a sustained yield harvest.

Authorizations or permits for forest exploitation ("autorizaciones de aprovechamiento forestal") are governed by articles 58 to 84 the general act for forest sustainable development, which are followed by the signing of "management agreement" (article 62).

Stratification

The stratification was developed according to the information available on the nature and composition of the forests in the project area. In this analytical process, the mapping of existing vegetation was used as one of the main criteria for stratification. This analysis led to the determination of a single stratum corresponding to the Sub-Perennial Tropical Forest.

3.1.5 Additionality (VCS, 3.14)

Demonstrate and assess the additionality of the project, in accordance with the applied methodology and any relevant tools, taking into account the following additionality methods:

3.1.5.1 Regulatory Surplus (VCS, 3.14)

Is the project located in an UNFCCC Annex 1 or Non-Annex 1 country?

☒ Annex 1 country ☐ Non-Annex 1 country

Are the project activities mandated by any law, statute, or other regulatory framework?

☐ Yes ☒ No

If the project is located inside a Non-Annex 1 country and the project activities are mandated by a law, statute, or other regulatory framework, are such laws, statutes, or regulatory frameworks systematically enforced?

☐ Yes ☐ No

Not applicable, Mexico is an Annex 1 country.

3.1.5.2 Additionality Methods (VCS, 3.14)

For the following, provide sufficient information (including all relevant data and parameters, with sources) so that a reader can reproduce the additionality analysis and obtain the same results:

- *Where a project method is applied to demonstrate additionality and the procedure in the applied methodology or tool involves several steps, describe how each step is*

applied and clearly document the outcome of each step. Indicate clearly the method selected to demonstrate additionality (e.g., investment analysis or barrier analysis in the case of the CDM Tool for the demonstration and assessment of additionality). Where barrier analysis, or equivalent, is used to demonstrate additionality, only include the most relevant barriers. Justify the credibility of the barriers with key facts and/or assumptions and the rationale. Provide all relevant references.

- *Where a performance method is applied to demonstrate additionality, demonstrate that performance can be achieved to a level at least equivalent to the performance benchmark metric.*
- *Where the methodology applies an activity method for the demonstration of additionality, include a statement that notes that conformance with the positive list is demonstrated in the Applicability of Methodology section above.*

3.1.6 Methodology Deviations (VCS, 3.20)

There are no methodological deviations.

3.2 Quantification of Estimated GHG Emission Reductions and Removals

3.2.1 Baseline Emissions (VCS, 3.15)

The methodology establishes as a requirement the presentation of a baseline scenario in the project, which must involve timber harvest planning. This baseline scenario, in accordance with VM0010 standards for a protected logged forest, has been configured following common practices. In the process of modeling this baseline, several relevant emissions are included: conversion of wood products, decomposition of dead wood from logged trees, emissions from removal of wood products, stock change due to post-harvest growth, as well as decomposition of trees killed incidentally during logging and through the creation of logging trails or by road construction and log landing clearing. Baseline emissions calculations are available for consultation in Appendix 4. (Logged to Protected Ex-ante Model).

Reference areas in the same jurisdiction already under timber harvest management that comply with legal requirements for forest management have been selected to be representative of the common practices for timber harvest. Table 19 and Table 20 show the sites selected for common practices as well as the information used.

Table 19. Common practices data used for merchantable timber.

Ejido	Merchantable Timber (m^3 ha^{-1})	Extracted Timber (m^3 ha^{-1})	Rotation Age (years)
Ejido 20 de noviembre	148.89	45.45	25
Ejido Álvaro Obregón	85.34	11.02	25
Ejido Botes	189.61	38.37	25
Ejido Caoba	163.85	17.98	25
Ejido Francisco I. Madero	127.71	19.13	25

Ejido Nuevo Becal	118.53	16.7	50
Ejido Pachuitz	52.19	1.97	20
Ejido Piedras Negras	46.25	7.58	25
Ejido Pozo Pirata	34.03	4.2	25
Ejido Xmaben	171.77	13.03	25

Table 20. Common Practice Data for Forest Infrastructure

Ejido	Total Area [ha]	Meters per ha of Skid Trails [m]	# of Log Landings [-]	Ha per log landing [-]	Size Log Landing [ha]
Ejido Noh Bec	18,549	28.1	112	165.62	0.25
Ejido 20 de noviembre	-	8.57	-	-	-
Ejido Petcacab	5,256	-	51	103.06	0.25
Average		18.34		134.34	0.25

- Calculation of Carbon Stocks in Commercial Timber Volumes

This section calculates $C_{HB,j,i\,|\,BSL}$, the mean carbon stock in total harvested biomass in $tC{\cdot}ha^{-1}$ and $C_{EX,j,i\,|\,BSL}$, the mean carbon stock in extracted timber (merchantable timber that leaves the forest) in $tC{\cdot}ha^{-1}$.

Table 21 shows merchantable timber available on each Ejido. These values were obtained from plot-based field measurements then converted into timber volume by using appropriate allometric equations.

Table 21. Merchantable volume from each Ejido

#	Ejido	# of sample plots	Merchantable volume [m^3 ha^{-1}] [Vj,i,sp]
1	Ejido Cancabchen	5	131.05
2	Ejido Chanchen	14	156.73
3	Ejido Chun Ek	10	157.19
4	Ejido Felipe Angeles	3	188.66
5	Ejido Gral. Francisco J. Mujica	4	121.49
6	N.C.P.E. Lic. Manuel Crescencio Rejón	4	222.87
7	Ejido Pustunich	25	155.5
8	Ejido Xkanha	21	184.28

9	Ejido Yohaltun	17	131.88

The estimate of merchantable volume for each species j at the sample plot level was calculated as:

$$V_{j,i,sp} = \sum_{l=1}^{L} V_{l,j,i,sp}$$

Where:

$V_{j,l,sp}$	Merchantable volume for species j in sample plot sp, m^3;
$V_{l,j,l,sp}$	Merchantable volume for tree l of species j in stratum i in sample plot sp, m^3;
l	1, 2, 3 … L sequence of individual trees in sample plot;
i	1, 2, 3 … M strata;
sp	1, 2, 3 …SP sample plot; and
j	1, 2, 3 .. J tree species

Therefore, the merchantable volume per unit area of species j in stratum i was calculated as the mean merchantable volume in all sample plots in stratum i:

$$V_{j,i|BSL} = \frac{1}{SP} * \sum_{sp=1}^{SP} \frac{V_{j,i,sp}}{A_{sp}}$$

Where:

$V_{j,i\,|\,BSL}$	Mean merchantable volume per unit area of species j in stratum i in the baseline scenario, $m^3 \cdot ha^{-1}$;
$V_{j,i,sp}$	Merchantable volume for species j in stratum i in sample plot sp, m^3;
Asp	Area of sample plot sp, ha;
i	1, 2, 3 … M strata;
sp	1, 2, 3 …SP sample plot; and
j	1, 2, 3 .. J tree species

The forest harvesting plan sets the average allowable harvested volume ($V_{EX,j,i\,|\,BSL}$) of this marketable volume according to legal limits.

For this project we calculated the legal volume harvested using the common practices of the region that are approved by the Mexican state government.

Harvest limits were established based on the minimum harvestable diameters.

The minimum cutting diameters are classified into five categories, *palizada*, precious woods, hardwoods, softwoods and regionally important timber according to the following table.

Table 22. Minimum cutting diameter by type of wood

Wood Type	Minimum Cutting Diameter (cm)
Hardwoods	35
Softwoods	35
Precious woods	55
Regional importance	55
Palizada	5

A total of 137 species were identified in the sample plots and then classified by wood types as shown in Table 22 and Table 23. Palizada trees were included in one of the other categories. The full list can be found on Appendix 4. (Species Found in the Forest Inventory Classified by Wood Type).

Table 23. Species harvested by type of wood.

Wood Type	# Species
Hardwoods	14
Softwoods	119
Precious woods	1
Regional importance	3

Extractable timber ($V_{EX,j,i|BSL}$) per hectare was estimated for each Ejido and is shown in Table 24.

Table 24. Legally Extractable Timber from Each Ejido

Ejido	Legally Extractable Timber [m^3 ha^{-1}] [$V_{EX,j,i|BSL}$]
Ejido Cancabchen	64.99
Ejido Chanchen	67.15
Ejido Chun Ek	56.41
Ejido Felipe Angeles	61.98
Ejido Gral. Francisco J. Mujica	26.27
N.C.P.E. Lic. Manuel Crescencio Rejón	56.22
Ejido Pustunich	68.13
Ejido Xkanha	47.30
Ejido Yohaltun	59.92

Based on the estimates of legally extractable timber per Ejido, common practices data was used to set a value of extracted timber for forestry infrastructure per hectare per year for each Ejido. This means that the commercial volume of 6.31 m^3 per hectare per year would be harvested and subsequently converted into roads, skid trails and log landings (decks) $V_{EX,INF,j,i|BSL}$.

Therefore, the carbon stock of timber harvested per unit area for species j in stratum I was calculated from this mean volume of extracted timber:

$$C_{HB,j,i|BSL} = (V_{EX,j,i|BSL} + V_{EX,INF,j,i|BSL}) * BCEF_R * CF_j$$

Where:

$C_{HB,j,i\|BSL}$	Mean carbon stock of harvested biomass per unit area for species j in stratum i, $tC \cdot ha^{-1}$;
$V_{EX,j,i\|BSL}$	Mean volume of extracted timber per unit area for species j in stratum i, $m^3 \cdot ha^{-1}$;
$V_{EX,INF,j,i\|BSL}$	Mean volume of extracted timber for forestry infrastructure per unit area for species j in stratum i, $m^3 \cdot ha^{-1}$;
$BCEF_R$	Biomass conversion and expansion factor applicable to wood removals in the project area, t.d.m m^{-3}. Value applied: 1.44[14]
CF_j	Carbon fraction of biomass for species j, tCt d.m.$^{-1}$ Value applied: 0.47
i	1, 2, 3 …M strata; and
j	1, 2, 3 .. J tree species

Table 25 shows the mean carbon stock of harvested biomass for the Project in the baseline.

Table 25. Calculations of mean carbon stock of harvested biomass

Ejido	Mean carbon stock of harvested biomass [tC ha^{-1}] [$C_{HB,j,i\|BSL}$]
Ejido Cancabchen	48.34
Ejido Chanchen	49.81
Ejido Chun Ek	42.54
Ejido Felipe Angeles	83.10
Ejido Gral. Francisco J. Mujica	46.31
N.C.P.E. Lic. Manuel Crescencio Rejón	22.14
Ejido Pustunich	42.41
Ejido Xkanha	50.47
Ejido Yohaltun	36.37

[14] The value used is from IPCC Table 4.5. Default Biomass Conversion and expansion factors (BCEF), tonnes biomass (m^3 of wood volume)

Not all of the harvested biomass leaves the forest because the timber harvested has two components: 1) wood removed to market (extracted timber) and 2) wood remaining in the forest as a result of harvest.

Therefore, the mean carbon stock of extracted timber per unit area for species j in stratum i was calculated from the mean volume of extracted timber multiplied by density and carbon fractions:

$$C_{EX,j,i|BSL} = V_{EX,j,i|BSL} * D_j * CF_j$$

Where:

$C_{EX,j,i\|BSL}$	Mean carbon stock of extracted timber per unit area for species j in stratum i; $tC \cdot ha^{-1}$;
$V_{EX,j,i\|BSL}$	Mean volume of extracted timber per unit area for species j in stratum i; in $m^3 \cdot ha^{-1}$;
D_j	Basic wood density of species j; t d.m. m^{-3}; Value applied: 0.66
CF_j	Carbon fraction of biomass for species j, tCt $d.m.^{-1}$ Value applied: 0.47
i	1, 2, 3 …M strata; and
j	1, 2, 3 .. J tree species

Table 26 shows the mean carbon stock extracted from each Ejido.

Table 26. Mean carbon stock of extracted timber in each Ejido

Ejido	Mean carbon stock of extracted timber [tC ha^{-1}] [$C_{EX,j,i\|BSL}$]
Ejido Cancabchen	22.16
Ejido Chanchen	22.83
Ejido Chun Ek	19.50
Ejido Felipe Angeles	38.09
Ejido Gral. Francisco J. Mujica	21.22
N.C.P.E. Lic. Manuel Crescencio Rejón	10.15
Ejido Pustunich	19.44
Ejido Xkanha	23.13
Ejido Yohaltun	16.67

- Calculation of Dead Wood (Logging Slash) Generated in the Process of Timber Harvest

This section calculates $\Delta C_{DWSLASH,i,p|BSL}$ includes the following:

a) The change in carbon stock in dead wood (i.e., logging slash) left on the forest floor following timber harvest in stratum i in land parcel p, using $C_{EX,j,i|BSL}$ and $C_{HB,j,i|BSL}$.
b) The change in carbon stock in dead wood (i.e., logging slash) that results from residual stand damage ($C_{RSD,j,i|BSL}$). Residual stand damage is the breaking or uprooting of other neighboring trees

during the process of tree felling. Residual stand damage is calculated using the residual stand damage factor $F_{RSD|BSL}$.

$$\Delta C_{DWSLASH,i,p|BSL} = \left[\sum_{j=1}^{J}\left[\left(C_{HB,j,i|BSL} - C_{EX,j,i|BSL}\right) + C_{RDS,j,i|BSL}\right]\right]$$

Where:

$\Delta C_{DWSLASH,i,p|BSL}$	Change in carbon stock of dead wood as logging slash resulting from timber harvest per unit area in stratum i in land parcel p, in tC ha^{-1};
$C_{HB,j,i|BSL}$	Mean carbon stock of harvested biomass per unit area for species j in stratum i, tC·ha^{-1};
$C_{EX,j,i|BSL}$	Mean carbon stock of extracted timber per unit area for species j in stratum i, tC·ha^{-1};
$C_{RSD,j,I,|BSL}$	Mean carbon stock in timber from residual stand damage per unit area for species j in stratum i, tC·ha^{-1}
i	1, 2, 3 …M strata; and
j	1, 2, 3 .. J tree species
P	1, 2, 3 …P land parcels.

The mean carbon stock in timber from residual stand damage ($C_{RSD,j,i|BSL}$) is calculated as follows:

$$C_{RSD,j,i|BSL} = C_{EX,j,i|BSL} * F_{RSD|BSL}$$

Where:

$C_{RSD,j,I,|BSL}$	Mean carbon stock in timber from residual stand damage per unit area for species j in stratum i, tC·ha^{-1}
$C_{EX,j,i|BSL}$	Mean carbon stock of extracted timber per unit area for species j in stratum i, tC·ha^{-1};
$F_{RSD|BSL}$	Factor for residual stand damage, dimensionless;
i	1, 2, 3 …M strata; and
j	1, 2, 3 .. J tree species

Table 27 shows the mean carbon stock in timber from residual stand damage from each Ejido.

Table 27. Mean carbon stock in timber from residual stand damage in each Ejido

Ejido	Mean carbon stock in timber from residual stand damage [tC ha^{-1}] [$C_{RSD,j,I,|BSL}$]
Ejido Cancabchen	6.43
Ejido Chanchen	6.62

Ejido	Mean carbon stock in timber from residual stand damage [tC ha^{-1}] [$C_{RSD,j,i,|BSL}$]
Ejido Chun Ek	5.65
Ejido Felipe Angeles	11.05
Ejido Gral. Francisco J. Mujica	6.15
N.C.P.E. Lic. Manuel Crescencio Rejón	2.94
Ejido Pustunich	5.64
Ejido Xkanha	6.71
Ejido Yohaltun	4.83

- Calculation of Baseline Carbon Sequestered in Wood Products

This section calculates the net carbon stock change resulting from wood product conversion and retirement.

The carbon stock of extracted timber across species is calculated as:

$$C_{EX,i|BSL} = \sum_{j=1}^{J} C_{EX,j,i|BSL}$$

Where:

$C_{EX,i|BSL}$	Change in carbon stock of extracted wood products resulting from timber harvest per unit area in stratum i in land parcel p, in tC·ha^{-1}
$C_{EX,j,i|BSL}$	Mean carbon stock of extracted timber per unit area for species j in stratum i, tC·ha^{-1};
$F_{RSD|BSL}$	Factor for residual stand damage, dimensionless;
i	1, 2, 3 ...M strata; and
j	1, 2, 3 .. J tree species

Wood product classes k, (sawnwood, wood-based panels, other industrial roundwood, paper and paperboard, and others) are the end use of the harvested timber. For this project the following percentages of harvested products were assigned, according to common practices in the region (Table 28).

Table 28.Percentage of wood product type

Type of wood products	Proportion (%)
Proportion of harvest for roundwood	70
Proportion of harvest for sawnwood	30
Proportion of harvest for woodbase	0

Type of wood products	Proportion (%)
Proportion of harvest for paper & paperboard	0

In accordance with the VCS AFOLU Requirements, the amount of carbon stored in wood products that would decay within 3 years after harvest (i.e., the Wood Waste (WW) and the Short-Lived Fraction (SLF)), are assumed to be emitted at the time of harvest. Wood products that are retired between 3 and 100 years after harvest (i.e., the Additional Oxidized Fraction, OF), must be accounted according to a 20 year linear decay function. Decomposition rates for proportions of wood products (Winjum, Brown, & Schlamadinger, 1998) are shown in Table 29.

Table 29. Decomposition rates for different wood product type

Wood products	Decomposition rates
Wood waste. Fraction immediately emitted due to sawmill inefficiency.	0.62
Short-lived fraction of roundwood	0.18
Short-lived fraction of sawnwood	0.12
Short-lived fraction of woodbase	0.06
Short-lived fraction of paper & paperboard	0.24
Additional Oxidised Fraction - Other industrial roundwood	0.99
Additional Oxidised Fraction - Sawnwood	0.86
Additional Oxidised Fraction - Woodbase panels	0.98
Additional Oxidised Fraction - Paper & paperboard	0.99

Therefore, the carbon stock of extracted timber that is immediately emitted to the atmosphere at the time of harvest is calculated as:

$$C_{WP0,i|BSL} = \sum_{k} C_{EX,i,k|BSL} * (WW_k + SFL_k)$$

Where:

$C_{EX,i\|BSL}$	Change in carbon stock of extracted wood products resulting from timber harvest per unit area in stratum i in land parcel p, in $tC{\cdot}ha^{-1}$
$C_{EX,j,i\|BSL}$	Mean carbon stock of extracted timber per unit area for species j in stratum i, $tC{\cdot}ha^{-1}$;
$F_{RSD\|BSL}$	Factor for residual stand damage, dimensionless;
i	1, 2, 3 ...M strata; and

j	1, 2, 3 .. J tree species

- Change in Carbon Stocks Due to Forest Regrowth After Harvest

The carbon sequestration in the baseline scenario resulting from forest regrowth after timber harvest up to year t is equal to the forest regrowth rate of each stratum.

Documentary research was carried out to determine the mean diameter growth of the most relevant species identified in the forest inventory (Table 30), expressed in centimeters per year.

Table 30. Diametric Growth in Centimeters

Species	Diameter (cm)					
	5 year	10 year	15 year	20 year	25 year	30 year
Manilkara zapota	0.1	0.37	0.34	0.96	0.54	0.37
Pouteria reticulata	0.2					
Pouteria campechiana	0.2					
Brosimum alicastrum	0.1	0.3	0.5			
Bursera simaruba	0.06					
Gymnanthes lucida	0.22	0.28	0.30	0.37	0.32	0.30
Thouinia paucidentata						
Metopium brownei						
Casearia thamnia						
Coccoloba spicata						
Lonchocarpus xuul						
Vitex gaumeri						
Croton arboreus						
Gymnopodium floribundum						
Melicoccus oliviformis						
Neea psychotrioides						
Krugiodendron ferreum						
Coccoloba cozumelensis						
Cenostigma gaumeri						
Piscidia piscipula	0.1					
Lysiloma latisiliquum	0.18					
Swietenia macrophylla	0.8					

Species	Diameter (cm)					
	5 year	10 year	15 year	20 year	25 year	30 year
Average	0.22	0.28	0.30	0.37	0.32	0.30

Using these diametrical growth values, the growth of each tree belonging to the reference species was projected. Through field data on heights and diameters, a non-linear regression model (logarithmic) was applied to estimate the future height of each tree at time 't'. It's worth noting that this step may be unnecessary if the employed allometric equation does not require the height value.

The estimation of the aboveground biomass of all trees was carried out using the estimated diameters and heights for different years with the allometric equations Appendix 4. Subsequently, the aboveground biomass for each plot was calculated for each estimated year, thus allowing the calculation of biomass per hectare for each time period.

The annual growth rate was calculated by subtracting the biomass of year 't2' from year 't1' to obtain the annual growth rate. These values were obtained by dividing the resulting difference by the number of elapsed years, providing an average annual rate.

With the projected annual growth rates, a non-linear regression model was applied, adjusting them to a sigmoidal curve to analyze and predict future growth in a broader context.

The annual growth rate was capped based on the values outlined in the accompanying Table 31. Consequently, when the growth reaches the maximum biomass per hectare, its progression halts to prevent an overestimation of non-existent biomass within the project area. This action is taken to ensure measurement accuracy and to prevent unrealistic growth projections within the specific project area. In the calculations, values were used in terms of carbon per hectare [tC ha-1].

Table 31. Timber Volume, Standing Biomass and Standing Carbon per hectare on mature forest in the Reference Region

Site	Standing Timber Volume	Standing Biomass	Standing Carbon	Source
	[m^3 ha^{-1}]	[MgDM ha^{-1}]	[tC ha^{-1}]	
Calakmul, Campeche	746.8	492.9	231.7	(Aryal D. , 2014)
Calakmul, Campeche	204.2	116.4	54.7	(Návar-Chaidez, 2011)
Calakmul, Campeche	239.3	136.4	64.1	(Návar-Chaidez, 2011)
Campeche, Oaxaca, Quintana Roo	233.5	133.1	62.6	(Návar-Chaidez, 2011)
Campeche, Quintana Roo, Yucatán	149.5	85.2	40.0	(Návar-Chaidez, 2011)
Yaxnohcah, Campeche	422.6	240.9	113.2	(Vázquez-Alonso , et al., 2022)
Yucatan Peninsula	394.7	225.0	105.8	(A. Cairns, Olmstedb, Granados, & Argaez, 2003)

Site	Standing Timber Volume	Standing Biomass	Standing Carbon	Source
	[m^3 ha^{-1}]	[MgDM ha^{-1}]	[tC ha^{-1}]	
Mexico Temparate Forest	450	297.0	139.6	(W. CubbageUBBAGE, R. Davis, Rodriguez, Mollenhauer, & Kraus Elsin, 2015)
Peninsula Yucatan	121.7	80.3	37.8	(Forster, Guemes-Ricalde, & Zapata, 2014)
Average	**329.1**	**200.8**	**94.4**	

The growth rate obtained was multiplied by 0.75, which represents 75% of the actual effectiveness in forest regeneration. This figure aligns with the study conducted in the Maya forest region, indicating forest regeneration rates between 75% and 80% in forested areas (Toledo-Aceves, Purata-Velarde, & M. Peters, 2009)

Therefore, carbon sequestration resulting from forest regrowth after timber harvest is calculated as:

$$C_{RG,i,p|BSL} = \sum_{i} RGRi * Aharvest$$

Where:

$C_{RG,I,p\|BSL}$	Carbon sequestration resulting from forest regrowth after timber harvest and establishment of forestry infrastructure in stratum i in the land parcel p, tC·ha^{-1}·yr^{-1};
RGR_i	Regrowth rate of forest post timber harvest for stratum i, tC·ha^{-1}yr-1;
i	1, 2, 3 …M strata;

- Calculation of Baseline Scenario Greenhouse Gas Emissions from Change in Carbon Stocks

The net carbon stock change to be converted to emissions is equal to the carbon stock change as a result of timber harvest plus the carbon stock change resulting from conversion and retirement of wood products minus carbon sequestration from forest regrowth after harvest.

In order to generate the annual carbon stock change in the baseline scenario, the total net change in carbon stocks for parcels within is multiplied by the area of forest in the particular age class (ie, years since harvest in the baseline).

The annualized calculations vary between years 1, 2-10; 11-20; and all years since the start of the project activity, depending on which decay functions apply.

Therefore, the net change in carbon stock from wood products and logging slash across all parcels within the first year of harvest in the baseline is calculated as:

$$\Delta C_{NET|BSL(1)} = \sum_{i,p} A_{1,i,p} * \sum_{i=1}^{M} \left(\frac{C_{DWSLASH,i,p|BSL}}{10}\right) + C_{WP0,i,p|BSL} + \left(\frac{C_{WP100,i,p|BSL}}{20}\right)$$

Where:

$\Delta C_{NET\|BSL(1)}$	Net change in carbon stock across all parcels in the baseline scenario in the first year since harvest in the baseline scenario, in tC;
$\Delta C_{DWSLASH,i,p\|BSL}$	Change in carbon stock of dead wood as logging slash resulting from timber harvest per unit area in stratum i in land parcel p, in tC ha^{-1};
$\Delta C_{WP0,i,p\|BSL}$	Change in carbon stock resulting from wood product conversion and retirement from stratum i in land parcel p, that is assumed to be emitted in the first year of harvest in the baseline tC ha^{-1};
$\Delta C_{WP100,i,p\|BSL}$	Carbon stored in wood products that is assumed to be retired between 3 - 100 years after harvest from stratum i in land parcel p, tC ha^{-1};
$A_{1,i,p}$	Area of stratum i in land parcel p that was harvested 1 year ago, ha;
i	1, 2, 3 …M strata;
p	1, 2, 3 …P land parcels harvested within the project crediting period.

The net change in carbon stock from wood products and logging slash across all parcels the years 2 – 10 since harvest in the baseline are calculated as:

$$\Delta C_{NET|BSL(2-10)} = \sum_{i,p} A_{2-10,i,p} * \sum_{i=1}^{M} \left(\frac{C_{DWSLASH,i,p|BSL}}{10}\right) + \left(\frac{C_{WP100,i,p|BSL}}{20}\right)$$

Where:

$\Delta C_{NET\|BSL(2\text{-}10)}$	Net change in carbon stock across all parcels in the baseline scenario in years 2-10 since harvest in the baseline scenario, in tC;
$\Delta C_{DWSLASH,i,p\|BSL}$	Change in carbon stock of dead wood as logging slash resulting from timber harvest per unit area in stratum i in land parcel p, in tC ha^{-1};
$\Delta C_{WP100,i,p\|BSL}$	Carbon stored in wood products that is assumed to be retired between 3 - 100 years after harvest from stratum i in land parcel p, tC ha^{-1};
$A_{2\text{-}10,i,p}$	Area of stratum i in land parcel p that was harvested between 2 and 10 year ago, ha;
i	1, 2, 3 …M strata;
p	1, 2, 3 …P land parcels harvested within the project crediting period.

The net change in carbon stock from wood products across all parcels the years 11 – 20 since harvest in the baseline are calculated as:

$$\Delta C_{NET|BSL(11-20)} = \sum_{i,p} A_{11-20,i,p} * \sum_{i=1}^{M} \left(\frac{C_{WP100,i,p|BSL}}{20} \right)$$

Where:

$\Delta C_{NET\|BSL(11-20)}$	Net change in carbon stock across all parcels in the baseline scenario in years 11-20 since harvest in the baseline scenario, in tC;
$\Delta C_{WP100,i,p\|BSL}$	Carbon stored in wood products that is assumed to be retired between 3 - 100 years after harvest from stratum i in land parcel p, tC ha^{-1};
$A_{11-20,i,p}$	Area of stratum i in land parcel p that was harvested between 11 and 20 year ago, ha;
i	1, 2, 3 …M strata;
p	1, 2, 3 …P land parcels harvested within the project crediting period.

The net change (sequestration) in carbon stocks due to forest regrowth on all plots in all years since logging in the reference scenario is calculated according to the following equation.

$$\Delta C_{NET|BSL(1+)} = \sum_{i,p} A_{t*} * \sum_{i=1}^{M} \left(-\Delta C_{RG,i,p|BSL} \right)$$

Where:

$\Delta C_{NET\|BSL(1+)}$	Net change in carbon stock due to forest regrowth in all parcels that have been harvested in the baseline scenario, in tC;
$\Delta C_{WP100,i,p\|BSL}$	Carbon sequestration resulting from forest regrowth after timber harvest in stratum j in land parcel p, tC ha^{-1};
A_{t*}	Cumulative area harvested until t*, ha;
t*	1, 2, ….10, time elapsed since the start of the project, in years;
i	1, 2, 3 …M strata;
p	1, 2, 3 …P land parcels harvested within the project crediting period.

Therefore, net change in carbon stock across all parcels harvested over each year of the project crediting period in the baseline scenario since the start of the project activity was calculated as:

$$\Delta C_{NET|BSL,t*} = \sum_{p=1}^{P} \left[\Delta C_{NET,p|BSL(1)} + \Delta C_{NET,p|BSL(2-10)} + \Delta C_{NET,p|BSL(11-20)} + \Delta C_{NET,p|BSL(+1)} \right]$$

Where:

$\Delta C_{NET\|BSL,t}$	Net change in carbon stock across all parcels in the baseline scenario in the year t* since the start of the project activity, in tC;
$\Delta C_{NET\|BSL(1)}$	Net change in carbon stock across all parcels in the baseline scenario in the first year since harvest in the baseline scenario, in tC;
$\Delta C_{NET\|BSL(2-10)}$	Net change in carbon stock across all parcels in the baseline scenario in years 2-10 since harvest in the baseline scenario, in tC;
$\Delta C_{NET\|BSL(11-20)}$	Net change in carbon stock across all parcels in the baseline scenario in years 11-20 since harvest in the baseline scenario, in tC;
$\Delta C_{NET\|BSL(1+)}$	Net change in carbon stock due to forest regrowth in all parcels that have been harvested in the baseline scenario, in tC;
t*	Time elapsed since the start of the project, in years;
p	1, 2, 3 ...P land parcels harvested within the project crediting period.

The net carbon stock change in the baseline scenario was converted to net greenhouse gas emissions and is calculated as:

$$GHG_{NET|BSL,t*} = \Delta C_{NET|BSL,t*} * \frac{44}{12}$$

Where:

$GHG_{NET\|BSL,t*L}$	Net greenhouse gas emissions in the baseline scenario in the year t* since the start of the project activity, in tCO_2e;
$\Delta C_{NET\|BSL}$	Net change in carbon stock across all parcels in the baseline scenario in the year t* since the start of the project activity, in tC;
44/12	Ratio of molecular weights of carbon dioxide and carbon, tCO_2-e tC^{-1}

The summary of emissions in the baseline is presented in Appendix 4.

3.2.2 Project Emissions (VCS, 3.15)

3.2.2.1 Ongoing Forest Growth in the Project Scenario

This section calculates $\Delta_{CAB,t|PRJ}$ annual carbon stock change in aboveground biomass of trees in the project scenario, in tCO_2e

3.2.2.1.1 Allometry

Appropriate allometric equations were selected for each species or species group found in the inventory that then were converted based on tree dimensions from field timber inventories in the sampling plots into aboveground tree biomass. Allometric equations used are shown in Table 32.

Table 32. Allometric equations by species or species group

Species	Allometric equation
Castilla elastica	Biomass = ((Exp(4.9375)*dbh^2.1166)*0.00000114)*1000
Cecropia peltata	
Lonchocarpus castilloi	
Lonchocarpus rugosus	
Lonchocarpus xuul	
Alseis yucatanensis	Biomass = (0.0301)*(dbh^2)*height
Cosmocalyx spectabilis	
Exostema mexicanum	
Guettarda combsii	
Machaonia lindeniana	
Randia longiloba	
Simira salvadorensis	
Brosimum alicastrum	Biomass = (0.0336*((dbh)^2*(height))^1)
Pouteria campechiana	Biomass = (0.0358)*(dbh^2)*height
Chrysophyllum mexicanum	Biomass = (0.0447)*(dbh^2)*height
Manilkara zapota	
Sideroxylon foetidissimum subsp. gaumeri	
Trichilia pallida	Biomass = (0.0465)*(dbh^2)*height
Diospyros juruensis subsp. campechiana	Biomass = (0.064066*(dbh)^2.62323)
Piscidia piscipula	
Bursera bipinnata	Biomass = (0.064808*(dbh)^2.46998)
Bursera simaruba	
Casearia thamnia	Biomass = (0.078545*dbh^2.58952)
Casimiroa tetrameria	
Ceiba schottii	Biomass = (0.0841)*(dbh^2.41)
Gliricidia sepium	Biomass = (0.1185)*(dbh^2)
Bauhinia divaricata	Biomass = (0.197575*dbh^2.34002)
Licaria campechiana	Biomass = (0.222776*(dbh)^2.33953)
Guazuma ulmifolia	Biomass = (0.232435*dbh^2.21906)
Hampea trilobata	Biomass = (0.23736*dbh^2.16175)

Species	Allometric equation
Luehea speciosa	
Maclura tinctoria tintoria	
Pseudobombax ellipticum	
Croton glabellus	Biomass = (0.2385)+((0.0580)*(dbh^2)*height)
Psidium guajava	Biomass = (0.246689*(dbh)^2.24992)
Psidium oligospermum	
Psidium sartorianum	
Cedrela odorata	Biomass = (0.4125+(0.0421*(dbh)^2*(height)))
Eugenia foetida	Biomass = (0.4600)+((0.0370)*(dbh^2)*height)
Eugenia ibarrae	Biomass = (0.5825*dbh^1.6178)
Senegalia gaumeri	
Vatairea lundellii	
Pouteria amygdalina	Biomass = (0.8322)+((0.0429)*(dbh^2)*height)
Pouteria reticulata	
Talisia floresii	Biomass = (0.943+0.620*(dbh))^2
Cordia dodecandra	Biomass = (10^-0.755)*(dbh^2.072)
Cordia nodosa	Biomass = (-2.108)+0.210*(dbh)*(height)
Casearia laetioides	
Populus simaroa	
Populus sp.	
Lysiloma bahamensis	Biomass = (Exp(-1.527)*(dbh^2.056))
Thouinia paucidentata	Biomass = 0.00238*((dbh)^2.3385)*((height)^0.9411)
Swietenia macrophylla	Biomass = 0.022*((dbh)^2.920)
Terminalia amazonica	Biomass = 0.05*dbh^2.56
Terminalia bucera	
Colubrina arborescens	Biomass = 0.0511*(dbh)^(2)+0.5596*(dbh)-0.1862
Krugiodendron ferreum	
Croton arboreus	Biomass = 0.063*((dbh^2)*height)^0.862
Spondias mombin	
Vitex gaumeri	Biomass = 0.1065*(dbh)^(2)-2.1243*(dbh)+25.013
Aspidosperma megalocarpon	Biomass = 0.1085*((dbh)*(height))^(0.9497)

Species	Allometric equation
Tabebuia rosea	Biomass = 0.1138*(dbh)^2.3513
Agonandra obtusifolia	Biomass = 0.1142*(dbh)^(2.4451)
Cleyera integrifolia	
Erythroxylum guatemalense	Biomass = 0.1245*(dbh)^(2.4163)
Gymnanthes lucida	
Lysiloma divaricatum	
Lysiloma latisiliquum	
Platymiscium yucatanum	
Swartzia cubensis	
Jatropha gaumeri	Biomass = 0.1730*(dbh)^(2.2950)
Astronium graveolens	Biomass = 0.2368*(dbh)^(2.2219)
Caesalpinia mollis	
Haematoxylum campechianum	Biomass = 0.37*(dbh)^1.96
Plumeria obtusa	Biomass = 0.465*(dbh)^(2.202)
Protium copal	Biomass = 1.120*(dbh)^(2)
Guaiacum sanctun	Biomass = 21.297-(6.953*(dbh))+0.74*(dbh^2)
Bourreria pulchra	Biomass = 21.297-6.953*(dbh)+0.74*(dbh)^2
Forchhammeria trifoliata	
Gymnopodium floribundum	
Neea psychotrioides	
Coccoloba caracasana	Biomass = 21.297-6.953*(dbh)+0.74*dbh^2
Coccoloba cozumelensis	
Coccoloba spicata	
Dendropanax arboreus	
Erythroxylum rotundifolium	
Eugenia capuli	
Hyperbaena winzerlingii	
Karwinskia humboldtiana	
Maytenus schippii	
Metopium brownei	
Myrciaria floribunda	

Species	Allometric equation
Zanthoxylum sp	
Neomillspaughia emarginata	Biomass = -3.485+1.25*(dbh^2)
Simarouba glauca	Biomass = 5.042591+0.025101*(dbh)^(2)*(height)
Drypetes lateriflora	Biomass = 6.9664+(0.0326*((dbh^2)*height))
Attilaea abalak	
Beaucarnea pliabilis	
Bonellia macrocarpa	
Byrsonima roigii	
Canarium zeylanicum	
Cascabela gaumeri	
Casearia emarginata	
Chloroleucon mangense	
Citrus × aurantium L.	
Cnidoscolus sp.	
Coccoloba acapulcensis	
Cochlospermum vitifolium	
Damburneya coriacea	Biomass = exp(-2.68+1.805*Ln(dbh)+1.308*Ln(height)+0.377*Ln(0.5656))
Damburneya patens	
Diphysa carthagenensis	
Erythrostemon yucatanensis	
Handroanthus chrysanthus	
Kitinche	
Mariosousa dolichostachya	
Matayba oppositifolia	
Mosannona depressa	
Neea psychotroides	
Pimienta dioica	
Pithecellobium lanceolatum	
Pseudalbizzia niopoides	
Pseudalbizzia tomentosa	
Sebastiania glandulosa	

Species	Allometric equation
Senegalia gaumeri	
Solenandra mexicana	
Tetramerium nervosum	
Trophis racemosa	
Vachellia collinsii	
Vachellia cornigera	
Cenostigma gaumeri	Biomass = exp(-2.68+1.805*Ln(dbh)+1.308*Ln(height)+0.377*Ln(0.6598))
Bauhinia ungulata	Biomass = exp(-2.68+1.805*Ln(dbh)+1.308*Ln(height)+0.377*Ln(0.9262))
Coulteria mollis	
Trophis racemosa	
Melicoccus oliviformis	Biomass = exp(-2.68+1.805*Ln(dbh)+1.308*Ln(height)+0.377*Ln(0.98))

3.2.2.1.2 Measurements

According to the methodology, only the individual trees, species and strata which were to be harvested in the baseline scenario were measured. The tree dimensions and minimum diameter at breast height (DBH) specified by the selected allometric equation in Section 3.2.2.2 was applied to these trees.

All minimum values employed in inventories will be held constant for the duration of the project.

3.2.2.1.3 Determining Sample Plot Carbon Stocks

Carbon stock in aboveground biomass for each individual tree of species group *j* in the sample plot located in stratum *i* were estimated using the selected allometric equation applied to the tree dimensions resulting from Section 3.2.2.3.

Therefore, the sum of the carbon stock in each sample plot was calculated as:

$$C_{AB,j,i,t,sp|PRJ} = \sum_{l=1}^{L_{j,i,sp,t}} f_j(X, Y \ldots) * CF$$

Where:

$C_{AB,j,l,t,sp\,|\,PRJ}$	Carbon stock in aboveground biomass of trees of species j in plot sp in stratum *i* at time *t* in the project scenario, in tC;
CF_j	Carbon fraction of biomass for tree group *j*, tC t d.m.-1;

fj (X,Y...)	Aboveground biomass of trees based on allometric equation for species group *j* based on measured tree variable(s), t. d.m. tree-1;
i	1, 2, 3, ... *M* strata
j	1, 2, 3, ...*J* tree species
l	1, 2, 3, ...$L_{j,i,t,sp}$ sequence number of individual trees of species group *j* in stratum *i* at time *t* in sample plot *sp*;
t	0, 1, 2, 3, ...*t** years elapsed since start of the project activity; and
sp	1, 2, 3 ...*SP* sample plots

3.2.2.1.4 Determining Stratum Carbon Stocks

The total carbon stock in the aboveground biomass of all trees present in the sample plot *sp* of stratum *i* at time *t* was calculated as:

$$C_{AB,i,t,sp|PRJ} = \sum_{j=1}^{J} C_{AB,j,i,t,sp|PRJ}$$

Where:

$C_{ABj,i,t,sp|PRJ}$	Aboveground biomass carbon stock of all trees of stratum *i* at time *t* in sample plot *sp* in the project scenario, tC;
$C_{AB,j,i,t,sp|PRJ}$	Carbon stock in aboveground biomass of trees of species j in plot sp in stratum *i* at time *t* in the project scenario, in tC;
i	1, 2, 3, ... *M* strata
j	1, 2, 3, ...*J* tree species
t	0, 1, 2, 3, ...*t** years elapsed since start of the project activity; and

Only one stratum was determined by the type of forest in the project area, which is subperennial tropical forest.

3.2.2.1.5 Determining Mean Carbon Stocks

Therefore, the mean carbon stock in aboveground biomass for each stratum per unit area was calculated as:

$$C_{AB,i,t|PRJ} = \frac{1}{SP} * \sum_{sp=1}^{SP} \left(\frac{C_{AB,i,t,sp|PRJ}}{A_{sp}} \right)$$

Where:

$C_{AB,i,t|PRJ}$	Mean aboveground biomass carbon stock of trees in stratum *i* at time *t*, tC·ha^{-1};
$C_{AB,j,i,t,sp|PRJ}$	Aboveground biomass carbon stock of trees in stratum *i* at time *t* in sample plot *sp*, in tC;

Asp	Area of sample plot *sp*, ha;
sp	1, 2, 3, …*SP* sample plots:
i	1, 2, 3, … *M* strata
t	0, 1, 2, 3, … *t** years elapsed since start of the project activity; and

3.2.2.1.6 Determining Carbon Stocks Changes

The annual carbon stock change in aboveground biomass of trees in year t is the difference in mean carbon stock in aboveground biomass between sampling events and, when expressed in tCO_2e, was calculated as:

$$\Delta C_{AB,t|PRJ} = \left(\sum_{i=1}^{M} \left(A_i * \frac{C_{AB,i,t2|PRJ} - C_{AB,i,t1|PRJ}}{T} \right) \right) * \frac{44}{12}$$

Where:

$C_{AB,t\|PRJ}$	Annual carbon stock change in aboveground biomass of trees in year *t* tCO_2eyr^{-1};
$C_{AB,i,t\|PRJ}$	Mean aboveground biomass carbon stock of trees in stratum *i* at time *t*, $tCha^{-1}$;
Ai	Area covered by stratum *i*, ha;
sp	1, 2, 3, …*SP* sample plots:
T	Number of years between monitoring time t1 and t2 (T=t2-t1); years;
i	1, 2, 3, … *M* strata
t	0, 1, 2, 3, … *t** years elapsed since start of the project activity; and
44/12	Ratio of molecular weights of carbon dioxide and carbon, tCO_2etC^{-1}

The carbon stock change in aboveground biomass of trees ($\Delta C_{AB,t|PRJ}$) is the output of this section and is necessary to calculate net greenhouse gas emissions in the project scenario.

3.2.2.2 Forest Disturbance in the Project Scenario

This section calculates $\Delta_{CDIST\_FR,t|PRJ}$, carbon stock change due to fire disturbance in the project scenario; tCO_2e, $\Delta C_{DIST,t|PRJ}$, carbon stock change due to non-fire natural disturbance in the project scenario; tCO_2e.

3.2.2.2.1 Natural Disturbance

Option A: Natural disturbance-Fire

Where fires occur ex post in the project area, the area burned must be delineated.

Therefore, based on the IPCC 2006 Inventory Guidelines, estimation of greenhouse gas emissions from biomass burning must be calculated as:

$$\Delta C_{DIST-FR,t|PRJ} = \sum_{i=1}^{M} A_{burn,i,t} * B_{i,t|PRJ} * COMF_i * G_{g,i} * 10^{-3} \cdot GWP_{CH4}$$

Where:

$\Delta C_{DIST-FR,t\|PRJ}$	Net greenhouse gas emissions resulting from fire disturbance in year t, tCO_2e
$A_{burn,i,t}$	Area burnt for stratum *i* at time *t*, ha;
$B_{i,t\|PRJ}$	Average aboveground biomass stock present in the project scenario but absent in the baseline scenario before burning stratum *i*, time *t*; t.d.m. ha^{-1};
COMPi	Combustion factor for stratum *i*, dimensionless;
$G_{g,i}$	Emission factor for stratum *i* for methane, g kg^{-1} dry matter burnt;
GWP_{CH4}	Global warming potential for CH_4 (IPCC default: 21), tCO_2e tCH_4^{-1};
i	1, 2, 3, … *M* strata;
t	0, 1, 2, 3, … *t** years elapsed since start of the project activity;

The average aboveground biomass stock present in the project scenario but absent in the baseline scenario before burning for a particular stratum must be calculated as:

$$B_{i,t|PRJ} = \sum_{j=1}^{J} \{V_{EX,i,j|BSL} * BCEF_R\}$$

Where:

$B_{i,t\|PRJ}$	Average aboveground biomass stock present in the project scenario but absent in the baseline before burning for stratum *i*, time *t*, t.d.m. ha^{-1};
$V_{EX,j,i\|PRJ}$	Mean volume of extracted timber per unit area for species *j* in stratum *i*, $m3{\cdot}ha^{-1}$;
$BCEF_R$	Biomass conversion and expansion factor applicable to wood removals in the project area, t.d.m m^{-3};
i	1, 2, 3, … *M* strata;
j	1, 2, 3, … *J* tree species;
t	0, 1, 2, 3, … *t** years elapsed since start of the project activity;

Option B: Natural Disturbance Non-Fire

Where non-fire natural disturbances occur ex post in the project area, the area disturbed must be delineated.

$$\Delta C_{DIST,t|PRJ} = \sum_{i=1}^{M} \left(A_{dist,i,t} * \sum_{j=1}^{J} \{C_{AB,j,i|BSL}\} \right) * \frac{44}{12}$$

Where:

$\Delta C_{DIST,t\|PRJ}$	Net greenhouse gas emissions resulting from non-fire natural disturbance in year *t*, tCO_2e;

$A_{dist,i,t}$	Area disturbed for stratum *i* at time *t*, ha;
$C_{AB,i\|BSL}$	Carbon stock in aboveground biomass per unit area in stratum *i*, $tC \cdot ha^{-1}$;
44/12	Ratio of molecular weights of carbon dioxide and carbon, $tCO_2e\ tC^{-1}$
i	1, 2, 3, … *M* strata;
j	1, 2, 3, … *J* tree species;
t	0, 1, 2, 3, … *t** years elapsed since start of the IFM project activity;

In the Yucatan region of Mexico, wildfires are particularly dramatic, especially during the 4-6 month dry season (February through May), and affect areas close to the RBC. Most instances of project activity have not been significantly affected by fires, although some incidents appear to come within a few dozen miles of the RBC boundaries. Project activities are focused on promoting fire monitoring and control, as well as addressing other disturbances that may arise within the Instances. For carbon calculations, we have determined that disturbance emissions will be zero, and continuous monitoring is expected during verification events.

3.2.2.3 Illegal Logging

A participatory rural appraisal (PRA) of the communities surrounding the project area must be completed to determine if there is the potential for illegal extraction of trees from the project area. If this assessment finds no potential pressure for these activities, then illegal logging ($\Delta C_{DIST\_IL,i,t|PRJ}$) can be assumed to be zero and no monitoring is needed.

Therefore, where the PRA or the limited sampling indicate no illegal logging occurring:

$$\Delta C_{DIST-IL,t|PRJ} = 0$$

Where the PRA and the limited sampling indicate degradation is occurring, net carbon stock changes as a result of illegal logging must be calculated as:

$$\Delta C_{DIST-IL,t|PRJ} = \sum_{i=1}^{M} \left(A_{DIST-IL,j} * \frac{C_{DIST-IL,i,t|PRJ}}{AP_i} \right) = \frac{44}{12} * C_{DIST-IL,t|PRJ}$$

Where:

$\Delta C_{DIST-IL,t\|PRJ}$	Net greenhouse gas emissions resulting from non-fire natural disturbance in year *t*, tCO_2e;
$A_{DIST\_IL,i,t}$	Area potentially impacted by illegal logging in stratum *I*, ha;
$C_{DIST\_IL,I,t\|PRJ}$	Biomass carbon of trees cut and removed through illegal logging in stratum *i* at time *t*, tCO_2e;
APi	Total area of illegal logging sample plots in stratum *i*, ha;
44/12	Ratio of molecular weights of carbon dioxide and carbon, $tCO_2e\ tC^{-1}$

i	1, 2, 3, … *M* strata in the in the project case;
t	0, 1, 2, 3, … *t** years elapsed since start of the IFM project activity;

Through the participatory rural appraisal (PRA) of the communities surrounding the project area it was determined that there is no potential pressure for illegal logging, therefore it was assumed that illegal logging ($\Delta CDIST\_IL,i,i,t|PRJ$) is zero, however during the verification events monitoring of illegal logging will be conducted through participatory rural appraisals (PRA).

3.2.2.4 Net Greenhouse Gas Emissions the Project Scenario

This section calculates $\Delta C_{NET,t|PRJ}$, the net greenhouse gas emissions in the project scenario in year t, in tCO_2e.

The net greenhouse gas emissions in the project scenario are the sum of net greenhouse gas emissions resulting from fire and non-fire forest disturbance, plus any carbon stock changes that occur as a result of illegal logging, minus the annual carbon stock change in the aboveground biomass of trees due to forest growth.

Therefore, net greenhouse gas emissions in the project scenario in year t, is calculated as:

$$\Delta C_{NET,t|PRJ} = \left(\Delta C_{DIST-FR,t|PRJ} + \Delta C_{DIST,t,PRJ} + \Delta C_{DIST-IL,t|PRJ}\right) - \Delta C_{AB,t|PRJ}$$

Where:

$\Delta C_{NET,t\|PRJ}$	Net greenhouse gas emissions in the project scenario in year *t*, tCO_2e;
$\Delta C_{DIST\_FR,t\|PRJ}$	Net greenhouse gas emissions resulting from fire disturbance in year *t*, tCO2e
$\Delta C_{DIST,t\|PRJ}$	Net greenhouse gas emissions resulting from non-fire natural disturbance in year *t*, tCO2e ;
$\Delta C_{DIST\_IL,t\|PRJ}$	Net carbon stock changes as a result of illegal logging at time *t*, tCO2e;
$\Delta C_{AB,t\|PRJ}$	Annual carbon stock change in aboveground biomass of trees in year *t*, $tCO_2e \cdot yr^{-1}$;
t	0, 1, 2, 3, … *t** years elapsed since start of the IFM project activity;

The net greenhouse gas emissions across in the project scenario since the start of the project is calculated as:

$$GHG_{NET|PRJ} = \sum_{t=1}^{t*} \Delta C_{NET,t|PRJ}$$

Where:

$GHG_{NET\|PRJ}$	Net greenhouse gas emissions in the project scenario since the start of the project activity, tCO_2e;
$\Delta C_{NET,t\|PRJ}$	Net greenhouse gas emissions in the project scenario in year *t*, tCO_2e;
t	0, 1, 2, 3, … *t** years elapsed since start of the IFM project activity;

3.2.3 Leakage Emissions (VCS 2.5, 3.2, 3.6, 3.15, 4.3)

Leakage is defined as the unanticipated decrease or increase in greenhouse gas (GHG) benefits outside of the project's accounting boundary as a result of project activities (Watson, 2000). This can occur through displacement of activities that lead to deforestation and forest degradation from within the project's boundaries to nearby areas. The VCS requires that, similar to emissions related to project implementation, project carbon accounting must consider emissions caused by leakage. For an IFM project, it must be demonstrated whether the reduction in harvest rates in the project area has not directly led to an increase in harvest rates outside of the project area.

3.2.3.1 Activity Shifting Leakage

The Ejidos included in our project do not experience any leakage of harvesting activities. In accordance with Mexican laws and the regulations for sustainable forest utilization, a forest landowner, in this case the Ejidos, is prohibited from cutting wood outside their designated lands. Any breach of this rule results in severe penalties. It's important to highlight that the Ejidos only own the land that falls within the scope of the project, further ensuring that no such leakage occurs.

3.2.3.2 Market Leakage

Leakage due to market effects is equal to the net emissions from planned timber harvest activities in the baseline scenario multiplied by an appropriate leakage factor:

$$GHG_{LK|LtPF,t*} = LF_{ME} * GHG_{NET|BSL,t*}$$

Where:

$GHG_{LK\|LtPF,t*}$	Total market leakage as a result of IFM LtPF activities, in the year t* since the start of the project activity, tCO_2e;
LF_{ME}	Leakage factor for market-effects calculations, dimensionless;
$GHG_{NET\|BS,t*L}$	Net greenhouse gas emissions in the project scenario since the start of the project activity, tCO_2e;

The leakage factor is determined by considering where in the country logging would increased because of the decreased timber supply caused by the project. The process followed to detrmine Market Leakage is detailed in Box 2: Market Leakage from VM0010 methodology.

In the development of this project, an exhaustive assessment was carried out on the surrounding forests and several key states of the country, with Quintana Roo, Yucatán, Tabasco, and Chiapas being at the forefront in the event of any market leakage. These states share similarities in their forest types, suggesting that any change in logging or forest management within the project area could directly impact them. This significance is because, geographically, these regions harbor similar tropical forests and are rich in valuable woods.

On the other hand, other regions of Mexico would be less affected by this project. The primary reason lies in the geographical distribution and the typology of their forests. The tropical forest and high-value woods, such as mahogany and cedar, are primarily located in the south of Mexico. Additionally, there are specific areas in the coastal regions of central Mexico that also possess these forest characteristics. However,

outside these states and particular areas, the rest of the country presents different forest ecosystems, so it is not expected to be directly affected by changes in forest management practices in the project area (Table 33).

Table 33 presents information extracted from four management programs. This information includes average commercial timber per hectare, average timber harvested per hectare and forest type. From these data, the information in Table 34 is calculated.

Table 33.Total biomass outside the project

#	Ejido	Forest type	Average Merchantable timber per hectare [m^3 ha^{-1}]	Average extracted timber per hectare [m^3 ha^{-1}]	Merchantable biomass per hectare [MG DM ha^{-1}]	Extracted biomass total [MG DM ha^{-1}]
1	Ejido 20 de Noviembre	Tropical	130	15	86	10
2	Ejido Nuevo Becal	Tropical	115	16	76	11
3	Ejido Noh Bec	Tropical	120	20	79	13
4	Ejido Caobas	Tropical	130	25	86	17

Next, the ratio between merchantable biomass and total biomass of each forest type from different Ejidos was compared to estimate the (PML_{FT}).

Table 34. Determination of average commercial biomass as a proportion of total aboveground tree biomass.

Concession	Merchantable biomass per hectare [MG DM ha^{-1}]	Extracted biomass total [MG DM ha^{-1}]	PML_{FT}
1	86	10	12%
2	76	11	14%
3	79	13	17%
4	86	17	19%
		Average	15%

Next, the ratio of merchantable biomass to total biomass of the project stratum was compared to estimate the (PML_I) (Table 35).

Table 35. Determination of merchantable biomass as a proportion of total aboveground tree biomass

Stratum	Extracted biomass total [MG DM ha^{-1}]	Merchantable biomass total [MG DM ha^{-1}]	PML_I
1	20	105.37	19%

The leakage factor (Table 36) is determined then by considering where in the country logging would increase as a result of the decreased supply of timber caused by the project. If the areas liable to be logged have a higher ratio of merchantable biomass to total biomass higher than the project area it is likely that the proportional leakage is higher and vice versa.

Table 36. Leakage factor for market-effects calculations

Stratum	Forest type	Area	PML_{FT}	PML_I	% Difference between PMLFT and PMPi	LF_{ME}
1	Natural Forest Management	95,738	15%	19%	81%	0.2

3.2.4 Estimated GHG Emission Reductions and Carbon Dioxide Removals (VCS, 3.15, 4.1)

Net GHG emission reductions are calculated as:

$$GHG_{CREDITS|LtPF,t*} = GHG_{NET|BSL,t*} - GHG_{NET|PJR,t*} - GHG_{LK|LtPF,t*}$$

Where:

$GHG_{CREDITS\|LtPF,t*}$	Project greenhouse gas credits associated with the implementation of improved forest management (IFM) activities in the year $t*$ since the start of the project activity, in the project scenario, tCO_2e;
$GHG_{NET\|BS,t*L}$	Net greenhouse gas emissions in the baseline scenario in the year $t*$ since the start of the project activity, tCO_2e;
$GHG_{NET\|PRJ,t*}$	Net greenhouse gas emissions in the project scenario in the year $t*$ since the start of the project activity, tCO_2e; and
$GHG_{LK\|LtPF,t*}$	Total greenhouse gas emissions due to leakage arising outside the project boundary as a result of the implementation of improved forest management (IFM) activities in the year $t*$ since the start of the project activity, in the project scenario, tCO_2e.

The estimated net GHG emission reductions and removals in each year of the project crediting period for all Project Activity Instances is presented in Table 37.

The VM0010 methodology states in section 8 that the estimated baseline emissions are averaged over the crediting period of the project and that each year the annual average emissions are applied.

State the non-permanence risk rating (%)	12%
Has the non-permanence risk report been attached as either an appendix or a separate document?	☒ Yes ☐ No
For ARR and IFM projects with harvesting, state, in tCO2e, the Long-term Average (LTA).	Not applicable, this IFM project does not include harvesting in the project scenario.
Has the LTA been updated based on monitored data, if applicable?	☐ Yes ☐ No Not applicable, this IFM project does not include harvesting in the project scenario.
State, in tCO2e, the expected total GHG benefit to date.	
Is the number of GHG credits issued below the LTA?	☐ Yes ☒ No *If no, provide justification.* *LTA was used on Baseline Emissions only.*

Complete the table below for the project crediting period. Note that the buffer pool allocation is split proportionally between the estimated reductions and removals. (For example, if a project is estimated to achieve 20,000 tCO2e removals and 80,000 tCO2e reductions and has a buffer contribution of 20%, or 20,000, the estimated removal VCUs would be 16,000 and reduction VCUs would be 64,000.)

Table 37. Summary Estimations of annual Emission, Reductions, Removals and VCUs for the crediting period.

Vintage period	Estimated baseline emissions (tCO2e)	Estimated project emissions (tCO2e)	Estimated leakage emissions (tCO2e)	Estimated buffer pool allocation (tCO2e)	Estimated reduction VCUs (tCO2e)	Estimated removal VCUs (tCO2e)	Estimated total VCU issuance (tCO2e)
19 May 2019 to 18 May 2020	*110,496*	*-*	*(22,099)*	*(10,555)*	*110,496*	*6,179*	*84,021*
19 May 2020 to 18 May 2021	*110,496*	*-*	*(22,099)*	*(11,982)*	*110,496*	*12,359*	*88,773*
19 May 2021 to 18 May 2022	*110,496*	*-*	*(22,099)*	*(13,352)*	*110,496*	*18,538*	*93,583*
19 May 2022 to 18 May 2023	*328,520*	*-*	*(65,704)*	*(32,222)*	*328,520*	*33,029*	*263,624*
19 May 2023 to 18 May 2024	*328,520*	*-*	*(65,704)*	*(36,029)*	*328,520*	*47,521*	*274,308*

Vintage period	Estimated baseline emissions (tCO2e)	Estimated project emissions (tCO2e)	Estimated leakage emissions (tCO2e)	Estimated buffer pool allocation (tCO2e)	Estimated reduction VCUs (tCO2e)	Estimated removal VCUs (tCO2e)	Estimated total VCU issuance (tCO2e)
19 May 2024 to 18 May 2025	*328,520*	-	*(65,704)*	*(39,730)*	*328,520*	*62,012*	*285,098*
19 May 2025 to 18 May 2026	*328,520*	-	*(65,704)*	*(43,354)*	*328,520*	*76,503*	*295,966*
19 May 2026 to 18 May 2027	*328,520*	-	*(65,704)*	*(46,915)*	*328,520*	*90,995*	*306,896*
19 May 2027 to 18 May 2028	*328,520*	-	*(65,704)*	*(50,423)*	*328,520*	*105,486*	*317,879*
19 May 2028 to 18 May 2029	*328,520*	-	*(65,704)*	*(53,887)*	*328,520*	*119,978*	*328,907*
19 May 2029 to 18 May 2030	*328,520*	-	*(65,704)*	*(55,466)*	*328,520*	*134,469*	*341,819*
19 May 2030 to 18 May 2031	*328,520*	-	*(65,704)*	*(57,010)*	*328,520*	*148,961*	*354,767*
19 May 2031 to 18 May 2032	*328,520*	-	*(65,704)*	*(58,522)*	*328,520*	*163,452*	*367,746*
19 May 2032 to 18 May 2033	*328,520*	-	*(65,704)*	*(56,961)*	*328,520*	*177,943*	*383,798*
19 May 2033 to 18 May 2034	*328,520*	-	*(65,704)*	*(55,374)*	*328,520*	*192,435*	*399,877*
19 May 2034 to 18 May 2035	*328,520*	-	*(65,704)*	*(53,762)*	*328,520*	*206,926*	*415,981*
19 May 2035 to 18 May 2036	*328,520*	-	*(65,704)*	*(52,127)*	*328,520*	*221,418*	*432,107*
19 May 2036 to 18 May 2037	*328,520*	-	*(65,704)*	*(50,470)*	*328,520*	*235,909*	*448,255*
19 May 2037 to 18 May 2038	*328,520*	-	*(65,704)*	*(48,793)*	*328,520*	*250,400*	*464,424*
19 May 2038 to 18 May 2039	*328,520*	-	*(65,704)*	*(47,096)*	*328,520*	*264,892*	*480,611*
19 May 2039 to 18 May 2040	*328,520*	-	*(65,704)*	*(45,216)*	*328,520*	*279,383*	*496,983*
19 May 2040 to 18 May 2041	*328,520*	-	*(65,704)*	*(43,319)*	*328,520*	*293,875*	*513,372*
19 May 2041 to 18 May 2042	*328,520*	-	*(65,704)*	*(41,405)*	*328,520*	*308,366*	*529,777*
19 May 2042 to 18 May 2043	*328,520*	-	*(65,704)*	*(39,202)*	*328,520*	*322,857*	*546,472*

Vintage period	Estimated baseline emissions (tCO2e)	Estimated project emissions (tCO2e)	Estimated leakage emissions (tCO2e)	Estimated buffer pool allocation (tCO2e)	Estimated reduction VCUs (tCO2e)	Estimated removal VCUs (tCO2e)	Estimated total VCU issuance (tCO2e)
19 May 2043 to 18 May 2044	*328,520*	*-*	*(65,704)*	*(36,984)*	*328,520*	*337,349*	*563,181*
19 May 2044 to 18 May 2045	*328,520*	*-*	*(65,704)*	*(35,698)*	*328,520*	*345,661*	*572,779*
19 May 2045 to 18 May 2046	*328,520*	*-*	*(65,704)*	*(34,404)*	*328,520*	*353,973*	*582,385*
19 May 2046 to 18 May 2047	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2047 to 18 May 2048	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2048 to 18 May 2049	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2049 to 18 May 2050	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2050 to 18 May 2051	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2051 to 18 May 2052	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2052 to 18 May 2053	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2053 to 18 May 2054	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2054 to 18 May 2055	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2055 to 18 May 2056	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2056 to 18 May 2057	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2057 to 18 May 2058	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2058 to 18 May 2059	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2059 to 18 May 2060	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2060 to 18 May 2061	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2061 to 18 May 2062	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*

Vintage period	Estimated baseline emissions (tCO2e)	Estimated project emissions (tCO2e)	Estimated leakage emissions (tCO2e)	Estimated buffer pool allocation (tCO2e)	Estimated reduction VCUs (tCO2e)	Estimated removal VCUs (tCO2e)	Estimated total VCU issuance (tCO2e)
19 May 2062 to 18 May 2063	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2063 to 18 May 2064	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2064 to 18 May 2065	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2065 to 18 May 2066	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2066 to 18 May 2067	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2067 to 18 May 2068	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2068 to 18 May 2069	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2069 to 18 May 2070	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2070 to 18 May 2071	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
19 May 2071 to 18 May 2072	*328,520*	*-*	*(65,704)*	*(33,102)*	*328,520*	*362,285*	*592,000*
				Total	16,757,494	14,230,284	25,625,380
				Average [tCO2 ha-1]	182	155	278
				Average [tCO2 ha-1 yr-1]	3.4	2.9	5.3

3.3 Monitoring

3.3.1 Data and Parameters Available at Validation (VCS, 3.16)

Data / parameter	$V_{EX,INF,j,i\|BSL}$
Data unit	$m^3\ ha^{-1}$
Description	Mean volume of timber extracted for wood processing during the process of forestry infrastructure establishment per unit area for species j in stratum i

Source of data	$V_{EX,INF,j,i\|BSL}$ is provided in the timber harvest plan
Value applied	6.31
Justification of choice of data or description of measurement methods and procedures applied	The value was obtained through common practices, taking from management plans near the project, the area of skid trails, and log landings per hectare and then estimating mean volume (m^3) extracted timber per hectare. The values used were: Skid trails: 73.34 m^2 ha^{-1} Log landings: 2,500 m^2 ha^{-1} Total infrastructure Area: 2,573 m^2 ha^{-1}
Purpose of data	Determination of baseline scenario
Comments	Used in equation 3, 4 and 37

Data / parameter	$F_{RSD\|BSL}$
Data unit	Dimensionless
Description	Residual Stand Damage Factor
Source of data	From research conducted in the Yucatan Peninsula, Mexico to evaluate CO2 emissions from harvesting activities called Reduced impact logging practices reduce forest disturbance and carbon emissions in community managed forests in the Yucatan Peninsula**Invalid source specified.**.
Value applied	29 %
Justification of choice of data or description of measurement methods and procedures applied	The percentage used comes from the sum of the percentage of collateral damage, skidding and log landings, the data comes from table 4. of the article "Reduced impact logging practices reduce forest disturbance and carbon emissions in community managed forests in the Yucatan Peninsula, Mexico in community-managed forests in the Yucatan Peninsula, Mexico" **Invalid source specified.**.
Purpose of data	Determination of baseline scenario
Comments	Used in equation 6

Data / parameter	$V_{l,j,i,sp}$
Data unit	$m^3\ ha^{-1}$
Description	Merchantable volume for tree l of species j in sample plots p in stratum i
Source of data	The merchantable volume of all trees in each biomass sample plot was calculated using a volumetric equation, each equation was selected because it was used in other forest management programs in the project region. These equations relate diameter at breast height (DBH, 1.3 m above ground level), and/or merchantable height (MH), to the merchantable (marketable) volume of trees in the sample plots above the minimum DBH established in the in the logging plan.
Value applied	See *Table 21*
Justification of choice of data or description of measurement methods and procedures applied	Merchantable volume was quantified using local equations with measured data from field biomass inventory.
Purpose of data	Determination of baseline scenario
Comments	Used in equation 6

Data / parameter	CF_j
Data unit	tC t-1 d.m.
Description	Carbon fraction of dry matter
Source of data	IPCC 2006, Chapter 4, Table 4.43. Carbon fraction of aboveground forest biomass
Value applied	0.47
Justification of choice of data or description of measurement methods and procedures applied	Default value

Purpose of data	Determination of baseline scenario. Calculation of project emissions Leakage
Comments	Used in equation 3, 4

Data / parameter	Dj
Data unit	t d.m.m^{-3}
Description	Mean wood density of commercially harvested species
Source of data	Local Jornal Articule (Chan-Coba et al., 2022)
Value applied	0.66
Justification of choice of data or description of measurement methods and procedures applied	This is the overall average wood density of 23 species, calculated from measurements obtained during the field study conducted in the Calakmul Biosphere Reserve.
Purpose of data	Determination of baseline scenario
Comments	Used in equation 4

Data / parameter	fj (X, Y...)
Data unit	t d.m. tree $^{-1}$
Description	Allometric equation(s) for species j linking measured tree variable(s) to aboveground biomass of living trees
Source of data	The equations used come from different sources used in the project region, the complete list of sources is presented in the excel document.
Value applied	Multiple values (see Table 32)
Justification of choice of data or description of	The use of allometric equations by species allows biomass estimates to decrease the error, each equation used has a scientific reference.

measurement methods and procedures applied	
Purpose of data	Indicate one of the following: Determination of baseline scenario, Calculation of baseline emissions, Calculation of project emissions, Calculation of leakage
Comments	Used in equation 17

Data / parameter	$BCEF_R$
Data unit	$t.d.mm^{-3}$
Description	Biomass conversion and expansion factor applicable to wood removals in the project area
Source of data	The value used is from IPCC Table 4.5. Default Biomass Conversion and expansion factors (BCEF), tonnes biomass (m3 of wood volume)
Value applied	1.44
Justification of choice of data or description of measurement methods and procedures applied	The project area is located under the Climatic Zone “Humid tropical” with growing stock level between 120 and 200 m^3.
Purpose of data	Determination of baseline scenario
Comments	Used in equation 3 and 22

Data / parameter	OF, SLF, WW
Data unit	$Kg\ kg^{-1}$
Description	OF = Fraction of wood products that would be emitted to the atmosphere between 3 and 100 years after production; SLF = Fraction of wood products that would decay within 3 years of production, but that would be assumed to be emitted to the atmosphere immediately upon production; and

	WW = Fraction of extracted biomass effectively emitted to the atmosphere during production
Source of data	The source of data is the published paper *(Winjum, Brown, & Schlamadinger, 1998)*
Value applied	Multiple values detailed below
Justification of choice of data or description of measurement methods and procedures applied	Winjum et al. 1998 indicate that the proportion of extracted biomass that is oxidized (burning or decaying) from the production of commodities to be equal to 19% for developed countries, 24% for developing countries. Short-lived fraction (SLF) Winju metal 1998 give decay rates for proportions of wood products, which were converted to with short-term (<3yr) uses (applicable internationally) as below: Sawnwood 0.12 Woodbase panels 0.06 Other industrial roundwood 0.18 Paper and Paperboard 0.24 Additional oxidized fraction (OF) Winjum et al 1998 gives annual oxidation fractions for each class of wood products split by forest region (boreal, temperate and tropical). This methodology projects these fractions over 95 years to give the additional proportion that is oxidized between the 3rd and the 100th year after initial harvest:
Purpose of data	Determination of baseline scenario
Comments	Used in equation 7 and 9

Wood Product Class	*OF*		
	Boreal	Temperate	Tropical
Sawnwood	0.39	0.62	0.86
Woodbase panels	0.62	0.86	0.98
Other industrial roundwood	0.86	0.98	0.99
Paper and paperboard	0.39	0.62	0.99

Data / parameter	PML_{FT}

Data unit	%
Description	Mean merchantable biomass as a proportion of total aboveground tree biomass for each forest type.
Source of data	It was determined using commercial biomass data from different forest management programs near the project.
Value applied	15%
Justification of choice of data or description of measurement methods and procedures applied	Using commercial biomass values close to the project helps to understand what the production capacity of the forest is and how much impact our project has on forest production activities.
Purpose of data	Determination of baseline scenario
Comments	Used in the section 8.3.2, Leakage, Box 2.

Data / parameter	RGR_i
Data unit	Indicate the unit of measure
Description	Forest regrowth rate post timber harvest for stratum i
Source of data	With information from scientific articles we determined the diametric growth of some commercial species, (in the excel file you can find more details), this value allowed us to model the growth of the forest with a non-linear equation adjusted to the field data, the equation is as follows, Biomass growth =(0.2082*LN(year)+0.714) with R^2 = 0.85 this equation is a function of the years of after harvesting or stand age (for project scenario).
Value applied	Multiple values
Justification of choice of data or description of measurement methods and procedures applied	Fitting a growth model with real data allows us to more accurately estimate forest growth.
Purpose of data	Calculation of baseline emissions, Calculation of project emissions
Comments	Used in equation 10

Data / parameter	$V_{EX,j,i\,|\,BSL}$
Data unit	m^3ha^{-1}
Description	Mean volume of extracted timber per unit area for species j in stratum i
Source of data	Field Biomass Inventory and Common practices
Value applied	See Table 24
Justification of choice of data or description of measurement methods and procedures applied	The volume extracted was calculated using common practices in the region, determining which species are harvested, types of wood and minimum cutting diameter.
Purpose of data	Determination of baseline scenario
Comments	Used in equations 3, 4, 22 and 27

Data / parameter	Ai,p
Data unit	Ha
Description	Area covered by stratum I over land parcel p
Source of data	Geodetic coordinates and/or Remote Sensing data and/or legal parcel records
Value applied	92,076
Justification of choice of data or description of measurement methods and procedures applied	The applied value comes from the sum of the area of 9 Ejidos that is forest at project start, this value corresponds to stratum 1, since only one stratum was used for this project. A stratum was determined by the type of forest in the project area, which is sub perennial tropical forest.
Purpose of data	Determination of baseline scenario
Comments	N/A

Data / parameter	Asp
Data unit	Ha
Description	Area of sample plots p
Source of data	Recording and archiving of size of sample plots
Value applied	0.0625
Justification of choice of data or description of measurement methods and procedures applied	A 25 meter by 25 meter plot was established to measured adult trees larger than 10 centimeters DBH.
Purpose of data	Calculation of baseline emissions Calculation of project emissions Calculation of leakage
Comments	N/A

Data / parameter	Asp subplot
Data unit	Ha
Description	Area of sample subplots p
Source of data	Recording and archiving of size of sample plots
Value applied	0.01
Justification of choice of data or description of measurement methods and procedures applied	A 10 meter by 10 meter subplot within the plot was used to measure saplings larger than 5 cm and smaller than 10 cm DBH.
Purpose of data	Calculation of baseline emissions Calculation of project emissions Calculation of leakage
Comments	

3.3.2 Data and Parameters Monitored (VCS, 3.16)

Data / parameter	Illegal Logging PRA Results
Data unit	Dimensionless
Description	Assessment whether illegal logging is a risk within the project boundary and whether an on-the-ground survey must be triggered
Source of data	PRA
Description of measurement methods and procedures to be applied	The PRA must evaluate whether timber harvest may be occurring in the project area and must consist of semi-structured interviews / questionnaires. If ≥10% of those interviewed / surveyed believe that illegal logging may be occurring within the project boundary, then the limited on-the-ground illegal logging survey must be triggered. An additional output of the PRA must be a depth of penetration of illegal logging pressure. A maximum distance must be recorded for penetration into the forest from access points (such as roads, rivers, already cleared areas) for the purpose of harvesting timber.
Frequency of monitoring/recording	Every two years
Value applied	Less than 10% of respondents are expected to believe that significant illegal logging occurs within the project boundary and the ex ante assumption is that project emissions from illegal logging are zero.
Monitoring equipment	Community surveys in the Ejidos, evaluated only to landowners (Ejidatarios).
QA/QC procedures to be applied	
Purpose of data	Calculation of project emissions
Calculation method	Interview/Survey
Comments	Ex ante estimation must be made of illegal logging in the with-project case. If the belief is that zero illegal logging would occur within the project boundaries then this parameter may be set to

	zero if clear infrastructure, hiring and policies are in place to prevent illegal logging.

Data / parameter	$A_{burn,i,t}$
Data unit	Ha
Description	Area burnt in stratum i at time t
Source of data	Geodetic coordinates and / or Remote Sensing data
Description of measurement methods and procedures to be applied	Disturbance will be observed in the field between monitoring events and delimiting areas of at least one hectare where a biomass reduction of more than 10 tC is observed since the last monitoring event. Disturbance sites observed in satellite images or during field patrols will be visited, the nature of the disturbance will be determined and the boundaries of the burned area will be verified by GPS.
Frequency of monitoring/recording	Disturbed areas will be monitored in accordance with the monitoring plan.
Value applied	Value applied at project validation is zero.
Monitoring equipment	Satellite imagery, GPS
QA/QC procedures to be applied	Quality control/quality assurance (QA/QC) procedures for image and data processing, as well as for field verification visits, will be established in the monitoring plan.
Purpose of data	Calculation of project emissions
Calculation method	The area will be measured by taking waypoints with GPS and tape measures when sufficient.
Comments	Burning areas must be observed and recorded in an internal Ejido logbook in real time for subsequent measurements.

Data / parameter	Adist,i,t
Data unit	Ha

Description	Area disturbed in stratum i at time t
Source of data	Geodetic coordinates and / or Remote Sensing data
Description of measurement methods and procedures to be applied	Disturbance will be observed in the field between monitoring events and delimiting areas of at least one hectare where a biomass reduction of more than 10 tC is observed since the last monitoring event. Disturbance sites observed in satellite images or during field patrols will be visited, the nature of the disturbance will be determined and the boundaries of the disturbed area will be verified by GPS.
Frequency of monitoring/recording	Areas disturbed will be monitored in accordance with the monitoring plan
Value applied	Value applied at project validation is zero.
Monitoring equipment	Satellite imagery and GPS
QA/QC procedures to be applied	Quality control/quality assurance (QA/QC) procedures for image and data processing, as well as for field verification visits, will be established in the monitoring plan.
Purpose of data	Calculation of project emissions
Calculation method	
Comments	

Data / parameter	ADIST_IL,i
Data unit	Ha
Description	Area potentially impacted by illegal logging in stratum i
Source of data	GIS delineation and ground-truthing
Description of measurement methods and procedures to be applied	Disturbance will be observed in the field between monitoring events and delimiting areas of at least one hectare where a biomass reduction of more than 10 tC is observed since the last monitoring event. Disturbance sites observed in satellite images or during field patrols will be visited, the nature of the disturbance will be determined and the boundaries of the burned area will be verified by GPS.

Frequency of monitoring/recording	Areas disturbed will be monitored in accordance with the monitoring plan
Value applied	Value applied at project validation is zero.
Monitoring equipment	Satellite imagery and GPS
QA/QC procedures to be applied	Quality control/quality assurance (QA/QC) procedures for image and data processing, as well as for field verification visits, will be established in the monitoring plan.
Purpose of data	Calculation of project emissions
Calculation method	Based on the results of illegal logging survey areas will be measured with GPS, satellite imagery or tape measures when possible.
Comments	The area disturbed by illegal logging will be measured when surveys show that more than 10% of respondents report illegal logging.

Data / parameter	$C_{DIST\_IL,i,t\,|\,PRJ}$
Data unit	tCO2e
Description	Biomass carbon of trees cut and removed through illegal logging in stratum i at time t
Source of data	Field measurements in sample plots
Description of measurement methods and procedures to be applied	The sampling plan must be designed using plots systematically placed over the buffer zone so that they sample at least 3% of the area of the buffer zone (ADIST_IL,i). The diameter of all tree stumps will be measured and conservatively assumed to be the same as the DBH. Where the stump is a large buttress, several individuals of the same species nearby must be located and a ratio of the diameter at DBH to the diameter of buttress at the same height above ground as the measured stumps must be determined. This ratio

	will be applied to the measured stumps to estimate the likely DBH of the cut tree. The aboveground carbon stock of each harvested tree will be estimated using the allometric regression equations chosen for forest growth in the project scenario. The mean aboveground carbon stock of the harvested trees is conservatively estimated to be the total emissions and to all enter the atmosphere
Frequency of monitoring/recording	Repeated each time limited sampling of ADIST_IL, indicates illegal logging
Value applied	Value applied at project validation is zero.
Monitoring equipment	Satellite imagery, GPS and diametric tape
QA/QC procedures to be applied	Quality control/quality assurance (QA/QC) procedures for image and data processing, as well as for field verification visits, will be established in the monitoring plan.
Purpose of data	Calculation of project emissions
Calculation method	Tree biomass is calculated from data collected in the field in unlogged forest areas, this value is obtained in tC ha-1 and multiplied by the number of hectares identified in the sampling.
Comments	Only used when areas with illegal logging are encountered

3.3.3 Monitoring Plan (VCS, 3.16, 3.20)

The parameters monitored in this project are as follows,

- *Illegal logging PRA Results*
- *Result of limited illegal logging survey*
- *Area burnt in stratum i at time t (Aburn,i,t)*
- *Area potentially impacted by illegal logging in stratum i (ADIST_IL, i)*
- *Total area of illegal logging sample plots in stratum i (APi)*
- *Merchantable biomass as a proportion of total aboveground tree biomass for stratum i*
- *(PMPi)*
- *Area covered by stratum i (Ai)*
- *Diameter at breast height of tree (DBH)*

These parameters are described in Section 3.3.2 Data and parameters monitored and include data, description of the measurement methods and procedures applied.

Climate data monitoring comes from three important data sources:

1) *Biomass inventories and*
2) *Spatial and remote sensing data.*
3) *Social data described in the Community Monitoring Report (Separate document)*

These parameters will be monitored at each verification and are used in equations 20, 21 and 23 of the VM0010 methodology.

To measure the parameters described in the methodology we have developed a standard operating procedure, which describes the steps to perform the monitoring in each verification event, including field measurements and the use of remote systems for Land Use Land Cover analysis.

Biomass Inventories

The main objective of conducting a Field Biomass Inventory is to collect essential data to quantify the amount of carbon stored in the area of interest. To optimize the management and analysis of this information, it consists of breaking down the total biomass into several significant compartments known as carbon pools. These pools, which harbor different types of biomass, allow for a more detailed and specific assessment of the carbon content within the ecosystem under study.

In practice, the measurement of carbon content takes place in 105 biomass plots strategically located within the area of interest. These plots serve as microcosmic representations of the broader ecosystem, facilitating the extrapolation of data throughout the project. In the case of this particular project, the forest inventory approach is instrumental in accurately accounting for aboveground biomass, providing a detailed and specific view of available resources in terms of carbon.

In the forest inventory, the following reservoir and the specific properties of the forest will be measured.

1. *Aboveground live tree biomass*
    a. *Diameter at breast height (DBH)*
    b. *Total height*
    c. *Height to first branch*
2. *Canopy cover percentage*
3. *Slope of plot*
4. *Aspect of point (□)*
5. *Average height of canopy*

The designated size for the plot will cover an area of 25 meters by 25 meters, and within it, a subplot will be identified. Within the larger plot dimensions (25 meters by 25 meters), the measurement of all timber trees, excluding palms classified as trees, will be conducted, focusing on those with a diameter equal to or greater than 10 centimeters (DBH ≥ 10 cm). This emphasis on trees of a specific diameter ensures a comprehensive capture of individuals that may have a significant impact on forest biomass and structure.

On the other hand, in the smaller plot of 10 meters by 10 meters, all timber trees with a diameter equal to or greater than 5 centimeters and less than 10 centimeters (5 cm ≥ DBH < 10 cm) will be measured. This more detailed focus on trees of specific diameters allows for a more precise assessment of regeneration and the lower stratum of the tree canopy, complementing the information gathered in the larger plot.

This differentiated sampling strategy between the two plots aims to provide a comprehensive view of the distribution and composition of timber trees in the study area, facilitating a more thorough analysis of the forest structure. The inclusion of a subplot within the larger plot further refines the sampling approach, allowing for a nuanced examination of different ecological components within the same spatial context.

To ensure comprehensive data quality control, a rigorous custody procedure is followed. After field data sheets are transcribed into MS Excel, they are temporarily stored in the subcontractor's offices. The responsibility for data entry lies with the person who recorded the information in the Excel sheet, as handwritten data could be susceptible to misinterpretation by third parties.

During both field data collection and data entry into Excel, meticulous quality control procedures are implemented to verify user errors or incomplete data. This includes the use of Data Validation in Excel, where any data deemed likely incorrect triggers an error message for further review. Both the subcontractor

and Terra Global conduct a thorough data verification before storing it on Terra Global's servers, ensuring the integrity and accuracy of the information.

During the combination and carbon calculation stage, as an integral part of an internal auditing procedure, Terra Global's foresters reverify the data, providing feedback if potential discrepancies or areas for improvement are identified. The complete set of quality control procedures, along with the Standard Operating Procedure (SOP) of the Biomass Inventory, is available to the Independent Verified Validator (VVB) for a transparent and thorough assessment. This measure not only ensures data consistency but also supports the reliability and robustness of the forest inventory results.

Spatial and remote sensing data

Remote sensing systems will be employed to conduct on-site evaluations of disturbances reported by project entities. The primary disruptive event under monitoring is the occurrence of fires, and to date, no incidents resulting in significant emissions have been recorded in the project area. However, during each verification, community interviews will be conducted to assess the existence of fires and their relevance in the project area.

The remote sensing system will leverage real-time satellite imagery to determine the affected area of the disturbance. This approach will enable a more precise and efficient evaluation of identified disturbances, contributing to detailed and timely monitoring of potential events of interest, such as forest fires, in the project area. The integration of remote technologies with community feedback will strengthen the project's comprehensive approach to monitoring and managing environmental disturbances.

Given the size of the area, the carbon model developed for this project can be utilized to determine the amount of carbon emissions caused by fires or other natural disturbances. The issue of disturbance due to illegal logging will be addressed through community interviews. If an issue of illegal logging is identified, attempts will be made to measure the dimensions through remote sensing.

3.3.4 Dissemination of Monitoring Plan and Results (VCS, 3.18; CCB, CL4.2)

Information regarding the project will be shared with stakeholders through in-person meetings. ACAC will hold several community meetings, and will be in communication with all relevant stakeholders to present the VCS/CCB Project Document, gather feedback and notify them of the 30-day comment period so that they could submit comments privately to the CCB via the website https://verra.org/programs/ccbs/ All relevant public comments submitted to the CCB during the public comment period will be addressed.

3.4 Optional Criterion: Climate Change Adaptation Benefits

This Project seeks to be validated to the Gold Level for Climate Change adaptation benefits. This project will demonstrate that activities implemented will be helping landowners (*ejidatarios/as*) and other local stakeholders to increase resilience on food crops and/or other adaptation measures under CCB gold adaption.

3.4.1 Regional Climate Change Scenarios (CCB, GL1.1)

The Yucatán Peninsula is semi-arid in the northern part, and sub-humid and rainy in the south. Due to its transitional climate, it is more sensitive to climate changes. The region has also been identified as particularly vulnerable to adverse climate change scenarios regarding socioeconomic status and biodiversity conservation. The Intergovernmental Panel on Climate Change (IPCC) has attempted to estimate what the future could look like for the Yucatán Peninsula through the use of General Circulation Models (GCM), and the construction of possible emission scenarios that integrate different global and regional socioeconomic and demographic situations, resulting in various possible projections of emissions of greenhouse gases (Andrade-Velásquez, Medrano-Pérez, Montero-Martínez, & Alcudia-Aguilar, 2021).

Climate projections indicate warming in Yucatán to 0.01°C per year. This trend is similar for both maximum temperatures and median temperatures (Andrade-Velásquez, Medrano-Pérez, Montero-Martínez, & Alcudia-Aguilar, 2021). Projections of regional climate change scenarios have identified the Yucatán Peninsula as being vulnerable to increasing meteorological events, such as drought. Predictions locate four distinctive clusters of precipitation, demonstrating climatic variability across the region. While temperatures are expected to rise, mean annual rainfall is projected to decrease in the Yucatán Peninsula, and drought and other extreme weather events are expected to increase in frequency and intensity (IPCC, 2018) (De La Barreda, Metcalfe, & Boyd, 2020).

Changes in the climate combined with a growing population can result in economic and environmental costs. These changes can determine the trajectory of emerging market economies, when livelihoods are highly reliant on annual rainfall (De La Barreda, Metcalfe, & Boyd, 2020). Communities' vulnerability in the Project Zone Instance is profound; but mitigation of human intervention to reduce the causes and effects of climate change, and the measures taken by the communities living in the Peninsula, will determine the overall impact that the changing climate will have. This may involve reducing emissions of greenhouse gases or improving the ability to remove them, through reforestation and improved forest management practices. Adaption policies need to prioritize a reduction in deforestation, degradation, and erosion, as well as take into consideration socioeconomic and agricultural activities, levels of infrastructure, migration, marginalization, and poverty of the population.

The Amigos de Calakmul Community Conservation Forestry Project aims to empower local communities to effectively halt logging activities, thereby significantly enhancing emission reductions and carbon removals. The generated carbon revenues will not only supplement their existing sources of income but also contribute positively to their overall resilience. Furthermore, the project's activities will play a crucial role in enhancing the capabilities of local stakeholders, fostering a sustainable and resilient future for the community.

3.4.2 Climate Change Impacts (CCB, GL1.2)

The Calakmul Biosphere Reserve and zone of influence along the Yucatán Peninsula is the region of Mexico that is most at risk to the change in climate. It has been a focal point for socioeconomic, political, and institutional arrangements that have led to degradation of the forest reserves. With the northern portion of the peninsula disproportionately affected by erratic rainfall, periods of drought, and meteorological events such as tropical storm patterns, as well as institutional changes that are undermining reforestation and improved land management efforts. The area is also prone to catastrophic wildfires that often cause hurricanes, fueled by climate change.

3.4.3 Measures Needed and Designed for Adaptation (CCB, GL1.3)

Based on the causal model described in response to G1.8, describe measures needed and designed to assist communities and biodiversity to adapt to the probable impacts of climate change.

Measures that were assessed to assist communities and biodiversity to adapt to the impacts of climate change by the Intergovernmental Panel on Climate Change (IPCC) definition of climate adaptation. This is the "the process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate harm or exploit beneficial opportunities. In natural systems, human intervention may facilitate adjustment to expected climate and its effects" (IPCC, 2014). There are activities from the Workplan (**Error! Reference source not found.**) that are for climate adaptation; those activities are related to increase of income opportunities through agriculture, development of small-business, NTFP enterprises, and are also related to fire adaptation measures, since the incidence of wildfires is likely to increase due

to climate change. The following table (Table *38*) describes the measures necessary to help communities adapt to impacts of climate change.

There will be constant monitoring by the Ejidos of the forested land cover and the biodiversity of the CBR to help us better understand the shifting dynamics of forest ecology and conservation in the region and modify activities when needed.

Table 38**.** Climate adaptation activities from the Long Term Implementation Workplan

Component	Outcome	Strategy	Specific Activities
Community	Increase income streams with an inclusive perspective to enhance livelihoods	Increased income through diversification of income streams, increased agricultural yield, and subsequent increase in income, through sustainable and conservation practices, development of business skills.	Identify potential partners to promote agricultural development and sustainable agroforestry practices
			Conduct trainings on improved agricultural practices and crop diversification
			Distribute seeds and bundles of improved varietals for climate resilience
			Investigate and implement efficient water farming technology for climate adaptation
			Adoption of sustainable agricultural practices and water management systems by Ejidos
			Business skills and entrepreneurship in Ejidos lead to self-sufficient rural enterprises
			Develop and train entrepreneurs on small-business plan
			Organize workshops and training sessions focused on developing essential business skills to enhance the entrepreneurial capabilities of individuals in Ejidos for income diversification
			Facilitate mentorship experiences between experienced entrepreneurs with new entrepreneurs in Ejidos to provide guidance, support, and practical knowledge on starting and managing successful rural enterprises
			Facilitate access to microcredit projects, grants, and other financial resources specifically tailored for rural entrepreneurs in Ejidos to enable them to invest in their business ventures, purchase necessary equipment, and expand their operations.
			Develop and implement economic empowerment projects for the community

Component	Outcome	Strategy	Specific Activities
			Training and evaluation of economic viability for the development of NTFPs project is carried out
			Training conducted with local Ejido communities on NTFPs development
			Work with Ejido communities to understand barriers to local supply chains and NTFP resources to build business development plans
			Certify the production line of Non-Timber Forest Products
			Develop and maintain sub-granting mechanism to local organizations for implementation of field projects
			Facilitate the creation and establishment of community cooperatives for the production and marketing of NTFPs
			Explore micro-loan project for development of NTFP enterprise cooperative extension
Climate	Maintain forest cover and reduce deforestation	Engagement of the to surveil and monitor forest areas in the Ejidos, along with improvement of fire management through the creation of fire brigades, fire management plans, availability of fire management infrastructure and tools.	Use existing fire threat models and weather monitoring to determine red flag days and share with neighbors and prevent anthropogenic fires
			Open fire lines or fire breaks and practice controlled burns in fire adapted ecosystems within the ejidos
			Facilítate fire management training with rangers and ejidatarios
			Creation of a safety-community brigade against forest fires with the ejidatarios

4 COMMUNITY

4.1 Without-Project Community Scenario

4.1.1 Descriptions of Communities at Project Start (CCB, CM1.1)

In the regions surrounding the Calakmul Biosphere Reserve and more generally in the Grouped Project Eligibility Area in the Yucatan Peninsula, 56% of the land and roughly two-thirds of the forests are managed by the Ejido communities. The Mexican federal government created the Ejido communal land-holding institution to attend to the long-standing land-tenure inequality in the country. From 1930 to 1970, there

was a redistribution of federalized and previously private land holdings, and half of Mexico's entire land area was transferred to the Ejido communities.

Ejidos Well-being

The Ejido lands are legally owned by the community members (Ejidatarios) and hold shared rights over management and decision-making on land use and natural resources. Ejidos are a formal restitution of ancestral land to native and indigenous peoples. Ejidos are organized into individual parcels for farming, common-use, forestry, and are managed collectively for timber, resins, and other non-timber forest products. Local Ejidos are the driving economic and political power at a municipal level (Varns, Cortez, Hovani, & Kingsbury, 2018) (Perramond, 2008).

In 1992, reform to the article prohibited any future expansion of Ejido lands and allowed privatization of communal resources, leaving the communities and their land, rich in biodiversity and cultural value, vulnerable to private investment agendas, including commercial agriculture and cattle ranching. While there was concern that Ejidos would sell their land to these interests, to date, only about 10 percent of Ejidos have converted to private property over the last 10 years (Schumacher, Durán-Díaz, Kurjenoja, Gutiérrez-Juárez, & González-Rivas, 2019).With the Ejidos living near to the buffer and core zones of the Calakmul Biosphere Reserve, their crop productions systems have a large impact on forestry management practices, and the quality of the ecosystem. Ejido farmers grow maize, squash, and legumes by a shifting agricultural system known as *milpa*, in which a field is cleared by cutting and burning the forest, planted for a few years, and then left fallow for the vegetation to regrow. Families typically have three to five hectares of *milpa* in production each year, with fruit and vegetable production to supplement their diets. These traditional production systems are known to be more efficient, with intensified systems of maize, squash and beans fixing nitrogen into soils to improve yields as the farmers move from plot to plot. As families' land tenure shifts toward individual management with shifting policy and political attention to climate change, Ejido livelihoods are transitioning away from subsistence agricultural systems to more intensive systems and raising cattle for sale in the market economy (Lawrence T. J., Stedman, Morreale, & Taylor, 2019). It is important to these communities that their traditional knowledge regarding the use, management, and conservation of their lands be preserved throughout time.

Within each Ejido, the General Assembly (GA) includes all Ejido members authorized to participate in shared decision-making forums. This group is responsible for debating and deciding on community issues, including natural resource management to the Ejido membership. Ejidos also have an authority board/commission, made of a president, secretary, treasurer, and administrative council elected by the GA for three-year terms. This commission carries out and enforces the decisions made by the GA and provides internal audits and conflict resolution (Ellis, et al., 2015).

According to the household survey in 2023, annual household income for Ejido families was USD $112, 36% of farmers had completed primary school, where only 5% had finished high school. Average landholdings were roughly 50 hectares, with 40 hectares under original primary forest cover. In a study in 2005, only 31 percent of participants in household survey reported using improved agroforestry practices in their landholdings (Mercer, Haggar, Snook, & Sosa, 2005).

Alternative approaches to land use, and particularly tropical forest management, have been shaped by ongoing work and conservation efforts in the region. Ecologically sophisticated forest management practices have provided a strong foundation for livelihood diversification and conservation efforts to work in unison. The emphasis on the sociocultural and socioeconomic intersection has proven necessary for the sustainability of the ecosystems and agricultural production systems in the area. The detailed knowledge

that the Ejido communities bring to conservation efforts makes them ideally placed to protect and monitor the biodiversity of the region, while improving economic stability.

Communities' Characteristics

Around 40% of Yucatán Peninsula's population is of indigenous descent (1.8 million people), and over half of land and forests are managed under Mexico's unique Ejido system of land tenure. The livelihoods of the Ejidos and indigenous and rural communities are interwoven with the forest and preservation of the ecosystems of the Calakmul Biosphere Reserve that provides food, energy, medicinal plants, raw materials, and spiritual resources. This rich natural resource base has supported, and been supported by, human populations for thousands of years, and it continues to provide a range of needs to its communities (Varns, Cortez, Hovani, & Kingsbury, 2018).

4.1.1.1 Diversity

Ejidos included in the project have similar cultural, social, and economic backgrounds. In general, living conditions for ejidatarios show minimal public services, difficult communications, emigration, and a high level of illiteracy.

Ejido families depend upon the diversification of productive activities in order to meet economic needs. Women's activities correspond to housekeeping and house administration; they mainly take care of home gardens and are responsible for water collection and wood gathering. While men carry out the activities of working in the milpa, animal husbandry, and honey production.

Descriptive statistics of Ejidos demonstrate, on average, the age of the household head was 38 years old, where most households had 4 children living at home.

Most Ejidos members are Mayan descendants. A strong immigration started in the seventies, coming from at least 23 states of Mexico. This is a heterogeneous population, frequently displaced by social conflicts in the native lands, that came to colonize the forest of the region. A large portion of the population belongs to the Mayan, Chol and Tzeltal ethnic groups from the state of Chiapas, and to the Yucatec Mayan group of the states of Campeche and Yucatan. Some of the minorities indigenous groups, join the Ejidos but with no legal access to land and therefore living in poverty conditions.

Table 39 describes living conditions, average education level and access to main services as well are engagement in government programs. This information was gathered through participatory focus groups conducted per Ejidos, which provided background on the similarities and differences related to Ejidos' living conditions.

Table 39. Ejidos included in Phase 1.

Ejido	Living Conditions-House Material	Average access to main services and others	Average Education Level	Access to Government Program
Yohaltún	Concrete houses with cement floor	Septic tank bathroom, fridge, washing machine, cable	Primary	Yes
Cancabchen	Wood and zinc houses	Septic tank bathroom, fridge	Primary	Yes

Ejido	Living Conditions-House Material	Average access to main services and others	Average Education Level	Access to Government Program
Chanchen	Wood, concrete and zinc houses with cement floor	Open air bathroom	Primary	Yes
Chun Ek	Mayan houses	Septic tank bathroom, cable	Incomplete Primary	Yes
Felipe Ángeles	Wood and zinc houses with cement floor	Septic tank bathroom, fridge, washing machine	Primary	Yes
Fransisco J Mujica	Wood and zinc houses with dirt floor	Latrines, washing machine	Incomplete Primary	Yes
Manuel Cresencio Rejón	Wood and zinc houses with cement floor	Septic tank bathroom, fridge, washing machine	Primary	Yes
Pustunich	Zinc house with cement floor	Septic tank bathrooms, fridge, washing machine, cable	Primary	Yes
Xcanhá	Concrete house	Cable	Primary	Yes

4.1.2 Interactions between Communities and Community Groups (VCS, 3.19; CCB, CM1.1)

Ejido, a formal land tenure and collective land ownership and management system to conduct a range of forestry operations on the land granted to them by the federal government. This system has adapted over time, but important characteristics have endured, including their general structure and the way in which they are nested within formal governance systems at municipal, state, and national levels. Within each ejido, the General Assembly (GA) includes all authorized ejido members and is responsible for deliberating community decisions, ranging from natural resource management to ejido membership. The ejidal commission, made up of a president, secretary, treasurer, and oversight council elected by the GA for three-year terms, carries out and enforces the decisions made by the GA and provides mechanisms for internal audits and conflict resolution.

Ejidos have proven to be effective at conserving forests while creating economic opportunities to a certain extent for the local rural communities who live and work on the land.

The project will adhere to Ejidos' structure and decision-making processes. Thus, the project will facilitate and participate in meetings and assemblies that bring *ejidatarios* together to jointly decide and work in the project's design and implementation.

4.1.3 High Conservation Values (CCB, CM1.2)

High Conservation Value	Sink holes (*Aguadas*)
Qualifying Attribute	"*Aguadas*" are areas where groundwater has been exposed in limestone typography. They are historically important to the Mayan Culture as a critical water source that supported Mayan agriculture and settlement. "*Aguadas*" are ecologically important as they are a habitat to several types of fish and amphibians. In the Yucatán region where water can be scarce, they play a vital role of collecting and storing rainwater and regulating the water table and contributing to the resilience of the region against climate change. Economically, they are an important tourist site and a potential for income generation
Focal Area	Ejido Xkanha

High Conservation Value	Archeological sites
Qualifying Attribute	Archeological sites in the project area are viewed as a link to the Maya civilization by current residents of Calakmul and the Yucatan peninsula at large and can be classified as a tangible historical record. They offer insights into Mayan astronomy, agriculture, politics, and social organization. Economically, they are a tourist attraction site that contributes to the project areas' potential for income generation through ecotourism.
Focal Area	Ejidos Yohaltun and Xkanha

High Conservation Value	Caves (Grutas)
Qualifying Attribute	Caves are culturally important to the local community for their historical significance in the Mayan culture. In the past they were used for ceremonies and served the practical purpose of providing shelter. Ecologically, caves are a biodiversity hotspot as a habitat for bats and insects that are adapted to the cave's ecosystems. Bats are extremely important for insect and pest control, benefiting the nearby agricultural areas. Some caves are also part of the extensive underground river systems that provide freshwater resources to the project area and region in general. Economically, they are a tourist attraction site that contributes to the project areas' potential for income generation through ecotourism.

Focal Area	Ejidos Felipe Angeles

4.1.4 Without-Project Scenario: Community (CCB, CM1.3)

Forest loss is alarming in the Peninsula, with one-third of the land protected, the region still loses more than 80,000 hectares of forest per year, releasing 5.7 million tons of CO2 emissions. Forest loss is driven by conversion to cattle pasture, commercial agriculture, and forest fires.

All throughout the Yucatán Peninsula, Ejido communities continue to practice traditional agricultural systems of maize, beans, squash, other vegetables, and fruit trees into fallow forest, beekeeping, and maintenance of forest corridors for hunting, wood collection, and conservation of native species. There are an estimated 500 species of animals and plants that are traditionally used by the Yucatec Mayan communities in the region, many of which are still being conserved today by Ejidos. The agroforestry model that the Ejido communities utilize in their non-native forest areas provides subsistence, market products, mitigates climate risks, and maintains natural biodiversity. The system is more ecologically sound and is suitable for the region's ecology and rural livelihoods (Varns, Cortez, Hovani, & Kingsbury, 2018).

Despite these positive returns, the traditional agriculture system typically generates a low income, and rural poverty in the area is widespread. With young adults out migrating, the likelihood of leasing the land to private companies or individuals to legally extract natural resources seeking a profit is high, and this could result in more than legal logging permits.

Road construction, commercial agriculture, and development for tourism pressure these communities, and often offer a large financial incentive. For the Ejido communities, harvesting forest for profit is seen as a way forward economically and socially, making the Yucatán Peninsula particularly vulnerable to exploitation of its natural resources and rich biodiversity (Lawrence T. , Stedman, Morreale, & Taylor, 2019).

The conversion from forest to non-forest could happen only in cases where there is a timber lease to a private company or individual, who over extracts the resources.

4.2 Net Positive Community Impacts

4.2.1 Expected Community Impacts (CCB, CM2.1)

The communities around the Project Activity Instance will be impacted by project activities. Barriers and risks that may prevent benefits from reaching these more marginalized households or vulnerable groups are managed by gathering data, such as access to resources in the Project Activity Instance.

Through PRAs, the community members mentioned interest in implementing activities to improve their governance system and organization, increase their income sources, learn, and adopt fire management plans and forest conservation strategies. Thus, based on their needs and interest, the Targeted Project Outcomes below were developed. Thus, the project's outcomes were based on Ejido's needs and priorities.

Moreover, the community members also mentioned the need to provide basic services, such as having a better health service system available, improved sanitation and potable water systems, and improved education services available for the communities. Those are additional activities that will be considered for the long term and will be implemented if funds are available.

Terra Global have identified low income and low educational attainment households through a social survey conducted in April 2023. Through the analysis of this data, we can determine the well-being impacts on

these groups more fully and mitigate any negative impacts that might occur. The well-being indicators mentioned in the tables below can be found in section 4.2.3.

The monitoring of the following outcome indicators are specified on the Monitoring Plan Appendix 4: Commercially Sensitive Information (Annex I) along with the details of the metrics to measure progress with indicators in the Long Term Implementation Work Plan found on Appendix 4: Commercially Sensitive Information (Annex H).

4.2.1.1 Targeted Project Outcome 1. Strengthening Ejidos' governance and structure for effective project management (On Project Activities: Outcome 1)

Community group	Ejido Community Members
Impact(s)	Enhanced Ejido's governance and structure through establishing Conservation Agreements between participating Ejidos and ACAC. Conservation agreements will enable Ejidos to develop sustainable and conservation principles towards forest and biodiversity conservation. To strengthen and expand the perspectives and solutions for forest conservation with an inclusive perspective, there will be incremental inclusions of minorities in Ejido's leadership positions and project activities. Training on capacity building and awareness of societally imposed differences will ensure a more equal environment. Currently, in Campeche, the population is composed of 49% of women *(Data Mexico, 2023)*, which does not have a significant gender representation in the Ejidos decision-making groups or General Assembly.
Type of benefit/cost/risk	The impact is predicted, direct and benefit to these mentioned communities
Change in well-being	Social Capital S5.3: Accountability of elected representation

4.2.1.2 Targeted Project Outcome 2. Increase income streams with an inclusive perspective to enhance livelihoods (On Project Activities: Outcome 2)

Community group	Ejido Community Members
Impact(s)	The average per household regional income level for Campeche is $381.72 (USD) (Data Mexico, 2023).

	The increase in income streams will come from the activities below: • Improved agricultural practices provide increased yields, consequently it generates higher incomes, and promote climate resilience and food security for Ejidal communities. Income from Non-Timber Forest Products (NFTPs).
Type of benefit/cost/risk	The impact is a predicted and direct benefit.
Change in well-being	Ejido Community Members

4.2.1.3 Targeted Project Outcome 3: Maintain Forest cover and reduce deforestation (On Project Activities: Outcome 3)

Community group	Ejido Community Members
Impact(s)	According to government data, the monthly average salary of those working in as park rangers, in 2014, was of $430 (USD) (Data Mexico, 2023), and for firefighters the average salary was of $402.64 (USD) (Data Mexico, 2023). The target salary for the project is $350 – $400 (USD) per month for patrollers. The participation of the Ejidos' in community patrolling and trainings activities to support the improvement of surveillance and monitoring of the forest areas, in addition to the creation of a fire brigade to improve fire management through prevention and mitigation, will expand the skillset abilities of the community members and constitute another source of income.
Type of benefit/cost/risk	The impact is a predicted and direct benefit
Change in well-being	Natural Capital N1.5: Biodiversity Financial Capital F2.1: Income levels, variability over time, distribution within society Human Capital H4.2: Educational level and skills

4.2.1.4 Targeted Project Outcome 4: Additional Environmental and Livelihoods Program Implemented (On Project Activities: Outcome 6)

Community group	Ejido Community Members

Impact(s)	The Project Activity Instance present the following conditions: • 6 health units. • Average of only 63% of people between 3 and 24 years old, attend school in the Project Area *(Data Mexico, 2023)*. • In Campeche, 90.3% of the houses have access to piped water, and 95.13% have access to sanitation systems *(Data Mexico, 2023)*. If there are available funds, additional activities related to livelihoods will be implemented to improve the piped water and sanitation accessibility, improve access to health system available, and education services available. These activities will improve the community members health, education, and sanitation.
Type of benefit/cost/risk	The impact is a predicted and direct benefit
Change in well-being	Natural Capital N1.4: Soil, water, rangeland quality Physical Capital P3.1: Access to roads, electricity, piped water Human Capital H4.2: Educational level and skills Human Capital H4.3: Health levels

4.2.1.5 Targeted Project Outcome 5: Maintenance of community and biodiversity HCV areas (On Project Activities: Outcome 5)

Community group	Ejido Community Members
Impact(s)	There will be activities specific to each ejido to monitor and maintain the community HCV areas (archaeological sites and grutas) according to their presence in the Ejidos. Additionally, there will also be trainings to raise awareness of the importance of maintaining those areas accessible.
Type of benefit/cost/risk	The impact is a predicted and direct benefit
Change in well-being	Human Capital H4.2: Educational level and skills

4.2.2 Negative Community Impact Mitigation (VCS, 3.19; CCB, CM2.2)

To mitigate potential negative impacts on community well-being, particularly concerning pollutants and safety concerns for marginalized groups, the project will implement several measures consistent with the precautionary principle:

1. Pollutant Mitigation: The project will establish stringent guidelines to minimize pollutants such as air and water discharges, noise, and hazardous materials. This includes the implementation of eco-friendly practices and technologies to reduce emissions and waste generation, as well as regular monitoring to ensure compliance with VCS+ CCB Standards

2. Community Safety: Special attention has been given to the safety of vulnerable groups, including women, girls, children, and marginalized communities. Awareness training and education sessions will be conducted with the Ejidos to address safety concerns and empower community members to identify and respond to potential risks effectively.

3. Monitoring and Education: Activities such as hunting and poaching, which may be displaced to other areas beyond the project's scope, are closely monitored. Mitigation actions will include active education and awareness training to discourage these activities and promote sustainable alternatives. By engaging with the Ejidos during General Assembly meetings, the project fosters a culture of environmental stewardship and responsible resource management.

4. Opportunity Cost Analysis: Ejidos face the opportunity cost of leasing forest areas for natural resource exploitation. To address this, the project provides Ejidos with comprehensive data comparing the economic benefits of conservation versus resource exploitation. This enables Ejidos to make informed decisions about land use, considering both financial gains and long-term sustainability.

4.2.3 Net Positive Community Well-Being (VCS, 3.19; CCB, CM2.3, GL1.4)

The impact to communities is expected to be positive. Well-being indicators demonstrate how community well-being is impacted positively through Project activities, based on the results of that impact indicator. Table **40**, which details Well being indicators was adopted from the Sustainable Rural Livelihood (SRL) Framework from *A Framework for Research on Sustainability Indicators for Agriculture and Rural Livelihoods* by Phil Woodhouse, David Howlett and Dan Rigby (Woodhouse P. et al, 2000), and used to demonstrate the significant benefits this project produced for the local communities. By determining how many communities or households gained access to biodiversity, roads, electricity and water, educational attainment, employment, and higher incomes, we see an overall positive trend in the well-being indicators being impacted by Project Activities.

The project's impact indicators are mapped to the community well-being indicators described in Table 40 and are used to determine the overall well-being impacts on the communities in the Project Activity Instance. By focusing on well-being as defined as natural, physical, human, financial and social capital, we can determine the positive well-being impacts derived from the implementation of project activities. The Indicators numbers are based on the Project Activities in the Long Term Implementation Plan in **Error! Reference source not found.**.

Table 40. Well-being Indicators.

#	Component of Human Well-being	#	Indicators of Human Well-Being	Map to Community Impact Indicators based on Project Activities
1	Natural capital:	1.1	Access to land, water, grazing.	N/A
		1.2	Ownership of herds, trees	N/A

#	Component of Human Well-being	#	Indicators of Human Well-Being	Map to Community Impact Indicators based on Project Activities
		1.3	Productivity (per unit of land, per unit of water, per unit of inputs)	N/A
		1.4	Soil, water, rangeland, quality	Indicator 6, Intermediate Outcome 6.1, Output 6.1.1
		1.5	Biodiversity	Indicator 3, Intermediate Outcome 3.1, Output 3.1.1, Output 3.2.1, Output 3.1.3, Intermediate Outcome 3.2, Output 3.2.1, Output 3.2.2, Outcome 4, Intermediate Outcome 4.1, Output 4.1.1, Intermediate Outcome 4.2, Output 4.2.1, Intermediate Outcome 4.3, Output 4.3.1, Outcome 5, Intermediate Outcome 5.1, Output 5.1.1
2	Financial capital	2.1	Income levels, variability over time, distribution within society	Indicator 2, Intermediate Outcome 2.1, Output 2.1.1, Intermediate Outcome 2.2, Output 2.2.1, Intermediate Outcome 2.3, Output 2.3.1, Output 2.3.2, Indicator 3, Intermediate Outcome 3.2, Output 3.2.3, Indicator 4, Intermediate Outcome 4.1, Output 4.1.1
		2.2	Financial savings, access to credit	N/A
		2.3	Debt levels	N/A
3	Physical capital	3.1	Access to roads, electricity, piped water	Indicator 6, Intermediate Outcome 6.1, Output 6.1.1
		3.2	Ownership/access to productive equipment (oxen, tractor, irrigation pump etc.)	N/A
		3.3	Housing quality	N/A
4	Human capital	4.1	Total labor	N/A
		4.2	Educational level, skills	Indicator 2, Intermediate Outcome 2.1, Output 2.1.1, Intermediate Outcome 2.2, Output 2.2.1, Intermediate Outcome 2.3, Output 2.3.1, Intermediate Outcome 2.3, Output 2.3.1, Indicator 3, Intermediate Outcome 3.1, Output 3.1.1, Output 3.1.2, Intermediate

#	Component of Human Well-being	#	Indicators of Human Well-Being	Map to Community Impact Indicators based on Project Activities
				Outcome 3.2, Output 3.2.3, Indicator 4, Intermediate Outcome 4.1, Output 4.1.1, Indicator 5, Intermediate Outcome 5.1, Output 5.1.1, Indicator 6, Intermediate Outcome 6.1, Output 6.1.1, Outcome 7, Intermediate Outcome 7.1, Output 7.1.1
		4.3	Health levels	Indicator 6, Intermediate Outcome 6.1, Output 6.1.1
5	Social capital	5.1	Membership of organizations	N/A
		5.2	Support from kin, friends	N/A
		5.3	Accountability of elected representation	Indicator 1, Intermediate Outcome 1.1, Output 1.1.1, Intermediate Outcome 1.2, Output 1.2.1, Intermediate Outcome 1.3, Output 1.3.1, Output 1.3.2, Output 1.3.3.

4.2.4 High Conservation Values Protected (CCB, CM2.4)

HCV areas are sites of special cultural, economic, or spiritual significance to the Ejidos. These sites include caves (*grutas*), archaeological sites, and "*aguadas*", which are areas with soil characteristics that allow the rain to accumulate. Activities to maintain and protect the HCV areas will be decided according to the existence of HVC areas per ejido. The output related to the protection of the HCV areas is in Section 5.2.1.2, and its respective activities (see Appendix 2: Project Activities and Theory of Change Table).

Significant conservation areas around the Project Activity Instance include the Calakmul Biosphere Reserve, which is 7,238 km2, it is the tropical forest declared the largest protected area of Mexico. It forms a forest continuum with Balam Ku State Reserves (4,092 km2) and Balam Kin (1,109 km2) in Mexico and with the Biosphere Reserve Maya (18,838 km2) in Guatemala and the private reserve Rio Bravo (445 km2) in Belize. However, this region has also been considered a "hot spot" of tropical deforestation.

The community patrolling system that will be carried out as a project activity will prevent illegal activities and maintain existing high-quality habitats and cultural sites in certain areas around the Calakmul Biosphere Reserve.

4.3 Other Stakeholder Impacts

4.3.1 Impacts on Other Stakeholders (VCS, 3.18, 3.19; CCB, CM3.1)

The project activities will be aligned with CONAFOR's conservation and restoration objectives, which will help the achievement of local goals of conservation, sustainable forest management and implementation of sustainable forestry practices. CONAFOR will be positively impacted by the implementation of the Project.

The Project's impact will positively impact the Calakmul Biosphere Reserve in terms of forest and biodiversity conservation. Additionally, since the Project and SEMANART have common goals regarding

sustainable development and environmental conservation, SEMANART will have its local goals achieved. Thus, SEMANART will not be negatively impacted by the Project activities.

4.3.2 Mitigation of Negative Impacts on Other Stakeholders (VCS, 3.18, 3.19; CCB, CM3.2)

Negative impacts are not expected on other stakeholders; thus, mitigation measures are not needed.

4.3.3 Net Impacts on Other Stakeholders (VCS, 3.18, 3.19; CCB, CM3.3)

ACAC expects positive results as there are more incentives and more resources to protect the forests areas and over time engage a larger group of Ejidos ACAC foresees more support for wildlife conservation from outside stakeholders, and more willingness to involve themselves in research and project implementation in the area.

SEMANART and CONAFOR expect positive results from Project activities, foreseeing more implementation of environmental conservation practices that align with their local goals of sustainable development and sustainable forest management.

4.4 Community Impact Monitoring

4.4.1 Community Monitoring Plan (CCB, CM4.1, CM4.2, GL1.4, GL2.2, GL2.3, GL2.5)

Community monitoring is described in the monitoring plan, which follows adaptive management. The monitoring plan is created in parallel with this PD and will be disseminated with the PD, in Spanish.

This monitoring plan will be sensitized with the communities and disseminated with the draft VCS/CCB Project Document. Community members will be asked to comment on the monitoring plan, along with the summarized PD. In addition, the monitoring plan will be made publicly available on the internet.

In the future, monitoring data and implementation activities will be in the combined VCS/CCB Monitoring Report. This document will be made available to stakeholders and communities following the dissemination process listed in Section **Error! Reference source not found.**. The report will be freely available on the public website www.verra.org.

4.4.2 Monitoring Plan Dissemination (CCB, CM4.3)

Information regarding the Project will be shared with stakeholders through in-person meetings. ACAC will hold ordinary and extraordinary meetings (according to the need) and will be in communication with all relevant Ejido authorities to present the monitoring plan for the project and gather feedback.

4.5 Optional Criterion: Exceptional Community Benefits

This Project will seek Exceptional Community Benefits.

4.5.1 Exceptional Community Criteria (CCB, GL2.1)

The Mexican Agricultural law (reform published on June 15, 2018) states that Ejidos (local communities in the Program) are legal entities who own the lands that have been endowed to them by law. Ejidos operate in accordance with their internal regulations (which are freely developed and adopted by them), that must contain the general bases for the economic and social organization of the ejido, the requirements to admit

new *Ejidatarios*, and the rules for the use of lands for common use. Ejidos have the rights to claim that the activities adopted under the Project will generate climate, community, and biodiversity benefits as is further detailed under Section 2.5.5.2.

4.5.2 Short-term and Long-term Community Benefits (CCB, GL2.2)

In the short term, the Ejidos will have increase knowledge and technical skills on forest and biodiversity conservation, and consequently an increase in income source through NTFP related activities, patrolling and fire brigade, maintenance of ecosystem services. They will also receive conservation payments.

In the medium term, after the 2nd verification period, the project's activities that support livelihood development will begin implementation (see **Error! Reference source not found.**). Ejidos will be supported to explore new alternative income opportunities such as NTFP production and commercialization, improve processing agricultural products and other agricultural production projects.

In the long term, the Ejidos will have the opportunity to build a "trust fund" from the net income of the Project, which will provide funding for additional community benefits aligned with the overall Project's objectives.

4.5.3 Community Participation Risks (CCB, GL2.3)

The opportunity cost for the Ejidos to enter and keep the conservation agreements with the project is continuous, as the Ejidos have the alternative of renting their land for an alternative income. Smaller Ejidos have a higher risk of renting their land for alternative income, due to the longer time necessary for their conserved land to have an equivalent value as logged forest. However, there the project will implement a Trust fund to establish a future source of income for the *ejidatarios*. Additionally, the project will share and explain the opportunity cost related to logging vs. forest conservation for them to make informed decisions and to mitigate this risk.

Through the PRA, it was identified that there is a risk of people outside of the Ejidos logging illegally in the Project Area, affecting the income from forest conservation of Ejidos participating in the project. Activities, such as forest patrolling, will be implemented during the project lifetime to mitigate the risk of external sources of logging, and assess, if any, external logging was done.

4.5.4 Marginalized and/or Vulnerable Community Groups (CCB, GL2.4)

Table 41 defines the groups that have been identified as marginalized and/or vulnerable and the impacts the Project is expected to have them each of them.

Table 41. Marginalized and/or Vulnerable Community Groups Impacts

Community Group	Women (18% of the Ejidos, HH survey 2023) are considered vulnerable due to structural patriarchal attitudes that prevent the participation of women in decision making activities and employment opportunities, such as starting their own small business, participating in patrolling, and monitoring activities, and collecting and trading NTFP. Women also bear the burden of

	keeping and maintaining the wellbeing of household, while having barely any income sources. According to the HH survey in 2023, women receive approximately $104 (USD) in comparison with $126 (USD) received by men. Additionally, only 4% of the women had primary education, in comparison with 38% of the men, while only 1% of the women finished high school, compared to 4% of the men. This creates another layer in the gap regarding income possibilities through employment or ownership of business. According to the UN, 24.6% of women suffer sexual or physical violence from their lifetime partner, thus empowering those women through income sources possibilities and gender equity trainings would benefit them in the long run
Net positive impacts	Women will be actively encouraged to participate in project activities and consultations in the decision-making during project implementation. Technical trainings in alternative income opportunities (sustainable agriculture, NTFP collection, beekeeping) will provide economic opportunities for women and contribute to fostering a sense of ownership.
Benefit access	Community consultations and participatory rural appraisals identified the main barriers for women's participation as limited employment opportunities and systematic exclusion from decision making. The project will address these barriers through: • Ensuring women are invited and represented in project awareness and decision making meetings. Implementing NTFP related activities (beekeeping and handcrafts) that exclusively target or prioritize women specifically.
Negative impacts	Women will be identified through the PRAs and disaggregated data from HH survey and groups meetings along the project lifetime. One possible vulnerable group are young women, but their well-being can be addressed at either in the women focused activities or youth focused activities.

Community Group	Youth (people from 15 to 29 years old) are target of prejudice due to their age, which puts them at disadvantage for employment opportunities and political participation. They are systematically discriminated due to their age and the linked perception of

	"inability" or "irresponsibility". The lack of opportunities incentivizes the youth to migrate to other countries in search of better opportunities.
Net positive impacts	The project will provide trainings in different skillsets and diverse income opportunities (sustainable agriculture practices, patrolling activities, and NTFP collection and production) that will allow youth to improve their skillsets and access to employment, or an increase income from higher productivity or learnt related NTFP activities, possibly improving he youth livelihood. Active inclusion of the youth in planning and consultation in decision making activities of the project will also provide that this group is heard and acknowledged in their struggles.
Benefit access	Community consultations and participatory rural appraisals identified the main barriers to benefit access for the youth as limited employment opportunities and systematic exclusion from decision making. The project will address these barriers through: • Ensuring youth are invited and represented in project awareness meetings and trainings. Implementing activities that promote diverse income sources (NTFP, sustainable forest management, fire brigade employment) and increase their skillset levels.
Negative impacts	Youth groups will be identified through the PRAs and HH survey, and groups meetings along the project lifetime. Young adults with only primary or no education may feel marginalized, but the planned activities were created to mitigate this negative impact and ensure they also get training and feel empowered to participate in decision making meetings.

4.5.5 Net Impacts on Women (CCB, GL2.5)

The inclusion and development of income generating activities specially for women, and their participation in decision making meetings and activities is a central objective of positive community benefits the project expects to deliver. Women, including young women, are an essential role in the agricultural market, as a consumer and producer, however they are at a disadvantage regarding market access and trainings.

Ensuring the inclusion of women in the community trainings, and subsequent implementation of the new agricultural technologies will be measured with disaggregated data showing the number of women in trainings, meetings and diverse income sources used by women.

Working towards gender equity will increase women participation in markets, improve their livelihoods, decrease their independence, and in the future increase their participation in Ejidos governance and decision-making groups.

4.5.6 Benefit Sharing Mechanisms (CCB, GL2.6)

The benefit sharing is already described in Section 2.5.8 above.

4.5.7 Benefits, Costs, and Risks Communication (VCS, 3.18; CCB, GL2.7)

ACAC has engaged Ejidos in the Project Zone Instance from the beginning of the project design. The Household survey and Participatory Rural Appraisal (PRA) asked Ejido members about their interest and engagement. During the PRA, *Ejidatarios* were asked to map solutions to solve the issues they face. Community members were asked to design project activities, as well as identify risks for each of the activities. Showing that they understand the design of the project and associated risks. Community engagement and communication about project design is described in detail in section **Error! Reference source not found.** Stakeholder Engagement. During the dissemination process, the summary of the PD was translated and given to communities, which included a detailed description of project benefits and risks.

4.5.8 Governance and Implementation Structures (CCB, GL2.8)

The Ejido communities have a formal process which must be followed for the Ejido to formally take decisions. Each Ejido that joins the Project follows this process which includes ample socialization and information sharing and culminates in a General Assembly held to vote and adopt conservation agreement and trust agreement. The governance of the Project is based on the trust of which the Ejidos are the sole beneficiaries. The carbon rights from the Project are transferred to the trust and the Project revenues are managed and allocated to the Ejidos, as the sole beneficiaries of the trust.

The Trust governance structure is detailed in Section **Error! Reference source not found.**. The Trust features a Technical Committee which is composed of two members from Terra Global and two members from ACAC. The Technical Committee is responsible for accepting beneficiaries, fiscal management of the Project, approving Technical sub-committees, and ongoing operating procedures.

The Technical Sub-committees will be established for each Ejido, which serves in a 3rd party "Oversee" capacity.

The Supervisory Committee includes members from Terra Global and ACAC and carries the responsibility of collaborating directly with the Technical Sub-committee to review reports and recommendations and issue opinions to the Technical Committee on the fulfilment of its obligations to the Parties.

4.5.9 Smallholders/Community Members Capacity Development (CCB, GL2.9)

Participating Ejidos in the project are made up of community members, who elect their own authorities and develop their regulations for managing the natural resources in the land assigned to them. Thus, the project works with Ejidos authorities to design project activities that respond to their economic and social needs. During implementation, the project will facilitate meetings and participate in Ejidos Assemblies to consult on the design, implementation, and progress of the activities. Additionally, during each verification period, progress towards the defined outcomes will be measured and adaptative management will be applied.

To solve the immediate communities' needs, alternative income opportunities will be developed, and forestry-related jobs will be created for sustainable forest use and conservation. Overtime communities are expected to engage deeper in more direct project activities such as project monitoring and enhancing project design and implementation. These activities follow a theory of change and are described in detail in the workplan.

The Project Implementation Plan provides all details on the outcomes, outputs and activities designed with communities to increase their economic capacity in the long term.

5 BIODIVERSITY

5.1 Without-Project Biodiversity Scenario

5.1.1 Existing Conditions (VCS, 3.19; CCB, B1.1)

Home to large tracts of biodiverse, lush, tropical forests, and providing habitat for rare and endangered species, while holding the millennium of Mayan culture, the Yucatán Peninsula is of considerable value to ecologists, biologists, and the communities who live there. The forests of the Peninsula harbor large populations of a number of emblematic species such as the spider and howler monkeys, tapir, and jaguar. Some endemic species of reptiles, specifically lizards, live in the Selva Maya forests and related Calakmul Biosphere Reserve; however, many are threatened by habitat loss and forest degradation (Islebe, et al., 2015). While the seasonal hurricanes, tropical storms, and development along the tourist coastline are proving decline in species, the most important threats are related to deforestation and loss of canopy cover. Subsistence hunting places a large role in communities that live within the Buffer Zones of the Calakmul Biosphere Reserve, demonstrating the strong correlation between the Ejido communities and the tropical environment.

With the Yucatán Peninsula containing some of the largest tracts of tropical forests in Mexico, they are host to some of the most popular and most studied land animals, including the Baird'sTapir, White-lipped Peccary, Gray Brocket, jaguar, puma, howler monkeys and spider monkeys. Most of these species face serious threats to their habitat from subsistence hunting, increasing fragmentation by deforestation, and extreme tropical storms. There are also more than 350 species of birds, 16 species of amphibians, 400 species of butterflies and 50 species of reptiles (Primack R., Bray D., Galletti H. and Ponciano I., 1998).

Following the initial biodiversity assessment to establish the project's baseline, the number of species observed by sight, capture, or camera trap footage was rich. Overall, the rapid biodiversity assessment observed almost 50% of species that were previously observed in past studies. They found the presence of 14 amphibians, 33 reptiles, 234 birds, and 60 mammals. Among these species. Some notable species include the jaguar (*Panthera onca*), Baird's tapir (*Tapirus bairdii*), ocelot (*Leopardus pardalis*), collared peccary (*Tayassu pecari*), Geoffroy's spider monkey (*Ateles geoffroyi*), the ornate hawk-eagle (*Spizaetus ornatus*), black hawk-eagle (*Spizaetus tyrannus*), and king vulture (*Sarcoramphus papa*). These species and some other important wildlife species in the present in the Project Activity Instance are classified under the IUCN Red List in **Table 42**.

Table 42. IUCN Species and specific present classifications

Scientific Name	Common Name	IUCN Classification
Leopardus tigrinus	Oncilla	Vulnerable
Panthera onca	Jaguar	Near Threatened
Leopardus pardalis	Ocelot	Least Concern

Scientific Name	Common Name	IUCN Classification
Puma concolor	Puma	Least Concern
Odocoileus virginianus	White-tailed deer	Threatened Species
Dasypus novemcinctus	Nine-banded Armadillo	Near Threatened
Tamandua mexicana	Northern tamundua	Least Concern
Tayassu pecari	White-lipped Peccary	Vulnerable
Tapirus bairdii	Baird'sTapir	Endangered
Alouatta pigra	Yucatan Black Howler monkey	Endangered
Ateles geoffroyi	Geoffroy's Spider monkey	Endangered

Due to the rich cultural history of hosting the Mayan civilization, the Peninsula is an extraordinarily rich region in diversity of habitats and wildlife and a cultural traditional and historical legacy. Sixty-five million years ago, an asteroid impacted the northern part of the Peninsula, this event is sometimes theorized as the cause of the extinction of the dinosaurs (Vázquez-Domínguez & Arita, 2010). From this event, it created a unique ecosystem and the rich wildlife diversity in this region is a product of these geological and climatic events. The Yucatán Peninsula and Central America have served as a main corridor between wildlife populations of North and South America. Indigenous and rural community forestry is key to slowing species extinction and reducing the environmental and economic shocks of climate change. Biological and cultural diversity combined can create resilience to social, environmental, and climate change (Nauman, 2016).

The biodiversity of Calakmul's forests has allowed various species of trees to grow here, including cedar, *Lignum vitae*, mahogany, sapodilla, *Dalbergia retusa*, tzalam, chechen, chaka and jabin (Mundo Maya, 2020). The forest structure consists of three to four shrub and tree layers that range from 5-25 m in height. There are roughly 100 species per hectare in the Calakmul Biosphere Reserve, Buffer Zones, and surrounding Silva Maya Forests. 75 percent of the trees are evergreen, and the remaining 25 percent are deciduous. Other common tree species include *Brosimum alicastrum (Maya nut), Manikara zapota* (sapodilla), *Talisia olivaeformis, Bursera simaruba* (chaca), *Lonchocarpus longistylus* (lancepod), *Nectandra, salicifolia* (Sweetwood), *Psidium sartorium* (guava), *Guettarda combsii* (velvetseed), *Vitex gaumeri* (fiddlewood), *Caesalpinia gaumeri* (Kitinche in Maya), and *Lysiloma bahamensis* (wild tamarid). Upland and lowland forests share many of the same species, and over half of these species are commercial timber species, relatively abundant in the entire region (Ellis, et al., 2015).

Research describes the regenerative ability of these tropical forests after reoccurring hurricanes, tropical storms, and other climatic and meteorological events, such as drought. Maintaining diversity and composition of the forest tree cover is a valuable characteristic of these tree species. Mahogany has brought significant attention as a key timber species in decline, as it has a high-density population in the region. With this species present, more favorable conditions are made for regeneration and growth of the abundant forests (Ellis, et al., 2015).

...Selva Maya Forests of the CBR	...In the without project scenario, the area of the Project Activity Instance would have been cleared for agricultural cultivation and livestock grazing. Fire management activities will also positively impact the habitat for the RTE species as it will help to reduce spread of wildfires and maintain habitat connectivity.
RTE Species	Activities like fire management, community patrolling, and alternative livelihood activities will benefit the RTE species as it will deter illegal activities in and outside of the ejidos, like hunting/poaching, timber extraction, etc. This will help maintain and improve populations of RTE species in the Project Activity Instance. The list of RTE species found in the area can be found in

5.1.2 High Conservation Values (CCB, B1.2)

High conservation value	HCV1 Species Diversity – RTE Species
Qualifying attribute	The Calakmul Biosphere Reserve is part of the last remaining continuous seasonal dry tropical forests in Mexico and most of Mesoamerica. It is home to the jaguar where an estimated 500 jaguars are present. Only about 6000 jaguars remain in North and Central America, and half of these are found in the Calakmul region. The CBR is also home to 5 out of the 6 big cats in Central and South America (margay, ocelot, jaguar, puma, and jaguarundi). Furthermore, other endangered and endemic species still remain in the CBR, including the Yucatan howler monkey, Geoffroy's spider monkey, and more. Protection of these species is imperative for a healthy ecosystem
Focal area	The Calakmul Biosphere Reserve and the Area of Influence around the Ejidos will need to be successfully managed to protect the jaguar and all other threatened wildlife species in the CBR. All 9 ejidos in the Project Activity Instance have the presence of endemic or rare species. For instance, *Sceloporus lundelli* is an endemic herpetofauna found in Pustinich, and threatened species include *Panthera onca* and *Tapirus bairdii*.

High Conservation Value	HCV3 – Landscape-level ecosystems, ecosystems, and IFL - Calakmul Biosphere Reserve
Qualifying Attribute	The Calakmul Biosphere Reserve is part of the last remaining continuous seasonal dry tropical forests in Mexico and most of Mesoamerica. This unique ecosystem connects to the Silva Maya forests that helps animals travel from Mesoamerica into parts of South America. This biosphere reserve is extremely

	important to wildlife species and to local communities as it holds significant cultural and economic value.
Focal Area	The Calakmul Biosphere Reserve and the Area of Influence around the Ejidos will need to be successfully managed to hamper anymore deforestation and illegal activities that would ultimately lead to the intact forests in the reserve.

High Conservation Value	HCV4 Ecosystem Services – Aguadas
Qualifying Attribute	Due to the soil properties of the CBR and surrounding areas, water absorbs quickly and there are few permanent sources of water. *Aguadas* are temporary pools formed in the wet season that provide water and habitat for many species in the Project Zone. These species are extremely dependent on these pools and with climate change and human disturbances, many pools have been lost or are shrinking. Species like the endangered tapir, jaguars, pumas, bird species, reptiles, and amphibians.
Focal Area	The Calakmul Biosphere Reserve and the Area of Influence around the Ejidos will need to be successfully managed to protect the remaining aguadas. Four of the nine ejidos in the Project Activity Instance 1 have aguadas.

At a local scale, specific sites within each ejido were identified as High Conservation Value areas based on their unique biological features. Primarily, these areas were characterized as bodies of water, with one noteworthy exception being the cave within Ejido Cristóbal Colón. In all instances, it is imperative to establish targeted conservation initiatives and protective measures to ensure the sustained vitality of these areas, allowing them to function as habitats and sanctuaries that support biodiversity. These actions align with the precautionary principle, serving as proactive steps to mitigate any potential negative impacts on biodiversity and to uphold or enhance the attributes that define these High Conservation Value zones.

5.1.3 Without-project Scenario: Biodiversity (CCB, B1.3)

Without the benefits of the Project taking place, there will be much more pressure on Ejidos and the CBR to develop forestry activities, and other environmentally harmful activities such as cattle ranching and encroachment by agriculture. Even though these activities are illegal, the financial pressures will be too difficult to dismiss and will persuade Ejidos to further engage in these illegal activities, causing an array of consequences.

Forests that are communally managed by the Ejidos have contributed to forest conservation efforts and lowered deforestation rates over the past 10 years and will continue to do so in the future (Spiric, Vallejo, & Ramirez, 2022). Researchers claim that the designation of the Ejido project in Mexico and having large tracts of intact forests owned and managed by rural Ejido communities is regarded to be the primary reason. Environmental limitations to agricultural development indicate that many communities, marginalized by poor economic systems and support, will turn to the forest for their livelihoods. This could either be

conducted with a sustainable approach, and assisted by conservation and environmental efforts, or it could not.

There are significant environmental threats that cause the destruction of natural habitats in the Yucatán Peninsula, where history has shown a special interest in business and agricultural interest held more power over development decisions, at the expense of natural resources. During the past few years, there is considerably more recognition of the conservation efforts in the country, allowing for growing environmental awareness to occur. However, critical steps must be taken to protect the country's most biodiverse region and enable laws to be more inclusive of these resources. More attention is now given to support research efforts through wildlife surveys, identifying and counting species, noting locations and in which habitats they occur, so that biologists can prioritize regions that provide critical habitat to the region's most vulnerable species. It is important to mention the Ejidos willingness to participate in conservation efforts, and their ideal position to carry out conservation and patrolling activities on their land. Outside pressure from businesses to utilize the land for profit, could result in severe loss of momentum for the conservation and environmental efforts done so far.

5.2 Net Positive Biodiversity Impacts

5.2.1 Expected Biodiversity Changes (VCS, 3.19; CCB, B2.1)

The project activity instances has not been cleared or drained of existing natural ecosystems in the last 10 years. Although small scale farming, grazing, and timber harvesting has occurred, the Project Activity Instance has many ejidos that reside within the Calakmul Biosphere Reserve where the forests are protected, and these practices are prohibited within the Core and Buffer zones of the reserve. In the ejidos, they do have rights to harvest timber on the small scale, but areas have not been cleared with these practices. Furthermore an analysis was conducted to visualize the land use land cover change from 2012-2022 and forest to nonforest conversion was sparse throughout the Project Activity Instance and native ecosystems are still predominant in the Core Zone (See Maps 8,9,10 in Project Boundary (VCS, 3.12)).

Targeted Project Outcome 3: Maintain forest cover and reduce deforestation (On Project Activities – Outcome 3)

Biodiversity Element	Improve Fire Management (Intermediate Outcome)
Estimated Change	The project will effectively reduce the % of fires per year. • % of fire reductions per year (impact) • % hectares affected by wildfires within the ejidos, as compared to historical wildfire data (impact) • # Fire prevention strategies defined, and forest fire monitoring protocols revised (operational) • # of materials produced (operational) • # of red flag days identified (operational) • # of hotspots in the Project Activity Instance identified (operational)

	• # of audiences identified (operational) • # of meetings with neighbors (operational) • # fire lines; # of controlled burns (incidents) (operational) • # of trainings, # women (operational) • # of ejidatarios in the fire brigade. (operational)We expect that with the project activities properly implemented the number of ha of land affected by wildfires to decrease compared to historical data.
Justification of Change	Proper fire management is a critical component of wildlife conservation and ecosystem health. For instance, fire prevention strategies like forest fire monitoring can benefit wildlife populations by safeguarding their habitats, reducing habitat fragmentation, protecting endangered species, and maintaining essential ecosystem services.

5.2.1.1 Targeted Project Outcome 4 Increase wildlife conservation in the Project Area and CBR (On Project Activities – Outcome 4)

Biodiversity Element	Wildlife Population Stabilization (Intermediate Outcome)
Estimated Change	• Species richness of 4 main taxa (mammals, avians, reptiles and amphibians) (impact) • # policy initiatives (operational) • change in number of (abundance) endangered species found in the Program Activity Instance over the project lifetime as compared to the baseline scenario (impact) • # findings (operational) • # patrols (operational) • # policies (operational) As we measure these metrics over time, we predict that these will increase over time as project activities are implemented in the Project Activity Instance.
Justification of Change	Information from patrol data and supplemental data from the biodiversity assessment during the monitoring period will function as an indicator of ongoing monitoring within the Project Activity Instance. The presence and increase of the species in the Project Activity Instance will serve as indicators of the effectiveness of wildlife population stabilization efforts. Consistent patrols and checks will guarantee a decrease in the

	frequency of unreported poaching incidents, signifying a gradual reduction in poaching over time.

Biodiversity Element	Improve Habitat Connectivity (Intermediate Outcome)
Estimated Change	Activities related to habitat connectivity will help to improve and maintain current intact tracts of forests in the CBR. Specific data for this indicator includes: • # ha of forest improved (Biodiversity Assessment, Intermediate Outcome 4.3) • # ejidatarios adopting conservation actions (Operational Report, Output 4.3.1) • # workshops (Operational Report, Activity 4.3.1.1) As we measure these metrics over time, we predict that these will increase as project activities are implemented in the Project Activity Instance.
Justification of Change	The adoption of conservation actions by the members of the ejidos will help to maintain current biological corridors for the important keystone species in the CBR (including the jaguar). Workshops will increase over time and more members will be willing to adopt conservation actions as the project increases livelihoods. The presence and increase of the species in the Project Activity Instance will serve as indicators of the effectiveness of the movement of wildlife populations.

Biodiversity Element	Community based patrolling system established and trained for enhanced conservation actions (Intermediate Outcome)
Estimated Change	Specific data for the indicator Community based patrolling system established and trained for enhanced conservation actions includes: • # community patrol teams established (Operational Report, Intermediate Outcome 4.1) • km of patrols (Operational Report, Intermediate Outcome 4.1) • # finding from patrol reports regarding to wildlife conservation (Operational Report, Output 4.1.1) • # workshops, change in knowledge before and after workshops (Operational Report, Activity 4.1.1.2) • # trainings (Operational Report, Activity 4.1.1.3)

	• # policies made, # reports analyzed (Operational Report, Activity 4.1.1.4) As we measure these metrics over time, we predict that these will increase as project activities are implemented in the Project Activity Instance.
Justification of Change	Information from patrol data and supplemental data from the biodiversity assessment during the monitoring period will function as an indicator of ongoing monitoring within the Project Activity Instance. The presence and increase of the species in the Project Activity Instance will serve as indicators of the effectiveness of patrols in reducing the number of illegal activities done in the CBR core and buffer zones. Consistent patrols and checks will guarantee a decrease in the frequency of unreported poaching incidents and illegal logging observations, signifying a gradual reduction in poaching and logging over time.

5.2.1.2 Targeted Project Outcome 5: Maintenance of community and biodiversity HCV areas (On Project Activites – Outcome 5)

Biodiversity Element	Maintenance of HCV Areas (Intermediate Outcome)
Estimated Change	This project will effectively maintain the HCV areas identified by ejidatarios and the baseline biodiversity assessment. Specific data that will be monitored over the project lifetime includes: • # hectares maintained (Biodiversity Assessment, Outcome 5) • # activities implemented (Operational report, Intermediate Outcome 5.1) • # of community members aware of state of HCV areas (Operational Report, Output 5.1.1) • # of activities identified (Operational Report, Activity 5.1.1.1) • # of meetings, # of attendees (# of women, # of youth) (Operational Report, Activity 5.1.1.2)
Justification of Change	Activities that are specific to protecting and maintaining the areas of HCV will ensure their long-term survival and ability to adapt to the changing climate, this includes *aguadas* and the CBR (large, contiguous dry tropical forests). These areas are important to wildlife that inhabit the Project Area but also the *ejidatarios*. Effective planning of activities will ensure the maintenance of these HCV areas.

5.2.2 Mitigation Measures (VCS, 3.19; CCB, B2.3)

This Amigos de Calakmul Conservation Community Forestry Project will have a positive effect on biodiversity both in and around the Calakmul Biosphere Reserve. There are no expected negative impacts on biodiversity.

In the Yucatan Peninsula, regional productive activities such as agriculture, livestock, and selective wood extraction are carried out, which have affected the extension, structure, and composition of forest communities.

Therefore, for the management and conservation of the areas incorporated into the *Proyecto Forestal Comunitario Amigos de Calakmul*, it is necessary to propose and implement a series of actions aimed at mitigating the possible impacts generated by direct and indirect human factors. Below we provide some project activities that will be developed over the course of the Project Lifetime to help mitigate any negative impacts on the important HCVs in the Project Activity Instance.

Therefore, the proposed mitigation actions are as follow:

- Enhanced patrols and enforcement: Conduct regular wildlife patrols (including anti-poaching and illegal logging patrols)

Implement robust monitoring and enforcement mechanisms within the conservation project areas. This includes deploying trained personnel, such as park rangers or wildlife conservation officers, to regularly patrol and protect the area against deforestation and hunting activities.

- Capacity Building and Training: Participate in joint trainings with partners

Provide comprehensive training and capacity-building programs for community members in the participating Ejidos. This training should encompass surveillance techniques, wildlife monitoring, and the identification of illegal activities, such as poaching and deforestation. Additionally, offer education on the importance of biodiversity conservation and the potential consequences of harmful activities.

- Training and Outreach Programs: Conduct trainings on improved agricultural practices and crop diversification

Develop and implement educational programs for local farmers and livestock owners in the project area. These programs should focus on sustainable farming and ranching techniques that reduce the negative impact on forests and biodiversity. This includes practices such as agroforestry, rotational grazing, and the use of organic farming methods.

- Diversify Livelihood Opportunities: Identify potential partners to promote agricultural development and sustainable agroforestry practices.

Encourage and support the development of alternative livelihood projects that align with conservation goals. This includes initiatives like beekeeping, chicle harvesting, or other sustainable non-timber forest product ventures. Provide training, resources, and assistance to community members interested in these projects.

5.2.3 Net Positive Biodiversity Impacts (CCB, B2.2, GL1.4)

The Project activities have been designed with the objective to aid and increase biodiversity in the Project Area. The Project is expected to produce the following biodiversity impacts:

Project activities are targeted to conserve forest cover and enhance biodiversity while improving the livelihoods of the communities. In order to do this, the project will facilitate a community-led design and implementation of territorial ordering and risk policies within the ejidos. Additionally, to implementing an improved fire management, the project will educate local people/landowners (*ejidatarios*) about the fire risks and safe practices and involve them in these efforts. Therefore, training will be crucial. Effective fire management is crucial for conserving biodiversity and preventing the loss of valuable natural resources. It requires a combination of prevention, preparedness, and response activities to minimize the impact of wildfires on conservation areas.

For instance, to increase wildlife conservation in the Project Area and CBR, it is important to do community patrolling as an activity planned in order to help control the unsustainable use of wildlife and timber extraction through active patrolling of the Project Zone. We expect community commitment, engagement, and active participation in the community patrolling initiative to be able to conserve wildlife and manage the sustainable use of wildlife resources.

Overall, the project activities intend to conserve wildlife populations in the CBR, focusing on maintaining forest cover and reducing deforestation.

5.2.4 High Conservation Values Protected (CCB, B2.4)

The entire Project Activity Instance constitutes a high conservation value due to the vulnerable species that utilize the entire Project Activity Instance 1 for habitat. The purpose of the project is to enhance and protect the forest resources that would be heavily degraded in the absence of the project. Therefore, areas that are of HCV will not be negatively affected by the project. The Project Activity Instance 1 is a critical ecosystem for endangered species as it is a buffer zone and area of influence for the Calakmul Biosphere Reserve. These buffer zones allow threatened species to migrate through the CBR and continue to have suitable habitat near human development These areas of special environmental, biological, and/or rare ecosystem significance are expected to proliferate during the project life and beyond its end. Communities have agreed to help conserve, monitor, and survey the protected area, which will ensure that they won't be negatively impacted.

5.2.5 Species Used (VCS, 3.19; CCB, B2.5, B2.6)

The project will only promote the use of native species already existing in the CBR and project activities in this phase of the project have not included planting and no new species will be used in Project Activities.

5.2.6 Invasive Species (VCS, 3.19; CCB, B2.5)

No known invasive species have been identified in the Project Activity Instance, and this project promotes the preservation of native forests. In the event of replanting, it would involve the use of native species that do not pose any invasive threat. Any harmful invasive species that will be introduced to the Project Activity Instance outside of the Project and project activity will be identified and mitigated as soon as possible.

5.2.7 GMO Exclusion (CCB, B2.7)

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The Project activities excluded the use of genetically modified organisms.

5.2.8 Inputs Justification (VCS, 3.19; CCB, B2.8)

No fertilizers, chemical pesticides, or biological control agents are being used for this project.

5.2.9 Waste Products (VCS, 3.19; CCB, B2.9)

In the early development of project activities, waste products are not expected to be produced and thus no waste management practices have been developed in the Project Activity Instance. If in the future, project activities are implemented that produce waste, then a comprehensive waste management plan will be developed and implemented accordingly.

5.3 Offsite Biodiversity Impacts

5.3.1 Negative Offsite Biodiversity Impacts (CCB, B3.1) and Mitigation Measures (CCB, B3.2)

Table **43** describes the potential negative impacts on biodiversity outside of the project zone resulting from project activities.

Table 43. Negative impacts on biodiversity outside of the project zone resulting from project activities

Negative Offsite Impact	Mitigation Measure(s)
Leakage outside of the Project Activity Instances related to hunting of species in forest areas.	The project will work with existing and future Ejidos through the project's implementation to make the leakage negligible. A patrolling community system will be implemented to report hunting activities and through monitoring we will learn about leakage and whether further mitigation measures will be necessary.

5.3.2 Net Offsite Biodiversity Benefits (VCS, 3.19; CCB, B3.3)

Table **44** describes the potential negative impacts outside of the project zone that may not be mitigated and is compared to the Project's overall positive biodiversity benefits in the project zone. This table demonstrates that the Project will provide net positive biodiversity benefits over the project lifetime, as positive benefits within the project zone will outweigh or negate the potential offsite negative impacts.

Table 44. Net Offsite Biodiversity Benefits

Unmitigated negative impacts on biodiversity outside the project zone	Project's potential biodiversity benefits within the project zone
Logging – fragmentation and habitat loss	The people will benefit from the project by having economic incomes and can reduce their field activities that have a direct impact on natural resources.
Poaching	The main benefit between communities is the change of mind young people about their vision of the rainforest and the biodiversity and new labor opportunities in life.
Wildlife Trade	People will be more responsible for natural resources and biodiversity. The main change will be to recognize that biodiversity has a social cost.
Land-use change by livestock and agriculture	People will not do any activity of the land-use change in the forestry extension because they recognized the environmental value of the forest. They will continue with activities in the farmer and ranchlands.
Introduction of exotics species and diseases	People will be more responsible for natural resources and biodiversity.

The Project offsite biodiversity will have a positive impact due to the implementation of the project activities and intended outcomes in the Project Activity Instance. Activities like wildlife patrols protect endangered species and prevent their decline, contributing to halting human-induced extinctions. The joint patrol coordination enhances conservation efforts, protects larger areas, and improves ecosystem connectivity and resilience; the participating in joint trainings ensures more effective and sustainable conservation practices and build capacity and expertise for successful conservation implementation; the monitoring species richness allows assessment of conservation success and prompt action for declining populations and aids in evaluating ecosystem health and sustainability; and the establishing Wildlife Environmental Management Units (UMA) helps conserve and restore ecosystems, increasing natural areas and promote sustainable biodiversity management by preventing overexploitation. Furthermore, the project goal to increase forest cover in the Project Activity Instance will also be invaluable for the conservation of terrestrial vertebrates in the Yucatan Peninsula and are a key part of the maintenance of ecological processes and environmental services that these areas provide. In addition, these areas are part of the local biological corridors that maintain regional ecological connectivity between the Calakmul Biosphere Reserve with other protected natural areas, and with other conservation schemes, such as Areas Voluntarily Destined for Conservation (ADVC), Wildlife Management Units (UMA), areas under the Payment of Environmental Services (PSA) via the National Forestry Commission, among others. By connecting these areas, it will protect the movement and dispersal of endangered species in the Project Activity Instance like the jaguar (*Panthera onca*), Baird's tapir (*Tapirus bairdii*), the margay (*Leopardus wiedii*), Geoffroy's spider monkey (*Ateles geoffroyi*), and Yucatan black howler monkey (*Aloutta pigra*).

5.4 Biodiversity Impact Monitoring

5.4.1 Biodiversity Monitoring Plan (CCB, B4.1, B4.2, GL1.4, GL3.4)

- *Identifies biodiversity variables to be monitored, which should be directly linked to the project's biodiversity objectives and to predicted outputs, outcomes and impacts identified in the project's causal model related to biodiversity. Identifies the areas to be monitored.Identifies the types of measurements, the sampling methods, and the frequency of monitoring and reporting to be used.Assesses the effectiveness of measures taken to maintain or enhance all identified HCVs related to globally, regionally, or nationally significant biodiversity present in the project zone.* Biodiversity monitoring is described in the monitoring plan, which follows adaptive management. The monitoring plan is created in parallel with this PD and will be disseminated with the PD, in Spanish.

The monitoring plan was determined to identify biodiversity in the Project Activity Instance 1, which is a buffer zone and area of influence to the Calakmul Biosphere Reserve, one of the largest continuous dry rainforests in Mexico and part of the largest continuous forests in Mesoamerica. The biodiversity assessments will occur in forest areas from all the participating ejidos and surrounding forest areas. Biodiversity assessments will be conducted every verification, and patrolling for illegal activities, like hunting and harvesting trees, will be ongoing activities through the project lifetime. The threats to biodiversity and habitats will be noted and recorded at each sampling site and trigger species population trends will be considered during monitoring.

In order to monitor and manage wildlife populations, different survey methodologies will be used for four taxa of animals: mammals, birds, amphibians, and reptiles. The surveys used for birds will be walking two transects (1 km) on roads and trails to observe and listen to as many species as possible in each ejido. The surveys will be conducted in the morning as most birds are most active around this time, and some transects will be conducted later in the evening and into the night to record crepuscular and nocturnal species.

For the recording of amphibians and reptiles, walking transects will also be conducted, where the observer searches intensively on roads, trails, under rocks, logs, on trees, and in bodies of water. These transects will be conducted in the morning to observe some lizard species that would be active and again at night when most amphibians and snakes are active.

For mammals, camera traps will be installed and used to capture images of the individuals in the Ejidos. 10 camera traps will be placed in each ejido and placed 40 to 50 cm above ground in strategic wildlife passage sites (i.e., roads, paths, or areas close to Ejidos). The camera traps will be separated by at least 1 km from each other to decrease the chance of capturing the same individuals, and they will be secured with cables and safety locks to prevent them from being stolen or removed. The camera traps will be placed on the first day of sampling and remain active until all the monitoring of the different taxa is completed (approximately 10 days). Another mammal survey methodology that will be used for surveying bat species populations is mist net surveys. 4 mist nets (5.0 x 2.0 m) will be placed in each ejido and will be open for 4 hours at night. The captured bats will be identified, morphological measurements will be taken, and sexed before being released at the capture site.

5.4.2 Biodiversity Monitoring Plan Dissemination (CCB, B4.3)

The summary of the Biodiversity Monitoring Plan will be created and translated into Spanish and shared with the Ejidos in the Project Activity Instance 1. This monitoring plan will be disseminated with the Project Document with the support of on-the-ground project partners. Local stakeholders will be asked to comment on the monitoring plan along with the summarized translated PD. The Monitoring Plan will be made publicly available on the public website www.verra.org.

5.5 Optional Criterion: Exceptional Biodiversity Benefits

5.5.1 High Biodiversity Conservation Priority Status (CCB, GL3.1)

- *At least five percent of the global population of a restricted-range species or a species with large but clumped distributions.*

The Project Activity Instance 1 is an area of 9 Ejidos in the buffer zone and area of influence of the Calakmul Biosphere Reserve (CBR). The CBR is a UNESCO World Heritage Site of Culture and Nature due to its high levels of biodiversity and ancient Mayan ruins (Slater, 2019). The CBR is part of the largest expanse of mature tropical dry forests remaining in Mexico and the largest continuous forest in Mesoamerica. It is a very important biological corridor that connects Guatemala's most northern point (Vester, et al., 2007). Following the baseline biodiversity assessment for this project, the presence of several endangered species was observed by camera traps and some by direct observations along transects. Jaguars, which are considered endangered in Mexico, Baird's tapir (EN), Yucatan black howler monkey (EN), Geoffroy's spider monkey (EN), and margay which are listed as endangered in Mexico were all observed by transect observations or camera traps across two days of sampling in each ejido. The jaguar is also considered to be an umbrella species for ecosystem health and some of the largest population of jaguars is found in the Calakmul region, about 500 individuals. Thus, Gold Level is achieved by the observation of these endangered species, and multiple IUCN vulnerable and near threatened species that were also observed in the Ejidos.

During the baseline biodiversity assessment, researchers observed the presence of Baird's tapir (EN), brown brocket deer (VU), jaguar (VU), and diverse group of other wildlife species by camera trap pictures and direct observations along transects. Further, the presence of the Yucatan black howler monkey and Geoffroy's spider monkey, both endangered species, were also observed. This project meets the criterion for high biodiversity conservation priority status because of its capacity and need to protect habitat for the endangered tapir, prey species like the vulnerable brown brocket deer, jaguar, and primate species.

The Program also meets the requirement for an Important Bird Area (IBA), as it was registered in 2021 as a global IBA due to the restricted range ocellated turkey (NT) has a majority of its population in the Calakmul Biosphere Reserve and there is a significant population of the great curassow in the CBR as well (BirdLife International, 2024).

5.5.2 Trigger Species Population Trends (CCB, GL3.2, GL3.3)

Ejido-managed forests in Mexico have significantly contributed to forest conservation, reducing deforestation rates over the past decade. These communal forests, owned and managed by rural Ejido communities, are vital due to limited agricultural development and economic support for marginalized communities. Their sustainable management, supported by conservation efforts, is crucial for ensuring

continued positive impact on forest conservation. However, the landscape in and around the Ejidos is human dominated and many of the forests have been previously degraded for agricultural purposes. The region presents severe signs of deforestation and habitat fragmentation, due to which immediate protection is needed to reverse the negative impacts of such activities and, on the other hand, to prevent said promoters of change from negatively impacting the areas that are intended for conservation within the project. Conserving and protecting the CBR and maintaining sustainable agricultural and forestry management in the Ejidos, along with patrolling to prevent illegal hunting should result in maintenance of the HCVs and the following trigger species.

There are 4 trigger species that will be monitored throughout the project lifetime to ensure that the project activities are maintaining these high biodiversity areas of the CBR and protect the species that meet the requirements for a Key Biodiversity Area (KBA) and IBA.

The ocellated turkey is a near threatened species that is restricted to the Yucatan peninsula and a majority of its population is found in the CBR but is also a popular hunted species (BirdLife International, 2024). Thus, monitoring the presence of the ocellated turkey in the Project Zone will help determine the impacts from the project activities on this threatened and important bird species to the ejidos. It is also a more easily monitored species as it can be observed via camera traps and transects/point counts.

The other trigger species include the jaguar, Baird's tapir, Yucatan black howler monkey, Geoffroy's spider monkey, margay and white-lipped peccary. These species are all used because they are great indicator species of ecosystem health as they are heavily dependent on mature, continuous forests and are highly sensitive to deforestation and degradation pressures. These species also face other threats like hunting for subsistence, illegal trade, and for medicinal purposes. By monitoring these species closely during the project lifetime, we can determine and adapt to findings so they can have the protection needed to maintain their populations in the Project Zone.

Indicators of population trends for each trigger species are considered a combination of habitat availability and presence as indicated by detections during surveys. Maintenance of these species is considered achieved when the habitat is protected, and the species is still detected within the site.

Trigger Species	Ocellated turkey (Maleagris ocellata)
Population Trend at Start of Project	The ocellated turkey population is estimated has fewer than 50,000 mature individuals following a previous study conducted by the Partners in Flight (2019).
Without-project Scenario	In the without project scenario, the main threats that would lead to the 20-29% decline rate of these species in the region, include exploitation and degradation of forests and hunting. The species is largely restricted to the Yucatan and may suffer high losses in the Project Activity Instance due to this.
With-project Scenario	In the with project scenario, we expect to maintain this population size, as degradation and deforestation will be reduced in the project, and more sustainable hunting practices will take place in the project lifetime.

Trigger Species	Jaguar (Panthera onca)
Population Trend at Start of Project	The jaguar population in the Calakmul region is about 500 individuals (Friends of Calakmul, 2017). The baseline assessment confirmed the presence of jaguars in the Project Activity Instance 1, but their population is at risk and is decreasing.
Without-project Scenario	Without formal protection of the species and conservation of the CBR and buffer zones (Ejidos) the jaguar will most likely disappear from the Yucatan Peninsula, as it is extinct from its former range in the Northern part of the peninsula.
With-project Scenario	With the project, the forest habitat for jaguars will be preserved, monitoring of populations, and patrolling to mitigate illegal hunting within the Project Activity Instance 1 will result in the jaguar population numbers to become stable over time.

Trigger Species	Baird's tapir (Tapirus bairdii)
Population Trend at Start of Project	In the Maya Forest of Mexico, Belize and Guatemala may contain viable population, previously estimated of about 1,000-1,500 individuals (IUCN , 2022)
Without-project Scenario	Without formal protection of the species and conservation of the CBR and buffer zones (Ejidos) the tapir will most likely disappear from the Yucatan Peninsula, as it is extinct from its former range in the Northern part of the peninsula. Furthermore, their dependence on temporary water pools, known as aguadas, and more frequent droughts due to climate change, could put pressure on the remaining population in CBR (Reyna-Hertado, et al., 2019).
With-project Scenario	With the project, the forest habitat for tapirs will be preserved, monitoring of populations, and patrolling to mitigate illegal hunting within the Project Activity Instance 1 will result in the tapir population numbers to become stable over time.

Trigger Species	Yucatan Black Howler Monkey (Alouatta pigra)
Population Trend at Start of Project	In Mexico (Chiapas, Campeche and Quintana Roo) reported densities vary between 12.8 and 23.3 ind./km² (IUCN, 2023). The baseline assessment confirmed the presence of Yucatan black howler monkey in Project Activity Instance 1, but their population is at risk and is decreasing.
Without-project Scenario	These species are endangered and endemic to the Yucatan Peninsula, thus have a restricted range. A population reduction of about 50% is expected over the course of the next three

	generations and are threatened by human activities like illegal hunting, development, agriculture etc. Due to the species restricted range, they will most likely disappear from the area (IUCN, 2023).
With-project Scenario	With the project, the forest habitat for howler monkeys will be preserved, monitoring of populations, and patrolling to mitigate illegal hunting within the Project Activity Instance 1 will result in the howler monkey population numbers to become stable over time.

Trigger Species	Geoffroy's Spider Monkey (Ateles geoffroyi)
Population Trend at Start of Project	In Mexico (Chiapas, Campeche and Quintana Roo) reported densities vary between 6.3 and 89.5 ind./km^2 (IUCN, 2023). The baseline assessment confirmed the presence of Geoffroy's spider monkey in the Project Activity Instance 1, but their population is at risk and is decreasing.
Without-project Scenario	According to the IUCN Red List, a population reduction of about 50% is expected over the next 45 years.
With-project Scenario	With the project, the forest habitat for the spider monkey will be preserved, monitoring of populations, and patrolling to mitigate illegal hunting within the Project Activity Instance 1 will result in the spider monkey population numbers to become stable over time.
Trigger Species	Margay (Leopardus wiedii)
Population Trend at Start of Project	Margays typically inhabit areas with densities ranging from 1 to 5 individuals per 100 square kilometers. However, in a limited number of specific and isolated regions, their estimated population densities have been notably higher, reaching figures as elevated as 15 to 25 individuals per 100 square kilometers.
Without-project Scenario	Margay populations are diminishing across a significant portion of their habitat due to human activities, including the transformation of native forests into agricultural land, pasture, and infrastructure development. This decline is projected to persist at a rate approaching, yet slightly less than, 30% over the next 18 years (equivalent to three generations). Consequently, this classification qualifies them as "Near Threatened" according to conservation assessments (IUCN, 2008). Margays are currently experiencing an ongoing decrease in their numbers primarily as a result of habitat loss due to deforestation, as indicated by the IUCN Cats Red List workshop in 2007.

With-project Scenario	The with-project scenario, increased forest cover, community patrols, and monitoring of the species in the area will help protect these endangered species from disappearing, and result in the population in the Project Zone to become stable overtime.
Trigger Species	Tayassu pecari (White-Lipped Peccary)
Population Trend at Start of Project	In the IUCN red list, it is listed as a Vulnerable species, but the populations in Mesoamerica are in critical danger and decline. It faces many threats, such as habitat loss due to livestock expansion and epidemics of diseases transmitted by domestic animals, and illegal hunting. The White-lipped Peccaries' range has shrunk by more than 21%. They have completely disappeared from an area spanning over 1,095,666 square kilometers, and currently, there is a strong likelihood of their sustained existence in only 47% of their original habitat. Their distributions have declined by 84 % in Guatemala and Mexico.
Without-project Scenario	If habitat fragmentation and loss, illegal hunting, and expansion of agricultural and domestic animal ranges continues to occur, this extremely important species will disappear from Mexico and most likely all of Central America.
With-project Scenario	The with-project scenario, increased forest cover, community patrols, establishment of the UMA's, and monitoring of the species in the area will help protect these endangered species from disappearing, and result in the population in the Project Zone to become stable overtime.

APPENDIX 1: STAKEHOLDER DESCRIPTION TABLE

Use this appendix, if necessary, to identify stakeholders and fulfill Section 2.3.2 above. Modify the table, if necessary, to suit the project activities, or delete if not used.

Stakeholder Identify communities and any community groups within them, any cross-cutting community groups, and list other stakeholders.	Rights, Interest and Overall Relevance to the Project
Ejidos	The Ejidos are landowners who participate in the Amigos de Calakmul project have the right to voluntarily give up logging rights on their lands to protect the forest and biodiversity. Their interests lie in conserving their lands, protecting biodiversity, and receiving support for livelihood activities, education, and employment opportunities related to forest protection and conservation. The participation of the Ejidos is highly relevant as it ensures on-ground implementation of conservation efforts and aligns with the project's goals of sustainable land management and biodiversity preservation in Mexico
Amigos de Calakmul A.C. (ACAC)	ACAC was legally constituted as a civil association in Mexico, granting them the right to promote conservation, restoration, and rational management of natural resources and ecosystems in the Calakmul Biosphere Reserve. ACAC's primary interest rests in facilitating the transition of local communities from supplying wood to logging companies to establishing a sustainable capital fund model for forest protection. Their overall relevance to the project is crucial, as ACAC coordinates project activities, engages local communities, secures funding, and ensures compliance with project goals, contributing to sustainable forest protection and community involvement in the Calakmul Biosphere Reserve.
CONAFOR (National Forest Commission)	Possesses rights related to forestry, including permitting authority and regulatory oversight to ensure alignment with conservation and restoration objectives. Its interests lie in promoting sustainable forestry practices, conserving and restoring forested lands, and collaborating on initiatives that support its goals of forest preservation and sustainable land management. It is a key federal agency responsible for forestry-related activities, conservation, and restoration, making it a valuable stakeholder in achieving objectives in the country.

Stakeholder Identify communities and any community groups within them, any cross-cutting community groups, and list other stakeholders.	Rights, Interest and Overall Relevance to the Project
SEMARNAT (Ministry of Environment and Natural Resources)	Holds the rights to establish and enforce environmental policies and regulations in Mexico, including oversight in protected reserves like CBR. SEMARNAT is deeply interested in environmental protection, reversing ecological deterioration, and achieving sustainable development by balancing human activities with nature conservation. Its involvement in the project is highly relevant due to its role as the primary government agency responsible for environmental protection and sustainable development, making it a crucial partner for initiatives focusing on environmental conservation and sustainable practices.

APPENDIX 2: PROJECT ACTIVITIES AND THEORY OF CHANGE TABLE

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
Ejidos (authorities) with signed conservation agreements are informed of the new funder	Ejidos are familiarized with the project	Ejidos involved in phase 1 of the project actively participate	Strengthening Ejido's governance and structure for effective project management	With the implementation of the project activities, the Ejidos will have an improved governance and efficient and accountable project management structure and personnel
Socialization is conducted (as needed) to inform existing Ejido communities of new funder and requirements				
Ejidos (existing and new) confirm their willingness to remain in the project and sign the trust agreement				
General Assembly (GA) held to vote and adopt conservation agreement and trust agreement				
On-going monitoring under Trust requirements				

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
Verification of areas assigned to the project				
Review Ejidos' forest area in Project Area and define status of forest conservation/timber harvesting is conducted	Phase 2 of the project (new Ejidos) started	Project scaled to engage New Ejidos (targeting 210,000 ha> 250,000 VCUs/yr.)		
New Ejidos selection and prioritarization process (working with CBR SEMARNAT)				
Develop materials to support the engagement process				
Conduct engagement meetings with new Ejidos in phase 2				
New Ejidos confirm their willingness to remain in the project and sign the trust agreement				
General Assembly held to vote and adopt conservation agreement and trust agreement				
On-going monitoring under Trust requirements				
Verification of areas assigned to the project				

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
Signing of new Conservation (Cooperation) Agreement and ascension in the Trust				
Faciliate trainings on leadership and decision-making to community members, equipping them with leadership skills, knowledge of sustainable land-use practices, and forest conservation techniques	Community Program Operation Bodies	Enhanced processes provide support to Ejidos by promoting equal and participatory decision-making, thereby nurturing internal accountability.		
Atend annual community assemblies and consultations where community members can gather to discuss important issues, express their opinions, and participate in decision-making processes.				
Organize workshops and training projects to raise awareness about others perspectives and promote equality within the community				
Assessing other actors to leverage project's impact while promoting inclusion				
Promote development of gender-responsive policies and practices within Ejidos				

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
Promote collaborative networks among different community groups, organizations, and stakeholders	An effective and equitable mediation process is established to support the resolution of conflicts and risks in communal lands, promoting legal security and social peace in the area.			
Provide biannual training to Ejido community members on forest protection, wildlife monitoring, territorial ordering, including land management, environmental conservation, sustainable development, and legal frameworks, REDD+ Project information sharing and stakeholders engagement	Ejido members actively participated in designing the territorial ordering policies.			
Facilitate community discussions on land use planning, natural resource management, infrastructure development, and conservation strategies, facilitate the mapping and data collection process in collaboration with community members				
Establish evaluation and feedback processes to assess the effectiveness of				

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
the governance system and gather input from community members.				
Identify potential partners to promote agricultural development and sustainable agroforestry practices	Adoption of sustainable agricultural practices (agroforestry, crop diversification) and water management systems by Ejidos	Improved agricultural outcomes (increased yields, incomes, climate resilience and food security) of participating Ejidos	Increase income streams with an inclusive perspective to enhance livelihoods	By implementing the activities for this Outcome, the community will have a more diverse sources of income (small-business, NTFP, increased crop yield) which makes them more resilient in face of economic downturns and climate change effects.
Conduct trainings on improved agricultural practices and crop diversification				
Distribute seeds and bundles of improved varietals varieties for climate resilience				
Investigate and implement efficient water farming technology for climate adaptation				
Organize workshops and training sessions focused on developing essential business skills to enhance the entrepreneurial capabilities of individuals in Ejidos for income diversification	Develop and train entrepreneurs on small-business plan	Business skills and entrepreneurship in Ejidos lead to self-sufficient rural enterprises		

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
Facilitate mentorship experiences between experienced entrepreneurs with new entrepreneurs in Ejidos to provide guidance, support, and practical knowledge on starting and managing successful rural enterprises				
Facilitate access to microcredit projects, grants, and other financial resources specifically tailored for rural entrepreneurs in Ejidos to enable them to invest in their business ventures, purchase necessary equipment, and expand their operations.				
Develop and implement economic empowerment projects for the community				
Evaluate commercial viability of different NTPFs in Project Activity Instance	Training and evaluation of economic viability for the development of	NTFPs projects are established		

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
Training conducted with local Ejido communities on NTFPs development	NTFPs projects is carried out			
Work with Ejido communities to understand barriers to local supply chains and NTFP resources to build business development plans				
Certify the production line of Non-Timber Forest Products				
Develop and maintain sub-granting mechanism to local organizations for implementation of field projects	Establishment of cooperatives created through grant recipients, with a documented amount of dollars operationalized for NTFPs ventures			
Faciliate the creation and establishment of community cooperatives for the production and marketing of NTFPs				
Explore micro-loan project for development of NTFP enterprise cooperative extension				
Conduct workshops involving community	Measures for adaptation and	Community-led implementation	Maintain forest cover and	The Ejidos will have an

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
members, meteorological experts, and local authorities to assess potential extreme meteorological risks. Develop effective preparation measures, including identifying vulnerable areas, establishing communication protocols, and stockpiling emergency supplies.	mitigation of extreme meteorological risks related to conserve forest cover are carried out, effective evacuation plans	of territorial ordering and risk policies within the ejidos	Reduce Deforestation	effective fire brigade, a better understanding of meteorological risks and how to mitigate them, to maintain the current forest cover and reduce deforestation.,
Collaborate with community members, local emergency response agencies, and relevant stakeholders to design comprehensive evacuation plans tailored to the ejidos' specific needs. Organize training sessions for community members to ensure they are familiar with the plans, evacuation routes, and roles during emergencies.				
Establish mechanisms for monitoring and evaluating the				

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
implementation of risk measures				
Develop new and/or repurpose existing awareness and outreach materials	Improved prevention and monitoring strategies of forest fires are designed and implemented	Improve fire management		
Use existing fire threat models and weather monitoring to determine red flag days and share with neighbors and prevent anthropogenic fires				
Map hotspots				
Identify key target audiences such as ejidos leaders and household heads and preferred medium for communication	Increase effective communication and collaborative participation of ejidos for effective preventive strategies			
Collaborate with neighbours and partners on burn plans and safety for agricultural fires to prevent fires				
Open fire lines or fire breaks and practice controlled burns in fire adapted ecosystems within the ejidos	Improve resilience against wildfire impacts within the ejidos			

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
Faciliate fire management training with rangers and ejidatarios				
Creation of a safety-community brigade against forest fires with the ejidatarios				
Provide awareness workshops in relation to poaching and illegal activities and importance of conservation and sustainable management	Patrols and reports regarding to wildlife conservation, illegal activities (i.e. poaching and small-scale logging), and monitoring are carried out	Community based patrolling system established and trained for enhanced conservation actions	Increase wildlife conservation in the Project Area and CBR	By implementing the project activities for this outcome, there will be a better understanding of the importance of wildlife, along with patrollers and the creation of biodiversity corridors which will foster the maintenance of biodiversity, creating a more sustainable environment
Coordination of joint patrol activities through regular communication with relevant partners (CBR)				
Data from patrolling is analyzed to make decions related to biodiversity				
Conduct regular wildlife patrols (including anti-poaching patrols and logging patrols)	Decrease in illegal activities in the CBR core and buffer zones	Wildlife Population Stabilization		
Promote sustainable hunting practices in the transition zone of the CBR				

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
Protect connectivity where habitat is still intact, through permanent conservation and adaptive management	Improve conservation behavior actions regarding to wildife	Improve habitat connectivity		
Identify activity to monitor HCV areas per ejido	Awareness of importance of maintenance of HCV areas	Implementation of activities to monitor HCV areas	Maintenance of community and biodiversity HCV areas	With the maintenance of HCV areas, the Ejidos will be more likely to maintain their access to their community and biodiversity areas, which promote the maintenance of the project in the long run
Meetings to raise awareness of importance of HCV areas				
Design a solid and liquid waste management plan that adjusts to the conditions of the territory	Implement additional social/environmental programs	Other environmental programs and livelihood programs (subject to available cash flow) developed	Additional Environmental and Livelihood Programs Implemented	With the availability of funding, these additional activities will be implemented which will promote an improved community infrastructure and access to health and education
Sourcing partnership to improve access to potable water to the ejidatarios				
Sourcing partnership to improve education services available in the communities				
Sourcing partnership to improve health access and services				

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
available in the communities				
Design on-going training plan for staff (local SEMARNAT, and community organization staff)	Build local capacity for continual data collection over time	Established local capacity through development of a comprehensive monitoring plan on collection of data and record keeping.	Monitoring and Reporting	The monitoring and reporting is a requirement for the maintenance and sustenance of the project and evaluation of the impacts of project activities
Conduct local training workshops (capacity building) each year on general MRV and Project Management				
Monitoring reports are socialized with communities and other stakeholders				
Conduct training on biomass inventory data collection	Conduct forest biomass plot inventory and classification for forest/land-use types			
Acquire and process satellite imagery				
Perform QA/QC on biomass inventory stocks and incorporate into monitoring report				
Collect, review and analyze data collected on social appraisals (Household social surveys/Participatory Rural Appraisal)	Conduct social appraisals per VCS/CCB requirements			

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
Conduct social surveys for every verification period				
Perform QA/QC and incorporate into monitoring report				
Training on biodiversity monitoring / partnership with local university to collect data on biodiversity yearly	Conduct biodiversity monitoring per VCS/CCB requirements			
Conduct biodiversity assessment (for every verification period)				
Perform QA/QC and incorporate into monitoring report				
The project gathers data on the activities they are responsible for monitoring	Gather, prepare and disseminate on-going monitoring reports in line with VCS/CCB monitoring plans			
Quarterly monitoring reports are prepared and distributed				
Monitoring reports are socialized with communities and other stakeholders				
Compile data for regular reports and	Prepare for VCS Validation	Validation conducted in		With the validation and

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
scan all hard copies of monitoring data	requirements for VCS/CCB	participatory manner to support management and achieve a Validated REDD+ Project Document with an established baseline for on-going measurements results	Validation and Verification Completed	verification of the project, there will be emission of VCUs which will maintain the project and benefit the Ejidos
Review and finalize the draft of monitoring plans				
Write non-carbon Sections of VCS/CCB PDD				
Perform carbon calculations for VCS/CCB PDD: Baseline calculation of carbon under the project scenario				
Perform carbon calculations for VCS/CCB PDD: ex-ante calculations of carbon under project scenario				
Perform carbon calculations for VCS/CCB PDD: Calculation of the non-biomass related emissions				
Perform carbon calculations for VCS/CCB PDD: Estimation of leakage potential				
Translate draft Combined Project Document into Spanish				

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
Finalize VCS/CCB Combined Program Design Document				
Disseminate Spanish draft combined PD to appropriate stakeholders using appropriate means	Conduct VCS/CCB Validation			
Gather stakeholder comments on draft combined PD				
Incorporate stakeholder comments into the combined PD				
Facilitate communities' engagement with VVB and assist with field visit logistics				
Communities activity engage with VVB				
Conduct field visit with VVB				
1st Round of CARs for VVB				
2nd Round of CARs for VVB				
Compile data for regular reports and scan all hard copies of monitoring data	Prepare for VCS verification requirements for VCS/CCB	Verification conducted in participatory manner to support		

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
Write non-carbon Sections of VCS/CCB MIR		management and achive VCUs with carbon assets with multiple co-benefits created and monetized based on agreements		
Perform carbon calculations for VCS/CCB MIR: Ex-post calculation of carbon				
Perform carbon calculations for VCS/CCB MIR: Calculation of the non-biomass related emissions				
Perform carbon calculations for VCS/CCB MIR: Estimation of leakage potential				
Translate draft Monitoring and Implementation Report into Spanish				
Review and finalize the CCB monitoring plans				
Finalize VCS/CCB Monitoring and Implementation Report				
Disseminate Spanish draft combined Monitoring and Implementation Report (MIR) to	Conduct VCS/CCB Verification			

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
appropriate stakeholders using appropriate means				
Gather stakeholder comments on draft MIR				
Incorporate stakeholder comments into the MIR				
Activity engage with VVB and assist with field visit logistics				
Communities activity engage with VVB				
Conduct field visit with VVB				
1st Round of CARs for VVB				
2nd Round of CARs for VVB				
Define institutional arrangements (legal entities, fiscal management, operational management, benefits sharing) required to manage sources of the carbon finance	Implement requirements for accessing multiple forms of Carbon and other Finance	Institutional Arrangements supported for sound fiscal and operational management, administration of benefits sharing and monetization of VCUs	Institutional Arrangement and Policies Developed and Operationalized	The development and implementation of institutional arrangements and policies permit the establishment and maintenance of the financial
Establish legal entitites (if required)				

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
to manage carbon finance				side of the project which enables the continuation of the project and continuous maintenance of the forest
Program Financing plan finalized				
Draft and execute agreement between parties for Program management (REDD+ Agreement)				
Develop and implement fiscal management plan				
Develop Draft Benefits Sharing Plan				
Socialize benefits plans with stakeholders				
Finalize benefits sharing plan				
Operationalize feedback, grievance and redress mechanism				
Develop and execute ERPAs for carbon sales				
Manage issuance and registry process				

APPENDIX 3: PROJECT RISKS TABLE

Project risks are identified in the Non-permanent Risk Report.

APPENDIX 4: COMMERCIALLY SENSITIVE INFORMATION

The following data and information are made available to the VVB as requested.

Section	Information	Justification
2.3.1	Annex A: Community Engagement Plan	Internal process
2.3.5	Annex B: Ejidal General Assembly Minutes	Internal process
2.3.14	Annex C: ACAC Antidiscrimination Policy	Internal process
2.3.15	Annex D: ACAC Feedback and Grievance Redress Procedure	Internal process
2.1.17	Annex E: Ejidos Agreements	Internal process
2.4.6	Annex F: TGC Anticorruption Policy	Internal process
2.4.6	Annex G: ACAC Anticorruption Policy	Internal process
4.2.1	Annex H: Long Term Implementation Work Plan	Defined activities
4.2.1	Annex I: Monitoring Plan	Internal protocol for monitoring

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