VALIDATION REPORT

zeroCARBON Program

Project Title:	zeroCARBON
Location:	Guatemala, Departamento Petén, Municipalidades: Sayaxche, Las Cruces, Santa Ana, La Libertad, Flores, San Andrés
Project scale	☒ Macroscale ☐ Microscale
Version of this validation report:	1.0
Project Coordinator/ Client	zeroCO2 S.r.l. Società Benefit Address:Via Ignazio Pettinengo, 72 - 00159 Roma – Italia Contact Name: Cecilia Monari Phone: 0039 33 93357349 Email: cecilia.monari@zeroco2.eco
Project Participants:	Vivero Mundo Verde See List of participants in ANNEX III
Validator:	Lead validator: Flavio Murillo Machado Guiera **Control Union Certifications Germany GmbH** Bornitzstraße 73-75 - 10365 - Berlin https://controlunion-germany.com/de Local expert / Validator in Training: Gema Echegoyen Control Union Certifications Germany GmbH
Validation Date of Issue:	17.09.2024
Project Period (crediting period):	20 years (1 January 2020 to 1 January 2040).
Methodology:	• Agriculture and Forestry Carbon Benefit Assessment Methodology developed by TLLG & Plan Vivo TAC Related General Methodology: Specific Plan Vivo modules and tools of Agriculture and Forestry Carbon Benefit Assessment Methodology TLLG & Plan Vivo TAC methodologies: • PU001 - Estimation of baseline and project GHG removals by carbon pools in Plan Vivo projects • PU002 Estimation of baseline and project GHG emissions from carbon pools in Plan Vivo projects • PU003 Estimation of baseline and project GHG emissions from emission sources in Plan Vivo projects • PU004 Estimation of GHG emissions from leakage in Plan Vivo projects • PU005 Estimation of uncertainty of carbon benefit estimates in Plan Vivo projects

Expected Carbon Benefit:	100,354.44 tCO2e. fPVCs = 80,283.95
Expected Ecosystem Benefit:	Reducing soil erosion Improving soil fertility Carbon sequestration Biodiversity conservation and regeneration Tree cover regeneration.
Expected Livelihood Benefit:	Food and agricultural production improvement Community capacity building Income and economic growth Diversified and resilient production against the effects of the climate change.
Approved by:	Julia Stefanovic

Contents

1. INTRODUCTION

1.1 Objective and Scope

The purpose of the validation audit activity was to conduct an independent assessment of the project to determine whether the project complies with the validation criteria, as set out in the guidance documents listed in Section 1.2 of this report.
The objectives of this validation are the following:
- Assess the conformance of the project design and governance structure with the Plan Vivo Standard Vs 5.0.
- Interview stakeholders and project members and assess the engagement of local affected parties with the participatory design approach.
-Visit the project Members' and check whether the designed project is being implemented in accordance with the presented in the documentation.
-Evaluate the conformance with the validation scope, including the GHG project and baseline scenarios, GHG sources, sinks, and reservoirs; and the physical infrastructure, activities, technologies and processes of the GHG project to the requirements of the PV standard;
-Evaluate the calculation of GHG emissions, including the correctness and transparency of formula and factors used, assumptions related to estimating GHG emission reductions, and uncertainties;
-Determine whether the project could reasonably be expected to achieve the claimed GHG reduction/removals.

1.2 Method and Criteria

The validation was assessment based on documentation provided by the project proponent and PV, which included the project design document (PDD), the results from the technical review by PV and supporting documentation:

The following steps were conducted during the assessment:

Desk review:
Before the field validation the assessment team reviewed the following elements of the project and verified compliance against the Plan Vivo Standard Version 5.0 Standard Requirements based on information provided by ZeroCO2 project:
-Project Design Document (PDD) Vs.3.1 (July 4, 2024)
-Shape files of the project;
-PV Technical Review
-Technical Specification documents;
- Methodology of Carbon removal/emission calculation.
-stakeholders consultation and FPIC.

Following ISO14064-3 validation process and based on the review described above, the assessment team has conducted a strategic analysis, risk assessment and issued an evidence-gathering and audit plan.

Site visit:
The site visit included farm visits, interviews with project participants and the project coordinators. For sampling purposes, farms were randomly selected to gather different sites in a stratified group of soils, species, communities, ages of the forest plantations and agroforestry activities.

During the site visit the following elements were validated:
- Project Coordination and Management;
- Shape files and land management plans;
- Participatory Design;
- Sustainability Monitoring Plan;
- Risk management;
- Livelihood Impacts;
- PES agreements and benefit-sharing;
- Consultation with local stakeholders.

The criterion for validation was the Plan Vivo Standard version 5.0, including the following documents:
• Project requirements version 5.0
• Methodology requirements version 1.0
• Procedures Manual version v1.0
• Plan Vivo Project Design Guidance version 1.1

Unless otherwise indicated, the assessment was performed against the most recent version of the relevant PV documents.

1.3 Level of Assurance

The assessment was carried out in order to provide a reasonable level of assurance of conformance against the defined Plan Vivo standard requirements and materiality thresholds within the audit scope. The evidence-gathering plan was designed to lower the detection risk to an acceptable level. Based on the findings of this validation, a positive statement is issued that assures that the project's GHG assertion is materially correct and a fair representation of the GHG data and information.

1.4 Summary Description of the Project

The zeroCarbon project is located in Guatemala, Petén Department across 9 municipalities. Its interventions aim for improved land management through forest plantation and agroforestry. This will be achieved predominantly through tree planting, assisted natural regeneration and sustainable forest management. The aim is to ameliorate the ecological function of degraded land, enabling the restoration of ecosystems, landscape and providing a sustainable livelihood for local communities.
The main planting systems are:
- Forest plantation (*Cedrella odorata* and *Switenia macrophilla*)
- Agroforestry system with intercropping (maiz, platano, cacao)

The project area encompassed 138 hectares in 2022 and was increased with 303,5 hectares in 2023. Another ~450 hectares will be added from 2024 onwards. At the time of validation the ZeroCARBON program encompassed 119 participants, taking into account both communities participating as a group (3) and individual farmers. The program will expand year by year in the region, involving new families/groups that meet zeroCARBON's eligibility requirements. The project period is scheduled from 2020-2050.

2. VALIDATION PROCESS

1.5 Validation team, technical reviewers and approver

Role	Name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)	Involvement in			
			Desk/document review	On-site visit	Interviews	Validation findings
Lead validator	Flavio Guiera	Control Union Brazil	X	X	X	X
Trainee / Local Expert	Gema Echegoyen	Control Union Guatemala		X	X	
Technical reviewer	Julia Stefanovic	Control Union Certifications Germany GmbH				X

1.6 Document Review

The Project Description Document submitted by the Project Coordinator was reviewed against the approved methodology and against PV requirements version 5.0. Additional background documents related to the project design, baseline and additionality were also made available before and during the assessment. The supporting documents that were reviewed are all listed in Annex 1 of this report. Control Union cross checked and compared then with the relevant sections of the PDD. After the on-site assessment the PDD was further updated to the final version 3.1 (July 4 2024) and reviewed by the assessor for the closure of CARs.

1.7 Site visits and Interviews

The validation consisted of an opening meeting, which included a brief introduction of the participants, confirmation of assessment objectives and scope as well as explanation on the methods to be employed during the validation. A review of the audit plan took place. Documents were readily available to the lead validator. Also, the persons responsible for processes on-site were available to present their roles and responsibilities. The site visits were conducted according to the audit plan and at the closing meeting the main findings were explained. All processes, activities and units mentioned in the program of activities were checked and the project members were interviewed. Key local stakeholders were contacted and interviewed in private meetings.
The Project Coordinator provided unrestricted access to all production and administrative units and fields for the validation team.
Site visits took place in all the 6 municipalities where the project is being implemented. In total, 5 cooperatives were interviewed: Novo Horizonte, Las Camelias, Monte Carmelo, Nuevo Amanecer and Nuevo Coban.

List of interviewed stakeholders, local affected parties and project participants.

Duration of the on-site inspection: 06/11/2023 to 09/11/2023					
Name	**Role**	**Organization/Community**	**Site location**	**Date**	**Audit member**
Margarita Figueroa	Project Member	Nuevo Horizonte	Santa Ana	06/11/23	FG / GE

Candelaria Martinez	Project Member	Nuevo Horizonte	Santa Ana	06/11/23	FG / GE
Anival_Jimenez Castillo	Project Member	Nuevo Horizonte	Santa Ana	06/11/23	FG / GE
Tereza Cac	Communitarian leader	Las Camelias	Sayaxche	07/11/23	FG / GE
Mario_Cac Caal	Communitarian leader	Cruze Cemuy	Sayaxche	07/11/23	FG / GE
Juan Francisco Juarez Juan	Project Member	Las Cruces	Vista Hermosa Los Chorros	07/11/23	FG / GE
D.Marcelino Xo Cuc	Communitarian leader Project Member	Nueva Esperanza	Sayaxche	07/11/23	FG / GE
Aurelia Chocooj Juc	Project member Communitarian leader	Nueva Esperanza	Sayaxche	07/11/23	FG / GE
D. Mario	Communitarian leader	Nueva Esperanza	Sayaxche	07/11/23	FG / GE
D. Manuel	Communitarian leader	Nueva Esperanza	Sayaxche	07/11/23	FG / GE
Maria Elena Pop Ical de Cac	Project Member	Cruze Cemuy	Sayaxche	07/11/23	FG / GE
Tereza Cac Caal	Communitarian leader	Las Camelias	Sayaxche	07/11/23	FG / GE
Sebastian Caal	Communitarian leader	Nuevo Coban	Sayaxche	07/11/23	FG / GE
Paulina Caal Bol	Project Member	Monte Carmelo	La Libertad	08/11/23	FG / GE
Santos Alvarado Martin	Project Member	Monte Carmelo	La Libertad	08/11/23	FG / GE
Nancy Maribel Salazar Donis	Communitarian leader	Monte Carmelo	La Libertad	08/11/23	FG / GE
Odonio Gregorio sales	Communitarian leader Projec Member	Nuevo Amanecer	La Libertad	08/11/23	FG / GE
Silvino Morales Matias	Project Member	Nuevo Amanecer	La Libertad	08/11/23	FG / GE
Guido Cencini, Cecilia Monari, Andrea Pesce, Francisco Chi, Virgilio Galicia.	Project proponent	N/A	Local office	09/11/23 – documentation cross-check and closing meeting	FG / GE

1.8 Sampling approach

The sample size was calculated with the support of Plan Vivo Guidance for Validation and Verification Bodies (VVBs) and Independent Experts. Vs 5.1 – chapter 6.2 Sampling Plan. 3 out of 6 municipalities gathered in the project were visited, aiming to check the activities to minimum 10 of 119 plots in 6 of 24 communities.

Plots visited:

Municipalidad Santa Ana, Comunidad Nuevo Horizonte (Date: 6/11)
Vivero Mundo Verde

- Margarita Figueroa
- Vicente_Choc
- Miguel_Angel_Castañeda Estrada
- Anival Jimenes Castillo
- Abelino Pop Choc
- Candelaria Martinez/ Faustino Sarceño Martinez

Municipalidad Sayache (Date: 7/11)
Comunidad Cruze Cemuy

- Mario_Cac Caal y Maria Elena Pop Ical de Cac

Comunidad Las camelias

- Tereza Cac Caal

Comunidad Nueva esperanza

- Aurelia_Chocooj Juc.

Comunidad Nuevo Coban

- Sebastian Caal

Municipalidad La Libertad (Date: 08/11)
Comunidad Monte Carmelo

- Ana_María Méndez Antonio
- Santos_Alvarado Martin
- Gladis_America Jacinto Lopes de Chum
- Fausto_Reyes Gómez
- Francsico_Coc Cal.
- Sergio_Antonio López Pérez.
- Enrique_Paná Tut
- Ana Lucia de la Cruz Lemus
- Nancy Maribel_Salazar Donis
- Paulina_Caal Bol

Comunidad Nuevo Amanecer

- Silvino_Morales Matias
- Odomio Gregorio sales

1.9 Resolution of Findings

During this validation process, 3 CARs were raised in total (#23/01, #23/02 and #23/03).After the VVB field inspection CAR #23/01 was converted to a Forward Action Request (FAR #23/01).The Project Coordinator updated the PDD to version 3.1 (dated: July 4th 2024) and responded adequately to the CARs which were raised during this validation. More details are listed in Annex 2 of this report.

Areas of validation findings	No. of NIR	No. of CAR	No. of FAR
GENERAL INFORMATION			
Project Interventions	N/A	N/A	N/A
Management Rights	N/A	N/A	N/A
STAKEHOLDER ENGAGEMENT			
Stakeholder Analysis	N/A	N/A	N/A
Project Coordinator and Project Participant	N/A	N/A	N/A
Participatory Design	N/A	N/A	1
Stakeholder Consultation	N/A	N/A	N/A
Free, Prior and Informed Consent (FPIC)	N/A	N/A	N/A
PROJECT DESIGN			
Baseline Scenario	N/A	N/A	N/A
Carbon Baseline	N/A	N/A	N/A
Livelihood baseline	N/A	N/A	N/A
Ecosystem Baseline	N/A	N/A	N/A
Theory of change	N/A	N/A	N/A
Technical specification	N/A	N/A	N/A
Project activities		1	
Additionality	N/A	N/A	N/A
Carbon Benefits	N/A	N/A	N/A
RISK MANAGEMENT			
Environmental and Social Safeguards	N/A	N/A	N/A
Achievement of Carbon Benefits	N/A	N/A	N/A
Reversal of Carbon Benefits	N/A	N/A	N/A
Leakage	N/A	N/A	N/A
Double Counting	N/A	N/A	N/A
AGREEMENTS			
Land Management Plans	N/A	N/A	N/A
Crediting Period	N/A	1	N/A
Benefit Sharing Mechanism	N/A	1	N/A
Grievance Mechanism	N/A	N/A	N/A
Project Agreements	N/A	N/A	N/A
MONITORING AND REPORTING			
Carbon indicators	N/A	N/A	N/A
Livelihoods indicators	N/A	N/A	N/A
Ecosystem Indicators	N/A	N/A	N/A
Monitoring Plan	N/A	N/A	N/A
Reporting and record recording	N/A	N/A	N/A
GOVERNANCE AND ADMINISTRATION			
Governance Structure and legal compliance	N/A	N/A	N/A
Financial Plan and Management	N/A	N/A	N/A

Others (please specify)	N/A	N/A	N/A
Total	0	3	1

1.10 Forward Action Requests

During the site visit FAR #23/01 was raised (requirement 2.4 Participatory Design), related to the observation that most of the farmers could not describe properly how the natural restoration of the forest after 5 years of plantation will be implemented and monitored.
The FAR was raised to ensure that the Project Interventions reviewed will be discussed in collaboration with the Project Participants, who must work in partnership to explore and identify preferred options of natural regeneration and in addition, to discuss biodiversity (selection of species) and the monitoring process.

1.11 Public Comments

There were no records of comments received during the public comments period.

3. VALIDATION FINDINGS

GENERAL INFORMATION

3.1 Project Interventions

The objective of the zeroCARBON project is to restore - through tree planting, Assisted Natural Regeneration and sustainable forest management - the ecological function of degraded land, enabling the restoration of the ecosystem, landscape and providing a sustainable livelihood for local communities. This will be achieved by shifting land use from extensive livestock farming, cropland, and unproductive fallow to the creation of forestry and agroforestry systems. The project interventions will be implemented following an approach that will not affect negatively the local dynamics of agricultural, cattle raising and other subsistence production or the surrounding ecosystems. The main project intervention is improved land management through forest plantations and agroforestry.
The following was witnessed during the on-site assessment by the validation team:
Forest plantations - will be implemented in fallow areas exploited by years of monoculture, through planting tree species to produce wood and other products. Mainly native species such as Cedar (Cedrela odorata), Mahogany (Swietenia macrophylla) and other forest species of economic and cultural value will be incorporated.
Agroforestry system with intercropping - This type of intervention with perennial fruit species will be limited to specifically defined areas (agroforestry system). In the remaining project area zeroCO2 will provide agroforestry systems together with forest tree crops (Cedar and Caoba) but only with annual herbaceous species (e.g. maize).
The project interventions benefits will exceed the direct benefits of PV certificates sales. With the long-term management of their plots, communities will be trained and incentivised to promote a natural and assisted revegetation enhancing the ecosystem services such as biodiversity, water, soil restoration and maintenance and forest products. Participation in the project allows smallholders to diversify production and generate new sources of income from the same plot of land. Another benefit remarked in the livelihood of local communities is that the project is built upon a participatory model that encourages vulnerable groups to participate in decision-making from the project design and benefits sharing, including women and indigenous people.
Thus, the assessment team concluded that the project interventions are in line with the standard requirements.

3.2 Management Rights

3.2.1 Project Boundaries

At the stage of the on-site validation in November 2023, the project was being developed in the department of Petén in Guatemala, in 6 of the department's 14 municipalities - Santa Ana, La Libertad, Sayaxche, Las Cruces, Flores, San Andrés. ZeroCARBON involves a group of 24 local farming communities spread across the 6 municipalities in the Peten region. The 2022 program reached 119 participants, considering both cooperatives participating as a group and individual farmers.

The validation team assessed the location of the project against the geospatial data files version 02. and consider the location of the project correct.

3.2.2 Land and Carbon Rights

zeroCO2 has the support and commitment from all communities and participants listed in the project database and from members of the first zeroCARBON program from 2022. During 2022, consultation and sharing of all information was completed, memberships were collected, and field operations in designated areas were developed. The contract binding the participants and zeroCO2 to the obligations and rights related to the program has been constructed and shared.

Table 1. Land and Carbon Rights

Project Area	Ownership and user rights status	Carbon rights	Validation Assessment
Private individual Property/Tenure	Individual property Ownership (through property or possession title) belongs to each participant involved in the program. In this case, zeroCO2 signs an agreement with each person/family. Titles and agreements reviewed provide absolute rights in decision-making on land use. According to Article 20 of FONTERRA decree 24-99, its beneficiaries are Guatemalan campesinos peasants, individually considered or organized in groups for access to land and agricultural products, livestock, forestry and	The resulting by-products, including carbon-related rights and timber & no-timber products, become, according to the project agreement defined between the parties, the property of the project participant.	Property or possession titles for individuals project members Title of property registered in the general Property Registry of Guatemala. MARCELINO XO CUC FINCA 6176 Folio 176 Libro 13E de El Peten(SAN ROMAN) MATILDA CABNAL YABAT DE CACAO FINCA 6793 Folio 293 Libro 194E de El Peten (EL EDEN - SAYAXCHÉ). TEREZA CAC CAAL

	hydrobiological production.		FINCA 9155 Folio 55 Libro 19E de El Peten (LAS CAMELIAS – SAYAXCHE) INGRI LORENA CHOC ICAL FINCA 6865 Folio 365 Libro 14E de El Peten (Tezulutlan I – SAYAXCHÉ) MARIO CAC CAAL Y MARÍA ELENA POP ICAL DE CAAL FINCA 5900 Folio 400 Libro 32E de El Peten (CRUCE SEMUY – SAYAXCHÉ) BERNARDO CAC CAAL FINCA 159 Folio 159 Libro 21E de El Peten. (LAS CAMELIAS – SAYAXCHÉ) (Annex I /34/35/ 36/37/38/39) Possession rights issued by the Fondo de Tierra law (FONTIERRA decree 24-99) or by Municipalities
Cooperatives and associations	Group ownership title Ownership is by the organised group that plants the trees in the community plots. Group ownership titles are obtained through the creation of cooperatives or	Both the trees donated by zeroCO2 to the communities and the resulting by-products, including carbon-related rights, become, according to the agreements defined between the parties, the property	Group ownership title duly registered in the general Property Registry of Guatemala. -RESOLUCIÓN DE DECLARATORIA TIERRAS

	corporations with legal personality. The titles are in the name of the cooperative or society, which is represented by a board of directors. Land titles provide absolute rights in decision-making on land use. In the case of collective land titles, zeroCO2 signs an agreement with each cooperative or society. It is important to mention that in the case where the property title is communal, not all the villagers participate in the project, so the benefits are individual for each participant.	of the project participant	COMUNALES Comunidad Monte Carmelo 27/11/2020 REGISTRO GENERAL DE LA PROPIEDAD EMPRESA CAMPESINA ASOCIATIVA ECA MONTE CARMELO Finca Numero 1133 Folio 133 Libro 223E de El Peten – La Libertad. -RESOLUCIÓN DE DECLARATORIA TIERRAS COMUNALES Comunidad Nuevo Horizonte 27/11/2020 REGISTRO GENERAL DE LA PROPIEDAD COPERATIVA INTEGRAL AGRICOLA NUEVO HORIZONTE", RESPONSABILIDAD LIMITADA Finca número 740 Folio 99 Libro 5 de El Peten . Finca 450 Folio 59 LIBRO 4 DE EL PETÉN (SANTA ANA) (Annex I /40/41/)

STAKEHOLDER ENGAGEMENT

3.3 Stakeholder Analysis

There were no grievances or disputes risen by the stakeholders or stated during the interviews with the project members and other parties. Many types of benefits brought by the project proponents were revealed by the local people and communitarian leaders. Positive impacts mentioned towards the validation assessment team included training, new perspective of rural production with

agroforestry, access to technical and financial support and assistance to develop the activities of reforestation.
Communitarian leaders do not state any negative social or economic impact of the project. There were some opinions stating that the lack of workforce poses a difficulty for some members to maintain activities of the plantations and to expand the planting area. In general, the project is very well recognized by the local stakeholders.
Many project members are women and are in the position of leadership within the communities. The project proponent technical team is often visiting the plots and promptly responding to claims or needs requested by the project members.
The project coordinator has made an accurate identification of the stakeholders, and the validation team deems it correct. Two types of local stakeholders have been identified and one type of secondary stakeholder. The validation team considers that the project proponent has correctly identified and included the relevant stakeholder groups, as confirmed during the interviews with local communities, cooperative and project members.

Table 2. Stakeholder Analysis and Evaluation

Stakeholder Group	Stakeholder Type	Impact	Influence	Validation assessment
Vulnerable and marginalised communities zeroCO2 works with smallholders, (landowners), either individually or communally. Project participants live in rural areas with little access to basic services, facing conditions of social, economic and climatic vulnerability. The project involves smallholders, (landowners) with land or individual property titles. Project participants live in rural areas with low economic resources with little access to basic services, facing conditions of social, economic and climatic	Local	**Social** Increased knowledge and skills of farming communities (high) increase in local people's capacity to manage the land and to produce (high) **Economic** Diversification of production (high) Diversification of income sources (carbon and plantation by-products) (high) Improvement in crop productivity (high) **Environmental** Regeneration of soils at risk of degradation through the improvement of above ground	**Social** Access to educational and environmental programs (high) Strengthening of community social relations (Moderate) Emergence of new community projects (Low) **Economic** Initiation of micro-entrepreneurship pathways (moderate) **Environmental** Reducing the risk of diseases and fires (high) Increasing environmental awareness within communities (Moderate)	Communities' engagement: During the interviews with project members and communitarian leaders, the same logic of approach for engagement was reported. Statements are in line with the steps of engagement process and the operational visits for development of project activities. The following project subscription for the agreement were revised: 00016_MC_1_2020 00002_NA_1_2020 00014_MC_1_2020 00001_CS_1_2022 00002_NA_1_2022 00001_CB_1_2022

vulnerability, due to the absence or difficulty of access to basic services, quality education, and health. Participants' land sizes average 2-4 hectares and more, on which diversified use and absence of conflict with food production is guaranteed. Land use varies from one area to another (usually each person owns more than one area that they devote to different activities). In general, the main land use is traditional farming and low-scale livestock.		biomass, below ground biomass and soil litter (high) Restoration of forest ecosystems and biodiversity (high) Land fertility improvement (high)		00003_NH_1_2022 00014_NH_1_2022 00025_NH_1_2022 00003_TZI_1_2022 00001_VH_1_2022 00002_CA_1_2022 00033_MC_1_2022 00001_NE_1_2022 00013_NA_1_2022 00026_NH_1_2022 (Annex I /42/) Field observations revealed the impacts of regeneration of soils at risk of degradation through the improvement of above ground biomass and forest environment. Local villagers declared the restoration of fauna with observation of birds, small rodents and lizards visiting the forested areas.
Nonparticipating farming communities/ individuals	Local	**Social** Increased knowledge and skills of farming communities (low) increase in local people's capacity to manage the land and to produce (low)	**Social** Strengthening of community social relations (Low) Emergence of new community projects (Low) **Environmental** Reducing the risk of diseases and fires (medium)	Project members and local leaders interviewed are involved and sensitised since the initial stages of engagement. Groups created are active and every training session or meeting are duly communicated and spread among the participants.

			Increasing environmental awareness within communities (Low)	The results of project activities are declared by the participants as empowerment of people to manage their own forest plantation, with safety and health principles, taking care of the garbage and fire control as brigades.
INAB (Forest National Institute) - government agency responsible for forestry and environmental legislation.	Secondary	Environmental Improvement of forest cover and institutional objectives. (High)	Institutional Good coordination to respect the laws and regulations of the Republic of Guatemala (Moderate)	The project has the recognition of INAB and works in synergy with the program of Illegal. Logging and restoration of degraded lands. (Introduction of Project activities Letter to INAB – 19/5/22)

Indigenous Peoples or local communities	**Rights to land or resources in the project area(s)**	**Governance structure**	**Involvement of women and marginalised groups**	**Validation Assessment**
Local and indigenous (mayan) communities	They have absolute rights to make decisions about their land, as they have a title deed or contract that accredits them as land owners.	Participating communities have different forms of organizational structures, depending on the goals for which they were founded. In general terms, each community may be organized as a cooperative or an agricultural enterprise, with different representative bodies. In most cases, the highest authority within the community is the General Assembly, which elects the Board of Directors, the body composed of a certain number of members (5 to 9) elected	Access to the Board of Directors is open to all democratically elected members of the community, regardless of their gender or ethnic group. The communities are built on a strong basis of cultural and historical continuity. Therefore, the composition of the Boards varies according to the composition of the community.	Indigenous and traditional communities have been visited and their members interviewed, and it has been found that they are marginalised people who are not prioritised by the state for basic services. There are Indigenous people and local communities that are beneficiaries of the project, ensuring them the same benefits of other project

		by the community members, in which decisions are made and which will represent the community during the period of its establishment and be responsible for it. In some communities, the Board of Directors is replaced instead by the Community Development Council (COCODE), a body with legal representation before state institutions. COCODE's highest institution is the community assembly, made up of all community members and acting as the coordinating body at the municipal level. Parallel to the Board of Directors/COCODE, each community is organized into a number of specific committees, such as education, health, women, reforestation, and any other relevant issues within the community. The type of committee and the success of its work varies depending on the community and its priorities. The zeroCARBON program is centrally managed by the Board of Directors/COCODE in the early stages of engagement, and it is planned to build additional specific committees/bodies at the community level for the representation of participants and	Although in Mayan culture it is mostly men who are in charge of field work, within the cooperatives women maintain a prominent role in decision-making on community land-use projects. zeroCARBON promotes equal access to decision-making bodies related to the program in order to give equal hearing and voice to all members of the participating group. Thus, in community committees, representation is expected to be proportional to the composition of the community, both in terms of women and indigenous representation.	members but culturally appropriated for the maya culture. All steps of FPIC are reported by the interviewees and records of the engagement process are available. Images and documents of the participatory design were reviewed: DSC01640 DSC01645 DSC02031-189 Participant meeting Listados de asistencia – ECA Monte carmelo La Libertad. Acta Nº 06/2022 (Annex I /43/44/)

		operational management of the program. These bodies are responsible for verifying compliance with all agreements established in reforestation projects and signing agreements with communities, as well as coordinating and organising all activities to be developed during the process, from area selection and preparation to tree planting, pest control or monitoring and supervision against forest fires. They are also given an active role in collecting grievances and in day-to-day communication with the Project Developer. More information is described in Section 5.1.		

3.4 Project Coordination and Project Participant

The management of the zeroCARBON project is based on a strong collaboration between the two teams, the Italian team (zeroCO2) and the Guatemalan team (Vivero Mundo Verde).
In Italy, a team of 3 people oversees the management and development of all activities necessary to ensure compliance with the Plan Vivo Standard and compliance with applicable policies, laws and regulations; it also takes care of updating the PDD with any changes in the project and of the annual reporting and validation and verification events, and of the issuance in the PV registry of the PVCs. Finally, it deals with the financial management of the project and the commercialization of the PVCs in the market and sales agreements, ensuring the sale of certificates and other means of financing the program.
The Vivero Mundo Verde team is responsible for following the operational development of the project with the participants, providing technical assistance and capacity building necessary for each project participant to implement project interventions and following the monitoring of Progress Indicators, Means of Living Indicators and Ecological Indicators and providing ongoing support to project participants.
The local partner Vivero Mundo Verde has an important role in building relationships with the communities. Since 2019 zeroCO2 has been implementing Corporate Social Responsibility and Sustainability projects and the related revenues have been used to date to fund projects in Guatemala and other reforestation projects around the world. In 2022 zeroCO2 used internal funds obtained from other active business lines (i.e. CSR and sustainability) to cover operating and management costs related to the 2022 plantations of the zeroCARBON project. In agreement with the project participants, the workflow and benefit sharing mechanism was defined. Since the second half of 2022, zeroCO2 has been talking to potential buyers and resellers interested in Plan Vivo certificates, focusing on the future PVC type, and finding increasing interest from the market.

The strategic local partner Vivero Mundo Verde was decided to use the expertise and supply to produce trees needed for the project. Benefits from carbon sales revenues are expected to support the local partner (Vivero Mundo Verde) that in 2022 was a company under Guatemalan law and is already converting to a nonprofit foundation under Guatemalan law during 2023. This will allow Vivero Mundo Verde to further expand its engagement in social projects and to generate local occupational and economic benefits in the project area.
All program activities are based on a common strategy and planning, defined together by both partners, according to the normative and technical needs and to the different phases of the program. Therefore, each team is fundamental and functional for the achievement of the project's quality objectives.
The connection with the indigenous populations is based on the relational capital that the local team has been able to create over the past three years. In fact, the consistency with which the reforestation and agroforestry programs have been carried out and the commitments made to the communities in previous years have been respected and allowed to contact several local cooperatives in all the municipalities of the Petén, organizations that represent indigenous communities that are extremely isolated culturally and socially from the rest of the region and the country. For example, in Sayaxche, one of the municipalities with the highest indigenous population in the region where the project operates, the first contact with the local communities, scattered throughout the municipality, was made through the Cooperativa Agricola Integral el Sembrador Ecologico, a cooperative made up of 39 active members with a total of 29 families of the Q'eqchi' ethnic group from various communities in the Saiaxche municipality, part of the zeroCARBON program (e.g. Nueva Esperanza and Las Camelias). The cooperative promotes communal projects aimed at self-determination and food sovereignty, as well as the right to land of the local communities and in the case of zeroCARBON acts as the legal representation of the communities. Once the relationship is established, zeroCO2 interacts directly with the individual participants in the various communities to carry out all operational activities of the program. The fulfilment of the link with the participants is also part of the clauses of the agreements signed within the program where the rights and obligations of both parties for the participation in the program are stated. In addition, zeroCO2 has established criteria to further designate the "priority participants" of the zeroCARBON program: Women, Indigenous people, older people, Persons with limited resources.

The Project Coordination and Management and project participants are correctly justified for the project by the registration on the Chamber of Commerce (Italy), agreements with Vivero Mundo Verde and each of the Project Member and Communities. Observations and interviews made during the site visit revealed a trusty, motivated and skilled team responsible by the implementation of the project activities. The Project Members also demonstrated a high level of participation and commitment with the project activities and with the project coordinator.

3.5 Participatory Design

All communities have a Board of Directors/COCODE (Community Development Council) and a mayor. The communities Cruce Semuy, Las Camelia Monte Carmelo, Nueva Esperanza, Nuevo Amanecer, Nuevo Horizonte y nuevo Coban were visited and at least a member of the council was interviewed. The councils are active and have consented the activities of the project with the community.

In other cases, when dealing with individual properties, there is no direct relationship with the Board of Director, but with the individuals or through Cooperatives that represent the individuals.
Fourteen (14) project members with individual properties were visited and interviewed (see Annex 3). zeroCO2 has direct relations with all participants with regards to trainings and operational activities.

Once the areas and potential communities are identified, the project implements the following participatory process:

1- The first contacts and a programme of visits and training is carried out to provide more details about the objectives, scope, and proposed activities of zeroCARBON.

2- Through meetings and workshops, the commitments, responsibilities, and rights that both parties (zeroCO2 and community members) acquire as part of this initiative are made known to the potential participants (Acta Nº 06/2022) (Annex I/44/).

3- zeroCO2 and Vivero Mundo Verde technical assistance staff then make frequent visits to the individuals and communities to initiate the process to describe and evaluate the social and environmental conditions of the sites (pictures of the engagement process are available and interview with project participants shown the practical activities developed for this step of participatory process.

4- Once the availability, forestry, environmental and social conditions of the site have been assessed, the groups in charge are formed. These groups coordinate with zeroCO2 and Vivero Mundo Verde technicians who provide direct support in any situation that may arise. By the end of 2023 zeroCO2 plans to create representative groups at the community level that can include the demands of the different individual participants in a broad and effective way.

5- Technical training is carried out through theoretical and practical workshops and field visits, in which an exhaustive description of the Plan Vivo programme is given, as well as the minimum social and environmental conditions for the development of the programme (pictures of the engagement process are available and interview with project participants show the practical activities developed for this step of participatory process (Participant meeting, Listados de asistencia – ECA Monte Carmelo La Libertad (Annex I /43/)).

The stakeholder involvement in the participatory design process is correctly justified for the project, as shown in interviews, pictures of the events and engagement sessions.

The participatory design had been formally conducted prior the review of the technical specifications, where the methods of ANR (Assisted Natural Regeneration) - as escribed in document Annex 17 - Species List Natural Regeneration and the document *Integración de regeneración natural en zeroCARBON* (Annex 1 /18/) - were formally defined. During the interviews with the project members and communitarian leaders it became clear that the proposed method of implementation of ANR is unknown between the majority of the participants.

FAR #23/01:
The project coordinator shall include all interventions promoted by the project logic in the participatory design and review of the project, thus the ANR (Assisted Natural Regeneration), after the 5th year of starting the project. The project interventions reviewed must be discussed in collaboration with the project participants, who must work in partnership to explore and identify preferred options of natural regeneration and in addition, to discuss biodiversity (selection of species) and the monitoring process.

3.6 Stakeholder Consultation

Once groups are identified as stakeholders or groups that show an initial interest in participating collectively, preliminary meetings are held in which the activities, benefits, rights and obligations of each stakeholder in participating in the carbon programme are explained.

Following this meeting, the participants understand the project, and meet within their organisation to determine those that are interested in participating or in providing inputs for the project. The interviews revealed that all parties were equally involved, ensuring the inclusion and non-discrimination of those considered most vulnerable due to issues of gender, ethnicity, or age. In the presence of ethnic indigenous people, zeroCO2 involved a local bilingual interpreter to ensure a full understanding of the program and to address their concerns.

The stakeholder engagement plan in the zeroCARBON project is based on the following steps:
A- Meetings with individuals, cooperatives or organized groups that are interested in participating in the project.
B- Each beneficiary community will be organized, according to the plan established by the project coordinator (zeroCO2), by a Board of Directors.
C- zeroCO2 &Vivero Mundo Verde and the Board of Directors of each community, design the training plan for forest management and control of the project, comprising:
i- Climate change and explanation of the project agreement, rights and obligations.
ii- Establishment of plantations and agroforestry systems.
iii- Prevention of forest fires.
Iv- Prevention and management of pests and diseases,
v- Maintenance, fertilization and other practices that participants are interested in.

The pertinent consultations are carried out with the project participants as follows:
- Information about the functioning of the project was provided to the participants upon receiving notification of interest in participating.
- Each community proposed their own way of participating according to what best suited their possibilities, planting, agroforestry systems, silvo pastoral systems or others, including annual crops for as long as the planted trees would allow.
- The feedback from the communities is an input information on what type of system is best suited to their land, pest typology or vulnerable areas in terms of floods, fires or others.
- To ensure full participation and proper representation of all participants a committee to represent the participants, in addition to the Community Board of Director.

The project coordinator has consulted correctly the stakeholders at the beginning of the project and has made a correct stakeholder consultation plan for the future consultations, such as demonstrated by the interviews with local stakeholders (cooperatives, communitarian leaders) and the records (pictures and attendance lists) of FPIC process and stakeholders consultation (Images of participatory design, DSC01640 - DSC01645 - DSC02031-189; Attendance List – ECA Monte Carmelo La Libertad, Acta Nº 06/2022; Images of participatory design. DSC01340-80 - DSC00883-19 - DSC00878-18 ECA Se'inup, Acta Nº 43/2022 (Annex I /43/, /44/ and /47/)).

3.7 Free, Prior and Informed Consent (FPIC)

After a comprehensive stakeholder assessment and a collection of interests from the communities approached, the local team of zeroCO2 and Vivero Mundo Verde conducted specific meetings, where rights and obligations of joining the zeroCARBON program were defined. Participants who confirmed their interest in participating in the program were included in the working group. All parties were equally involved, ensuring the inclusion and non-discrimination of those considered most vulnerable due to issues of gender, ethnicity, or age. In the presence of ethnic indigenous people, zeroCO2 involved a local bilingual interpreter to ensure a full understanding of the program and to address their concerns. Once they had ensured full understanding of the program, and resolved any further concerns, the members of the community-designated Board of Directors collected the memberships and made them official to the project coordinator.
A structured participatory approach lasts approximately 4 months (from meeting 1 to 4). During this process, the needs of the participants are listened to, and the technical bases of the intervention are defined and implemented in the field with the support and presence of the local zeroCARBON team. Then, once the design is defined, the technical training plan is implemented in the field and follow-up visits are made. Continuity in the relationship with the participants is the key element for the success of the program.
The following is a brief description of the steps to carry out the program.

First meeting - project information (month 1 and 2): People from the community, informative about what Zeroco2 is, what they do, how they do it, with whom they can be part of the project.
Second meeting - construction of project design (month 3): Interested people from the community, descriptive information of the requirements to be part of the project, availability and interest of the person, requirements of the species to be planted, availability of land to execute the project, description of the types of intervention that exist in the project, characteristics of the area where they will plant.
Third meeting - technical evaluation of the design in the field (month 4): Visit to the areas proposed for planting, evaluation of the characteristics of the area to determine if it is suitable for the species to be planted, discussion and decision making on what type of intervention is appropriate for the area.
Fourth meeting - Applied workshop 1: measurement of the area, first workshop "establishment of forest plantations or agroforestry systems" consists of the beginning of the technical training of the people for the adequate planting of the plants.
Fifth meeting - Applied workshop 2: second workshop "Plantation management" consists of transmitting knowledge of the importance of proper management of plantations to achieve the objectives set, the activities considered in this workshop are thinning, pruning and health monitoring.
Sixth meeting - Applied workshop 3: Third workshop "Pest and disease management" as a result of the activities recommended in the second workshop "health monitoring", the presence of pests or diseases in the plantation is identified, the third workshop aims to provide people with the ability to identify the pest or disease present in the plantation and to manage it properly to ensure the good health status of the plantation.
Seventh meeting - Workshop applied 4: Fourth workshop "Prevention and control of forest fires", the importance of prevention and control of forest fires to ensure the permanence of the plantation is made known.
Follow-up visits: Follow-up visits are carried out to monitor the implementation of the activities recommended in the workshops and when the plantation is not in operation.

The FPIC process is correctly justified, accurate and complete for the project and provides an understanding of the nature of the project for the Project Members and the communities affected by the Program of Activities of the project, such as demonstrated by the interviews with local stakeholders (cooperatives, communitarian leaders) and the records (pictures and attendance lists) of FPIC process and stakeholders consultation. (consultation's images - participatory design DSC01640 - DSC01645 - DSC02031-189 Attendance List – ECA Monte Carmelo La Libertad, .Acta Nº 06/2022 and Act Nº 07/2022; Images of participatory design DSC01340-80 - DSC00883-19 - DSC00878-18 ECA Se'inup, Acta Nº 43/2022 (See Annex I /43/, /44/ and /47/)).

PROJECT DESIGN

Baselines

3.8 Baseline Scenario

Over the last 15 years, deforestation and forest disturbance have, in fact, affected all forested areas in Guatemala, even protected areas, with deforestation rates of around 850 thousand ha (2000 – 2015, FAO). Communities are therefore much more likely to adopt subsistence land management systems that allow for steady income but, at the same time, lead to the inevitable degradation of soil fertility.
Field visits observation revealed mostly subsistence land management systems with degraded agricultural land and pastureland, across the boundaries of the project and also as common practice in the visited region. Thus, the project participants in general are still implementing agriculture and

pastures in their plots. The restoration with native trees will only take part of a fraction of the properties.

Step 0: preliminary screening based on the starting date of the A/R project activity
- Site visit of plantations established from 2020 to 2023 were done and the comparison between the plots with the same age.
- 20 samples of "Hojas de aprobación de participación al proyecto ZeroCO2" Monte Carmelo, Nuevo Horizonte, Cruze Semuy, Canahan, Nuevo Cobán, El Eden) from 2020 to 2023 were reviewed (Annex I /32/)

Step 1: Identification of alternative scenarios
- The site visits and the interviews are in line with the description of PDD and revealed the scenarios are matching with the project participants taking into account relevant national policies and circumstances, such as historical land uses, practices and economic trends. External sources were consulted such as SEGEPLAN, 2011. Petén: Proceso de Actualización del Plan de Desarollo Integral. Diagnostico Teritorial, Tomo I. Guatemala City, Guatemala: Secretaria General de Planificación y Programación de la Presidencia, April 2011 (Annex I / 57 /).

Step 2: Barrier Analysis
- local ecological conditions: site visits revealed the soils are intensively degraded by the agricultural and cattle raising. The relief and the drainage are also factors stated by the farmers as challenging for some parts of the plots.
- Investment barriers: PROBOSQUE policy of investments has proved to be insufficient to ensure the creation of large-scale, long-term, community-based projects such as stated by the farmers and stakeholders interviewed. Reforestation and management plan requires major upfront investments that cannot be covered by national subsidies alone, such as demonstrated by the comparison of PDD financial plan and the subsidies approved by hectare by PROBOSQUE Prognma de Incentivos para elestablecimiento, Recuperación, Restauración, Manejo. Producción y Protección de Bosques (https://www.sifgua.org.gt/SIFGUAData/PaginasEstadisticas/Recursos-forestales/probosque.aspx) (Annex I / 58/).

- Technological barriers: It was clearly demonstrated the lack of knowledge of the farmers on how to proceed an ARR project. The difficulty to find, collect and store seeds and seedling production are key points stated by the farmers and stakeholders which is very challenging for the forest plantations.
They also demonstrate the lack of knowledge and experience of how to prevent fire and pest and disease attacks.

Step 4. Common practice analysis
The comparison with other projects (private project observed from the road on 07/11/2023), including those where PROBOSQUE is financing part of the activities, clearly shows the additionality of projects implemented from 2020 to 2023 by PD.

Site visits and the interview in the local communities shows the assertion of baseline definition and its likely scenario in the absence of the zeroCO2 project. Therefore, the baseline scenario is correctly justified for the project intervention.

3.9 Carbon Baseline

The most likely reference scenario has been assessed to be the land use prior to the implementation of the project activity which is pastureland and cropland. The Methodological Tool A/R "Estimation of carbon stocks and carbon stock variation of trees and shrubs in CDM A/R project activities" (Version

04.2.) was correctly followed and the ex-ante and ex-post variation of carbon stocks of trees and shrubs in the baseline can be considered as zero.

Table 3. Total net-greenhouse gas emissions under the baseline scenario

Year	Baseline emissions (t CO_2e)
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0

3.10 Livelihood Baseline (initial status and expected change)

The change in forest cover or large-scale reforestation is evident in Petén due to the arrival of cattle ranching and palm oil companies. In the case of extensive cattle ranching, it affects all of Petén, while oil palm has mainly affected the municipality of Sayaxche. Evidence to this phenomenon can be seen through satellite analysis showing the change in coverage from 2000 to 2020.

The expected change in livelihoods is based on the project participants having a secure annual income for a medium term through the sale of carbon credits and, in the long term, an income from the sale of timber obtained from the plantation through sustainable management. These two aspects can ensure an improved quality of life, something that agriculture cannot guarantee due to the region's soil infertility and the effects of climate change.

Under the baseline scenario, generally for people who do not participate in the project, the medium-term result is the progressive loss of soil fertility regardless of use (whether agricultural or livestock). This would, in turn, lead to increased use of chemical fertilizers that would damage the soil as residual or organic amendments, increasing the cost of agricultural production. In the case of livestock, climate change is affecting livestock production in the Petén, which indicates the need to diversify the management and production of plots (production projects and forest-environmental projects).

Currently in Guatemala there are forest plantations of different species (cedar, mahogany, melina, teak, etc.) whose products are sold in the national and international markets. Some data on the supply of timber from plantations can be found in the mapping of forest plantations in Guatemala on the website of the National Institute of Forests -INAB-, (www.inab.gob.gt). In Petén, examples of timber projects include Taca and Melina, fast-growing exotic species, while cedar and mahogany are species to be harvested in the medium and long term.

Given the field observations and interview with local stakeholders, affected communities and project members, the expected livelihood change is correctly justified, accurate and complete for the project.

3.11 Ecosystem Baseline (initial and expected change)

During the initial stage of participant onboarding, the operational team conducts a preliminary analysis of the plot where the person interested in joining the project wishes to introduce a forestry or agroforestry system. Several factors are assessed here, such as topography, soil type, drainage, and the current and historical land use of the area. Areas that are forested or that have advanced natural regeneration as current land use will not be accepted in the project, as well as areas in which the characteristics are not appropriate to introduce the species used in this project.

Under the baseline scenario, the continuation of cropland and pastures, the project region will continue experiencing a conversion from forests into these land uses. This expectation is based on the historical and current trends in land use practices and forest loss in the region, which have been widely documented (Over the last 15 years, deforestation and forest disturbance have, in fact, affected all forested areas in Guatemala, even protected areas, with deforestation rates of around 846,000 ha in the period 2000 - 2015 as reported by the FAO MacDicken et al. 2016).
Both land uses require the conversion of forests, with its consequent loss in ecosystems services and biodiversity. The continuation of forest loss will have associated impacts in the project region including a decrease in soil fertility, loss in habitat availability and connectivity, less water availability and an increase in temperature.
In the absence of alternative land uses that are economically viable and do not rely on deforestation, such as the interventions proposed in this project, the trends in ecosystem degradation and deforestation will continue to take place, together with the population loss of fauna and flora species that populate the Peten-Veracruz humid forests. ZeroCO2 aims to address the main drivers of forest loss by bringing forward forestry and agroforestry as alternative land uses that respond to the socioeconomic needs of the population and are beneficial for the ecological conditions of the project region.
The interventions proposed are providing an economically viable alternative to the dominant land uses that are causing deforestation and ecosystem degradation in the project region. Besides, the gradual regeneration of agro-ecosystems will result in increased biodiversity, greater resilience to extreme weather events (droughts, floods) and increased carbon storage per unit area, in addition to increased soil fertility and stability. The project will also allow for the rapid sequestration of carbon in the woody material, addressing the mitigation to the climate crisis.
Based on these characteristics, the most suitable type of intervention and the most appropriate species for each participant are recommended.
During the visits to the plots there were checked the forms of evaluation and monitoring fulfilled specifically for each project member and project site (Final_Sampling june 2022_v1_0223: Sampling_Montecarmelo2: Carbon x sampling point) (Annex I /52/).
The expected ecosystem baseline is correctly justified for the project.

Theory of Change

3.12 Project Logic

Community leaders and project participants are engaged in to promote reforestation and to get valuable timber from the plantations as well as generate incomes from environmental services.
It was observed that the plots are being managed according to the technical specifications, and the conservative scenario reflects a suitable precautionary approach. The interviews revealed a community trained and willing to promote natural and assisted regeneration of the area through valuable timber species, cedar and mahogany. Besides, the objective is to promote natural regeneration in the project sites from year 5, which has been included in the project agreements.
At this early stage of the project a 20-year rotational forest planting will be considered, with reference to cedar and mahogany.
During annual monitoring, the different management approaches followed by the participants are then determined and documented (Technical Description for the Management of Forest Plantations and Agroforestry Systems of ZeroCO2 Project – Petén - Guatemala – 2020. – Annex 11- Land management Plan) (Annex I /53/).

The project logic is correctly justified, accurate and complete for the project.

Technical Specification

3.13 Project Activities

The PDD has proposed to improve the biodiversity benefits of the project design and has decided to gradually incorporate Assisted Natural Regeneration into the forest plantations to increase the number of native species per hectare while maintaining the productivity of the plantation. It is planned to be implemented in 100% of the plots of every participant of zeroCARBON. A comprehensive data research and methodology rationalize the implementation of ANR at the field level (PDD Annex 18 - Assisted Natural Regeneration Proposal and CO2 estimation (Annex I /54/)).
Even though the ANR intervention is currently in its development phase, it is already incorporated into the foundation of the project design of zeroCARBON. There is an initial management and monitoring plan, and a strategy for the engagement and capacity building of participants to ensure the permanence of the interventions. The outcomes will be monitored and documented in the annual reports from year 4 onwards.

As the validation was conducted in an early stage of ANR design, when initial consultations with participants were taking place, participants were still not fully informed about the application of ANR in their plots. For that a FAR was raised with regards to requirement 2.4.

Regarding agroforestry, it was observed that there are already participants who have adopted a mixed model integrated perennial crops within the forestry plantation, but this is not registered as a project intervention once zeroCO2 is not actively providing those crops or incorporating them into the CO2 accounting. Agroforestry system as the project intervention is planned to be fostered for systems with forestry and fruit trees (provided by zeroCO2), while assessing nursery production capacity and the most suitable fruit species to include.

CAR #23/01:
Project activities listed are not clear as the Project Proponent writes about agroforestry systems with annual crops yet are planting cedar (cedrela odorata) and mahogany (Swietenia macrophylla) at a density of 1,111 saplings per hectare. It needs to be explained in the PDD how both agroforestry will occur within a monoculture plantation of cedar (cedrela odorata) and mahogany (Swietenia macrophylla).

The project activities are correctly justified for the project intervention and after the review of updated PDD CAR #23/01 was closed.

Table 4 Project Activity Summary

Project Intervention	Project Activities	Inputs	Validation Assessment
Improved land management through forest plantations and agroforestry	Manage wasteland exploited by years of monoculture and extensive grazing by planting tree species to produce wood and other products. The use of native species such as cedar (Cedrela odorata) and mahogany (Swietenia macrophylla) is done. In almost all cases, after the start of forest cultivation, agroforestry systems with annual crops, first and foremost maize, are established for the first few	-Seedlings -Technical tools -Carbon benefit distribution	- site visit to the nursery and assessment of seedling production - Interview with the technical staff - Interview with project members - site visit to the plots and assessment of forest plantations establishment, sanity of

	years. The planting density is 1,111 plants per hectare. The long-term management goal is to reach year 20 through natural regeneration assisted by a complex, biodiverse system, with a gradual transition from plantation forestry to sustainable forest management. ZeroCO2 will guide communities in long-term plantation planning. By training project participants in organic management and promoting complexity. When, together with Cedar and Caoba, perennial fruit tree species are planted, planting densities will be reduced to 100 to 400 forestry plants per hectare. This second planting system is considered as an agroforestry system (SAF).		plots and agroforestry practices. - Document - Integración de regeneración natural en zeroCARBON (Annex I/48/)

3.14 Additionality

According to the results from the PDD review and field observations the validation team concludes that the additionality of the project intervention is correctly justified for the project. Additionality is correctly justified for the project (see also chapter 3.8 and Table 5 below).

Table 5 Additionality Assessment Summary

Project Intervention	Main Barriers	Activities to Overcome Barriers	Validation Assessment
Improved land management through forest plantations and agroforestry	**Financial & social** The project targets communities struggling with high levels of chronic poverty without the financial means to invest in planting and restoration activities. Significant initial liquidity problems (high initial costs and medium- to long-term return on investment) discourage the start-up of projects in favour of "business as usual" land	The project will provide communities with the primary resource (trees) and the tools for proper and effective management of the resource over time.	Social and Financial. - site visit to the communities revealed the social risk of poverty and lack of assistance for subsistence production development. - site visit to the nursery revealed the plant production of designed species (Caoba y Cedro) - Visit to the plots revealed the trees planted and the empowerment of members and communities for the management of plantations. 20 samples of “Hojas de aprobación de participación al proyecto ZeroCO2” Monte

	management practices.		Carmelo, Nuevo Horizonte, Cruze Semuy, Canahan, Nuevo Cobán, El Eden) (Annex I /32/). Technical - - site visit to the communities revealed the absence of technical assistance for forestry or agroforestry systems, being the traditional agricultural and pasture lands with high degraded soils the common practice. - Boletas de evaluación de área a plantar (Annex I /30/) - Interview with the technical staff and project members shows the capacity building process brought by the project and the establishment and growing hectares are evidencing the theory of change for the local people. Institutional Stakeholders consultation and communitarian leaders interviews revealed the low participation of local villagers in governmental assistance programmes and the difficulties of organization around a subject, such as environmental services reforestation or soil conservation and enhancement practices. Site visits and assessment of forest plantations establishment, sanity of plots and agroforestry practices revealed promising as the
	Technical High training deficit in forestry and other fields necessary for sustainable management. Few projects with similar characteristics have been attempted in the Peten region.	This programme utilizes the experience of forestry experts and brings that experience to the community. The zeroCARBON project is able to lead on cycles of training with the specialized operational team on site and the institutions (local universities) with which zeroCO2 works. As the project grows, the number of experts and stakeholders involved could increase and provide knowledge of good practices in sustainable forest management and agroforestry.	
	Institutional The systems prevalent in the region hardly ever involve trees, although the Mayan tradition was quite the opposite. The current widespread management involves a continuous subsistence farming	Through the project, it will be possible to gradually rediscover traditional agroforestry management methods of the Mayan culture. Through the project, communities are being empowered with the technical tools and knowledge to adopt a more	

	cycle through the typical 'milpa'. There is no set-aside or crop rotation due to the limited availability of land. This leads to a rapid impoverishment of the land. Lack of support from state and private institutions to the communities involved.	sustainable approach to land management. The project provides training on social organization and management of local institutions.	driver for the formation of Groups and Councils focused in the empowerment of local people to manage their land in a sustainable manner. Ecological Site visits and interviews with technical staff and project members revealed that extreme dry seasons or severe weather conditions have become more common and the difficulties with lack of water for breeding and cultivation has caused total breakdown of small holders and consequently rural exodus. The project ZeroCO2 has adapted the planting activities for to take place in rainy seasons and avoiding the competition for water between cultures (subsistence and restoration). Therefore, it is mentioned by the farmers that the forestry has helped the water regulation, controlling floodings and soil moisture retaining for the Guamil and other agroforestry system.
	Ecological barriers Natural events such as floods, unpredictable climatic conditions, land-pressures such as intensive grazing and monoculture plantation. Particularly, one of the main ecological barriers is the disrupted weather patterns during the rainy season, which is leading to many smallholders having limited access to water and therefore limited opportunities to start forestry practices that can make their land productive and profitable. The production of seedlings that make the establishment of forestry plantations possible, have limited growth periods that mostly coincide with the dry season when	The project produces seedlings in the nursery for those individuals who want to participate in the project but who lack access to water to produce seedlings during the dry season. Seedlings are delivered to project participants when the rainy season begins so they can plant them when water is available. The project considered water availability as a key ecological barrier in selecting species and developing the project intervention. The planting systems take into consideration the specific precipitation conditions of the project area.	

	they heavily depend on water. This represents a barrier for smallholders to access forestry land uses.		

3.15 Carbon Benefits

Calculations of Carbon Benefits are validated and reported in detail at Annex 6 _Carbon calculation spreadsheet and tech specs_v2.1 (Annex I /13/).

CAR #23/02
The crediting period in the PDD and in the carbon model and other supporting documentation was not aligned. The submission of the updated PDD where the crediting period was set to 20 years was considered sufficient by the validator to close the CAR.

The validation team has assessed the calculation provided by zeroCO2 and considers it correct and in line with the applied methodology.

Table 6 Validated Carbon Benefits Summary in the crediting period

Project Intervention	Baseline Emissions (t CO_2e/ha)	Project Emissions (t CO_2e/ha)	Leakage Emissions (t CO_2e/ha)	Carbon Benefit (t CO_2e/ha)
Improved land management through forest plantations and agroforestry	0	- 100,354.44*	0	100,354.44**
*without long term average **with long term average				

Table 7 Validated Plan Vivo Certificate Potential

Project Intervention	Carbon Benefit (t CO_2e/ha)	Project Area (ha)	Total Carbon Benefit (t CO_2e)	Risk Buffer 20% (t CO_2e/ha)	Potential PVCs (t CO_2e)
Improved land management through forest plantations and agroforestry	229.12	437,5	100,354.44	20,070,49	80,283,95
TOTAL	229.12	438	100,354.44	20,070,49	80,283,95

Risk Management

3.16 Environmental and Social Safeguards

3.16.1 Exclusion List

The project does not include any activities listed in the Plan Vivo Exclusion List (as reported in PDD Annex 8 (Annex I/26/). The only aspect on which a degree of uncertainty remains is in relation to pesticides.
- Weed management will mainly be done manually.
- Pesticides are almost always too expensive for communities. However, at this stage we cannot exclude a priori that no participants will use them.
- zeroCO2 monitors the aspect of pesticide application and continues to train communities to adopt nature-based solutions and eliminate the use of synthetic products (both pesticides and fertilisers) where use occurs.
- zeroCO2 also provides and develops alternatives with communities such as mulching, green manure, composting, bio-fertilisation and climate-smart fertilisation (biochar)
The exclusion list is correctly justified for the project.

3.16.2 Environmental and Social Screening

Project interventions will only be implemented in areas with degraded forest cover and scarce vegetation, these being either pasture or low-productivity agricultural land. These areas currently do not provide suitable conditions for most wildlife species and diminished ecological conditions. Thus, the project won't cause considerable impacts on biodiversity. The team follows strict requirements regarding the areas eligible to be included in this project, to ensure that the project interventions are not implemented in areas of ecological value and to avoid negative impacts on biodiversity. Besides, the risk of leakage and its associated degradation of ecosystems and their natural resources as a result of displacement of agricultural activities, is minimal.
Pesticides use is not being implemented by the participants due to its cost. Pesticides are only used, if so, during the first 2 to 3 years since planting. Besides, quantities needed for this project are minimal, and their application will be strictly controlled by project staff. The precise quantities that will be implemented together with the maximum levels is provided in the management plan, to demonstrate that the applied quantities will always remain well below harmful concentrations.

The complete environmental and social screening report is correctly justified for the project intervention, such as detected during the site visit, PPD review and interview with local affected stakeholders and project participants.

Table 8 Environmental and Social Risks

Risk Area	Significance (low, moderate, severe, high)	Validation Assessment
Vulnerable Groups	Low	- PDD Annex 11 – Land management plan (Annex I /53/) - PDD Annex 10 – Environmental and Social Assessment Report
Gender Equality	Low	
Human Rights	Low	
Community, Health, Safety & Security	Low	
Labour and Working Conditions	Low	

Resource Efficiency, Pollution, Wastes, Chemicals and GHG emissions	Low	(Annex I /28/). - Site Visit to the communities and project interventions (plots of forest plantation and Agroforestry systems) have confirmed the correctness and completion of risks significance. - Interview with local villagers and project members revealed the same perception of risk significance as figured by the Project Developer.
Access Restrictions and Livelihoods	Low	
Cultural Heritage	Low	
Indigenous Peoples	Low	
Biodiversity and Sustainable Use of Natural Resources	Moderate	
Land Tenure Conflicts	Moderate	
Risk of Not Accounting for Climate Change	Moderate	
Other – e.g. Cumulative Impacts	Low	

3.16.3 Environmental and Social Assessment

As described in the screening process, zeroCARBON is classified as a low-risk project. This being considered, and following the recommendations of Plan Vivo, a full environmental and social risk assessment was not required. However, every potential risk that was identified, including low and moderate risks, have been accounted for and considered in the design of this project. The corresponding mitigation measures applied for every identified risk are detailed at the Environmental and Social Management Plan which have been validated during this assessment.
During the initial risk assessment, there were several identified themes that could pose a significant risk to the project, particularly in regard to climate change risks, use of pesticides and biodiversity. In this case, the scope of the assessment was expanded to gain a better understanding of the potential impacts that these issues could generate in the project. The extended assessment of the three themes is provided in Annexes of PDD, including an explanation of the analysis that was performed to evaluate the significance of each risk and a description of the measures developed to minimize their potential impacts.
The environmental and social assessment report is correctly justified for the project activity.

3.16.4 Environmental and Social Management Plan

The following plan of mitigation of mapped impacts is in place and were checked during the site visit and interviews with stakeholders and project participants.

Pest and illness
– Preventive management, Trap placement, Plague and illness management

Wildfires
- Fire-cutting bands, Removal of fuel wood from program areas. Identification of critical areas

Droughts and extreme weather events –
- Mulching. Living fence against extreme weather events. Replanting. Correct tree species distribution to their resilience to flooding / drought.

Biodiversity and sustainable use of natural resources
- All project interventions will be carried out in ecologically degraded plots with low levels of biodiversity. Forest plantation, combining Assisted Natural Regeneration.

The project interventions are not implemented in areas of ecological value and to avoid negatively affecting local fauna and flora.

Land tenure conflicts
- Plots are owned by an individual with title deeds. The income from sales from carbon benefits is expected to discourage the property abandon or sale to third parties interested in acquiring land for other unsustainable land uses. Grievance Mechanism and liaison with local institutions (Community council, municipality, INAB and others) to address complains and disputes.

Pesticide Use –
Application only when needed for the first 2/3 years of the plantation to ensure tree establishment. Minimal use and application controlled by project staff. Capacity building workshops for participants on alternative methods will be implemented to encourage a transition in the project area.

Indigenous peoples-
The language barrier has been identified as a main factor of Indigenous people´s vulnerability in relation to this project. zeroCO2 uses a local translator to communicate with indigenous communities to facilitate their engagement in the project. FPIC process, based on existing indigenous institutions and cultural values.

Vulnerable groups –
Engagement process personalized to the most vulnerable individuals, such as old age, gender, participation in community assemblies or the existence of a family support system, to ensure they are given specific support. Value adding to their land with medium and long term sustainable activities (carbon and timber). Every participant, including the most vulnerable farmers, will be provided with all the tools and capacity needed to implement the land management plan and benefit from products and PVC sales.

Gender equality-
High participation of women in community board of decision-making. Strong participation in the capacity building and project interventions.

The environmental and social Management Plan is correctly justified for the project activity.
- Interview with local villagers and project members (see table List of interviewed stakeholders, local affected parties and project participants, item 1.7)
Title deeds registered in the general Property Registry of Guatemala (see 3.2.2. – Land and Carbon Rights)
Final_Sampling june 2022_v1_0223: Sampling_Montecarmelo2: Carbon x sampling point (Annex I /52/).
Technical Description for the Management of Forest Plantations and Agroforestry Systems of ZeroCO2 Project – Petén - Guatemala – 2020. – Annex 11- Land management Plan (Annex I /53/).
Attendance List – ECA Monte Carmelo La Libertad (strong women participation) (Annex I /43/44/)

3.16.5 Native Species

No non-native species is planted or promoted by zeroCO2 for any purpose.

3.17 Achievement of Carbon Benefits

Selectable PVCs: 90% (total saleable PVCs after future 20% risk buffer reduction.)
The remaining 10% not issued, will be kept in a Conservation Reserve that can be cancelled if the project fails to convert part of the fPVCs or PVCRs to PVCVs.

Calculations of Carbon Benefits are validated and reported in detail at Annex 6 _Carbon calculation spreadsheet and tech specs_v2.1 (Annex I/13/).
The achievement of carbon benefits is correctly justified, accurate and complete for the project intervention.

3.18 Reversal of Carbon Benefits

The impact and probability of the risks to the long-term maintenance of the project's carbon benefits were scored for each of the risk factor to reversal of the carbon benefits achieved by the project. All the mitigation measures are in place and being monitored.
The determined value of the overall risk rating is fair and suits to the scenario presented in the context of the project activities implementation.

Table 10 Risk of Reversals

Risk Factor	Mitigation Measures*	Score	Validation assessment
Land tenure and/or rights to climate benefits are disputed	Communities' inclusion and engagement process. An accompaniment and informed consent, as well as a participatory planning and continued stakeholder consultation over program lifespan, reduce the likelihood of disputes and conflicts. In general, there are minimum criteria in the participant selection process regarding the rights that participants must have over land, the main risk factor associated with the program.	2	Cross referenced with 3.12 Project Logic and 3.14 additionality sessions (detailed in PDD section 3.5 – Project Logic). Interview with local stakeholders and project members. Site visit observations. RESOLUCIÓN DE DECLARATORIA TIERRAS COMUNALES Comunidad Monte Carmelo 27/11/2020 - REGISTRO GENERAL DE LA PROPIEDAD EMPRESA CAMPESINA ASOCIATIVA ECA MONTE CARMELO Finca Numero 1133 Folio 133 Libro 223E de El Peten – La Libertad. (Annex I/40/) - RESOLUCIÓN DE DECLARATORIA TIERRAS COMUNALES Comunidad Nuevo Horizonte 27/11/2020 (Annex I/41/) - REGISTRO GENERAL DE LA PROPIEDAD COPERATIVA INTEGRAL AGRICOLA NUEVO HORIZONTE", RESPONSABILIDAD LIMITADA

			Finca número 740 Folio 99 Libro 5 de El Peten . Finca 450 Folio 59 LIBRO 4 DE EL PETÉN (SANTA ANA) (Annex I/34/) Title of property registered in the general Property Registry of Guatemala. MARCELINO XO CUC FINCA 6176 Folio 176 Libro 13E de El Peten(SAN ROMAN) (Annex I/34/) MATILDA CABNAL YABAT DE CACAO FINCA 6793 Folio 293 Libro 194E de El Peten (EL EDEN - SAYAXCHÉ). (Annex I/35/) TEREZA CAC CAAL FINCA 9155 Folio 55 Libro 19E de El Peten (LAS CAMELIAS – SAYAXCHE) (Annex I/36/) INGRI LORENA CHOC ICAL FINCA 6865 Folio 365 Libro 14E de El Peten (Tezulutlan I – SAYAXCHÉ) (Annex I/37/) MARIO CAC CAAL Y MARÍA ELENA POP ICAL DE CAAL FINCA 5900 Folio 400 Libro 32E de El Peten (CRUCE SEMUY – SAYAXCHÉ) (Annex I/38/) BERNARDO CAC CAAL FINCA 159 Folio 159 Libro 21E de El Peten. (LAS CAMELIAS – SAYAXCHÉ) (Annex I/39/)
Political or social instability	zeroCO2 is linked to Guatemalan forestry institutions and policy makers and is updated as regulations change so that it can respond to potential changes.	3	Interview with local stakeholders and project members. Introductory Letter for INAB detailed in PDD section 5.1. Governance Structure

Community support for the project is not maintained	Communities' inclusion and engagement process An accompanying and informed consent, as well as participatory planning and ongoing stakeholder consultation throughout the life of the program, reduce the likelihood of a loss of interest and thus a lack of support for the program. Receiving benefits from fPVCs and other products will increase their interest and motivation to participate. In the worst case scenario, new participants would be considered.	4	PDD section 2.4- Participatory design Acta Nº 43/2022 – ECA Se'inup Acta Nº 07/2022 - 10/07/2022 ECA Monte carmelo - La Libertad. Acta Nº 08/2022 - 14/07/2022 Cooperativa Nuevo Horizonte – Santa Ana. (Annex I /45/46/47/) Interview with local stakeholders and project members. Site visit observations.
Insufficient finance secured to support project activities	Market access and employment. zeroCO2 provides sufficient funds and resources for project start-up in terms of development (tree provision), management, and monitoring (local team). This is complemented by the commercial and strategic activity of selling fPVCs already initiated by zeroCO2, based on the growing interest in PVCs also following ICROA's endorsement of the standard. This activity will be strengthened over time, including in terms of integrating new resources into the sales team engaged in these products.	3	Interview with local stakeholders and project members. Site visit observations. PDD section 3.3- Livelihood baseline and 5.4 financial plan. (Annex I /1/)

Alternative land uses become more attractive to the local community	Training programs Market access and employment Accompaniment, awareness, and informed consent; training complementary to forestry programs; production diversification (timber and non- timber) and market access support.	4	Interview with local stakeholders and project members. Site visit observations. PDD section 3.3- Livelihood baseline, section 2.3 project participants and 3.5 ProjectLogic (Annex I /1/)
External parties carry out activities that reverse climate benefits	Forest management plan implementation and monitoring	2	Interview with local stakeholders and project members. PDD section 3.9 risk Management and 3.11. reversal of carbon. (Annex I /1/)
Fire	Forest management plan implementation and monitoring -Removal of fuel wood from program areas -Fire-cutting bands -Identification of critic areas -Surveillance	1	Interview with local stakeholders and project members. Site visit observations.
Pest and disease attacks	Forest management plan implementation and monitoring -Strong pest management control (see technical specifications) -Tree species diversification (living fence)	4	Interview with local stakeholders and project members. Site visit observations. PDD section 3.9 risk Management and 3.11. reversal of carbon. (Annex I /1/)

Extreme weather or geological events	Designing and planting activities - Replanting of trees as required Selecting drought - resistant species - Planting operations in the right season These types of risks are limited to the first years of the project.	2	Interview with local stakeholders and project members. PDD section 3.9 risk Management and 3.11. reversal of carbon. (Annex I /1/)
Capacity of the project coordinator to support the project is not maintained	Training Adequate training of project managers and staff in zeroCO2. The administrative process is in continuous improvement	2	Interview with local stakeholders and project members. PDD section 5.1 . Governance Structure (Annex I /1/)
Technical capacity to implement project activities is not maintained	Training Ongoing and focused training for technical capacity building and monitoring programs.	3	Interview with local stakeholders and project members. PDD section 3.8. Benefits Sharing (Annex I /1/)

3.19 Leakage

Within the applicability of methodology AR-ACM0003, the main source of leakage emissions considered in the selected methodology is leakage due to displacement of agricultural and pastureland activities. In the event of leakage occur, it will be calculated using the A/R CDM methodology using AR-TOOL15 : "*Estimation of the increase in GHG emissions attributable to the displacement of pre-project agricultural activities*".

The project intervention takes place on low productive land and, in every case, the participant already has an area of its land dedicated to agricultural activities, as its conditions are more suitable for that. This means that none of the participants' agricultural production will be compromised, as the forestry or agroforestry use will be complementary to the agricultural use that was already present before the start of the project.

Since families have a more suitable land for subsistence agricultural production, all participants will retain the current scale and production of their agricultural plots. Therefore, there will not be a need to claim other forested land for agriculture use, minimising the risk of leakage. On the contrary, one of the objectives of the project is to encourage the local population to adopt forestry land uses instead of continuing with cattle ranching or extensive agriculture, and thus, reduce deforestation in the project's area of influence.

However, during the initial activity in the project area, no displacement of pre-project agricultural activities is expected to occur and, if they do occur, they will be on land with equal or lower Soil Organic Carbon (SOC) and biomass stocks than the original agriculture.

During the project duration land cover analysis through remote sensing and on field survey will be performed to avoid this possibility. Therefore, in the first instance, leakage losses will be considered zero (LK,t =0).
The leakage is correctly justified for the project intervention.

3.20 Double Counting

ZeroCarbon has no intention to generate any other form of GHG-related environmental credit for GHG emission removals claimed under the Plan vivo program. zeroCO2 will use the Plan Vivo database to track, archive and manage carbon sales.
ZeroCO2 will also maintain an internal database modelled on that of Plan Vivo to track monitoring data, carbon sales and the amount paid to producers so that all carbon sales can be further tracked and linked to monitoring indicators.
The Project Developer implement efforts to not overlap the *Project Areas* with other greenhouse gas emission reduction projects or initiatives generating transferable emission reduction or removal credits from the same carbon pools or emission sources.
Measures implemented to follow up the sales accounting and the gathering of participants are correctly justified for the avoidance of the double counting.

3.21 Key Agreements to validate

The following aspects were assessed by the validation team:

1) Participatory process of Land Management Plans
- Disclosure and understanding of the process and monitoring of the carbon project;
- Acceptance of rights and obligations due to the program adherence;
- Benefit analysis and livelihood enhancement.
- Balance between food security of production and participation in the project;
- Definition of location and extent of area;
- Definition of activities to be carried out during the project
    - Establishment of the plantation;
    - Elimination of weeds within the plantation.
    - Removal of branches from a tree for a positive development of the trees
    - Sanitation pruning to eliminate damage caused by pests or disease.
    - Selective felling every four years depending on the need for space and nutrient.
    - Protection against pests and diseases.
    - Forest fire prevention and control.
    - Final cutting after 21 years
    - Replanting or simple Natural Regeneration Conduction.

2) Collaborative Agreement
The scope of the collaboration and the obligations and rights associated with the program are defined within the contract (or Project Agreement), based on the principles of Free, Prior and Informed Consent (FPIC).
- Actas de reunión FPIC – Nuevo Horizonte , Monte Carmelo.
20 samples of “Hojas de aprobación de participación al proyecto ZeroCO2” Monte Carmelo, Nuevo Horizonte, Cruze Semuy, Canahan, Nuevo Cobán, El Eden) (Annex I /32/)

3) Participation Criteria
- Demonstrate ownership of the land through relevant documentation.
- Demonstrate that the property is free from litigation or conflict (samples of actual domain certificates checked – See Table 1. Land and Carbon Rights)

- Demonstrate Guatemalan nationality.
- Possess sufficient land to participate in the program without jeopardising their food security.
- Have a commitment to maintain and preserve the plot(s) for the period stipulated in the agreements (submissions to the agreements listed in PDD Annex 14 (Annex I /16/).
- Be willing to carry out program activities, as well as participate in training and exchange of experiences.

4) Agreement elements
- System chosen (forestry or agroforestry)
- Financial plan (considering sales assumptions – 60% Project Participants and other local stakeholders / 40% program implementation and coordination costs)
- Benefits from the provision of the environmental service resulted from monitoring and compliance with management plan,.
- Conflict resolution mechanisms.

5) Agreement implementation
The amount of carbon to be credited and paid after each monitoring depends on the results achieved and other criteria such as the area, system, and forest species established by the project and the project participants are aware of the sanctions of non-compliance with the targets of management plan.
During the first 5 years of planting, zeroCO2 commits to crediting a sellable value equal to 60 percent of the total carbon benefit potentially captured by the system during the crediting period (20 years), according to the targets set in the technical specifications of each system. The amount of carbon accredited in each phase is proportional to the percentage of activities and targets achieved. If in any of the monitored years the farmer does not meet the activities initially planned, the duration of the overall process (and therefore payments) will be extended. In the monitoring in year 5, the farmer must meet all agreed targets to complete that stage, otherwise he keeps his zeroCARBON commitment active.
In case the yield has been affected by external factors beyond the farmer's control, such as pests, zeroCO2 supports the participant in monitoring and treating the problem.

6) Monitoring Process and Dispute Resolution
Monitoring will be developed at the local level through the project representative (Board of Directors and the Program Representative Committee). Complaints pending resolution will be addressed and possible solutions will be provided. Program Representative Body of each community is the responsible to collect and report grievances and complains through a suitable communication channel (mainly telephone/message) to the Project Developer's Technical Director. Within 60 working days the resolution process needs to be provided in writing.

Agreement minutes checked for the following participants:
00016_MC_1_2020
00002_NA_1_2020
00014_MC_1_2020
00001_CS_1_2022
00002_NA_1_2022
00001_CB_1_2022
00003_NH_1_2022
00014_NH_1_2022
00025_NH_1_2022
00003_TZI_1_2022
00001_VH_1_2022

00002_CA_1_2022
00033_MC_1_2022
00001_NE_1_2022
00013_NA_1_2022
00026_NH_1_2022
(Annex I /42/)

- Template of Contract - ZEROCARBON "CONTRACT OF FULFILLMENT OF COMMITMENT BETWEEN ZEROCO2 AND THE BENEFICIARY OF THE ZEROCARBON PROGRAM, ACCORDING TO "PLAN VIVO" (Annex I/56/)
- Agremeent zeroCO2_Vivero Mundo Verde_eng (Annex I/8/)
- Hojas de Aprobación de participacion al Programa ZeroCO2, 20 samples (Annex I /32/)

MONITORING AND REPORTING

Indicators

3.22 Carbon Indicators

Every year, zeroCO2 technical staff will visit the plots to assess the parameters listed to the indicators. Based on established minimum management or growth requirements, participating producers will receive payments for ecosystem services. The results of monitoring are used for adaptive management on an ongoing basis to ensure that carbon sequestration targets are met. This adaptive forest management system is achieved by leaving room for natural regeneration and early or delayed harvesting of fuel species depending on the growth of the stand.
The following basics carbon indicators will be monitored during the project intervention:
-Amount of carbon sequestration (tC/ha) with field measurements using continuous inventory methods and associated methodology for carbon quantification (AR-ACM0003-Version 02.0)
- Number of trees planted per year and species (N/ha year), following the field visit monitoring reports and nursery seedlings accounting.
- Survival Rate per year (%) following the field visit monitoring reports
- Numerical ratio between annual deforestation rates before and after the project start date in the project surroundings and accounting for the specific drivers of deforestation (disturbed area).

Further monitoring indicators from the Progress monitoring may be referenced and measured for to support or ratify the basic carbon indicators.

The carbon indicators are correctly justified for the project intervention.

Project Intervention	**Carbon Indicator**	**Validation assessment**
Improved land management through forest plantations and agroforestry	Number of Tree Planted	Records of Project intervention – Project database. (Annex 14_Project_DB_v2.1_138 ha : Project Participant_DB carbon – Spreadsheet XLSX) (Annex I /16/)
	Area of project	Geospatial (GPS) reconnaissance per participant for each project site visited.

		- Project areas merged 18_07_2023.xlsx (Annex I /55/) - map zerocarbon.kmz - Plantation plots_per community_shapefile - Annex 1_Project Location_v2.1 (Annex I/3/5/)
	Survival: Survival rate	Field observation Internal documentation – Project Database.- Field monitoring assessment forms (Boletas de monitoreo 2022) (Annex I /49/). - Annex 14 ProjectDB v2.1 138 ha : Project Participant DB carbon (Annex I /16/) - Final_Sampling june 2022_v1_0223.XLS - Boletas de evaluación de área a plantar (seen Monitoreo Grupo_22ZeroCO2 spreadsheet XLSX) (Annex I /30/31/)
	Pruning: % Pruned	Field observation Internal documentation – Project Database.- Field monitoring assessment forms. (Boletas de monitoreo 2022). - Monitoreo Grupo_22ZeroCO2 spreadsheet XLSX) (Annex I /31/49/)
	Thinning: % of trees harvested	Project logic description PDD – section 3.5 (Annex I /1/) No activities yet
	Inventory: Above and below ground biomass per hectare of different species	Carbon Calculation Spreadsheet – Technical Specifications (PDD Annex 7) (Annex I /25/) No activities yet
	Tree growth: Change in diameter at breast height (DBH) and height	Management plan/ Carbon Calculation Spreadsheet – Technical Specifications (PDD

		Annex 7 and 3.14 Land Management) (Annex I /25/) No activities yet
	Plot location GPS coordinates	Geospatial (GPS) reconnaissance per participant for each project site visited. Internal documentation – Project Database- Annex 14 ProjectDB v2.1 138 ha: Project Participant DB carbon (Annex I /16/) - Final_Sampling june 2022_v1_0223.XLS - Boletas de evaluación de área a plantar (seen Monitoreo Grupo_22ZeroCO2 spreadsheet XLSX) (Annex I /30/31)
	Disturbed area	Field monitoring assessment forms/ field observations (PDD sections 3.14 Land Management and 4.6 Progress Monitoring) (Annex I/1/). (Boletas de monitoreo 2022). - Monitoreo Grupo_22ZeroCO2 spreadsheet XLSX) (Annex I /31/49/)

3.23 Livelihood Indicators

Every year, zeroCO2 technical staff visit the plots to assess the following parameters:
- Skills enhancement and income gains for participating farming communities compared to minimum wage of the Region (Peten) through surveys and interview with local stakeholders.
- Number of participants split by gender, following the internal registration database.
- Training delivered split by gender, following the records of training session.
- Job created (splitted by gender) following the internal registration database.
- Amount paid to project participants following the internal registration database.
- Number of tree products brought to market (in the first 5 years) through a market study.

The livelihood indicators are correctly justified for the project intervention.

Livelihood Indicator	**Validation Assessment**
Number of participant households (divided by gender/indigenous group)	Internal registering documentation Annex 3_Initial project areas_v2.1 / communities visits / site visits) (see 1.7)

Quantity of carbon payments distributed to participants	Interview with Project Members (see 1.7) Receipts of payment (after the distribution)
Products (timber and non-timber) generated by the project	Project description Site Visits, interviews with project developers and members (See 1.7)
Number of agroforestry systems	Internal registering documentation (Boletas de monitoreo 2022) (Annex I /49/). - Monitoreo Grupo_22ZeroCO2 spreadsheet XLSX) (Annex I /31/). / communities visits / site visits (See 1.7)
Total number of trainings delivered (divided by gender/indigenous group)	Training sessions records Listado de asistencia participantes – taller 2 /22 manejo de Plagas y enfermedades – Nuevo Horizonte Listado de asistencia participantes – taller 2 01/09/2023 manejo de Plagas y enfermedades – Nuevo Amanecer (Annex I /50/51/) / Interview with Project Members (see 1.7)
Number of active women in training sessions and in the implementation of project activities	Training sessions records Listado de asistencia participantes – taller 2 /22 manejo de Plagas y enfermedades – Nuevo Horizonte Listado de asistencia participantes – taller 2 01/09/2023 manejo de Plagas y enfermedades – Nuevo Amanecer (Annex I /50/51/)
	- Actas de reunión FPIC – Nuevo Horizonte , Monte Carmelo (Annex I /32/)
	20 samples of “Hojas de aprobación de participación al proyecto ZeroCO2” Monte Carmelo, Nuevo Horizonte, Cruze Semuy, Canahan, Nuevo Cobán, El Eden) (Annex I /32/) / Interview with Project Members (see 1.7)
Number of working groups with women, indigenous, young and elderly people	Training sessions records Training sessions records Listado de asistencia participantes – taller 2 /22 manejo de Plagas y enfermedades – Nuevo Horizonte Listado de asistencia participantes – taller 2 01/09/2023 manejo de Plagas y enfermedades – Nuevo Amanecer (Annex I /50/51/)
	- Actas de reunión FPIC – Nuevo Horizonte , Monte Carmelo (Annex I /32/)
	20 samples of “Hojas de aprobación de participación al proyecto ZeroCO2” Monte Carmelo, Nuevo Horizonte, Cruze Semuy, Canahan, Nuevo Cobán, El Eden) (Annex I /32/)

	Annex 3_Initial project areas_v2.1 / Interview with Project Members (see 1.7)/
Creation of direct employments	Project description - Monitoreo Grupo_22ZeroCO2 spreadsheet XLSX) (Annex I /31/).
Number of partnerships with national and international institutions	Interview with managing staff INAB letter of communication of project activities (Annex I /59/)
Number of productive practices implemented for mitigation and adaptation to climate change	- Monitoreo Grupo_22ZeroCO2 spreadsheet XLSX) (Annex I /31/). 20 samples of "Hojas de aprobación de participación al proyecto ZeroCO2" Monte Carmelo, Nuevo Horizonte, Cruze Semuy, Canahan, Nuevo Cobán, El Eden) (Annex I /32/) Annex 14 ProjectDB v2.1 138 ha: Project Participant DB carbon (Annex I /16/) - Final_Sampling june 2022_v1_0223.XLS - Boletas de evaluación de área a plantar (seen Monitoreo Grupo_22ZeroCO2 spreadsheet XLSX) (Annex I /30/)

3.24 Ecosystem Indicators

The monitoring plan defines the further milestones to natural regeneration such as the timeline, sampling methods, parameters and methodology of monitoring of biodiversity including fauna. The project developer has defined in the ecosystem monitoring progress the timeline, sampling methods, parameters and methodology of monitoring of birds relative abundance, presence of mammals and soil macro fauna.
Every year, zeroCO2 technical staff visits the plots to assess the following parameters:
- Number of native species (trees, shrubs, herbaceous)
- Presence of birds, mammals and soil macrofauna in project sites, following inventories, interviews and observations recorded.
- Number of hectares of rehabilitated tree cover (ha).
- Soil fertility improvement trough sample analyses of trends in fertility and organic matter content.
- Number and type of good practices implemented in land management (ha agroforestry system developed with annual crops and perennial trees).
The ecosystem indicators are correctly justified for the project intervention.

Ecosystem Indicator	**Validation assessment**
Describe the indicator that will be monitored to assess ecological conditions or environmental risks.	- Boletas de evaluación de área a plantar (seen Monitoreo Grupo_22ZeroCO2 spreadsheet XLSX) (Annex I /30/) Site Visits and Interviews with project members and local communities(see 1.7) - Boletas de Monitoreo 2022 (- Monitoreo Grupo_22ZeroCO2 spreadsheet XLSX) (Annex I /49/)

Number of living trees established	Site Visits and Interviews with project members and local communities(see 1.7) - Boletas de Monitoreo 2022 (- Monitoreo Grupo_22ZeroCO2 spreadsheet XLSX) (Annex I /49/) 20 samples of “Hojas de aprobación de participación al proyecto ZeroCO2” Monte Carmelo, Nuevo Horizonte, Cruze Semuy, Canahan, Nuevo Cobán, El Eden) (Annex I /32/)
Number of ha reforested	- Monitoreo Grupo_22ZeroCO2 spreadsheet XLSX) (Annex I /31/). 20 samples of “Hojas de aprobación de participación al proyecto ZeroCO2” Monte Carmelo, Nuevo Horizonte, Cruze Semuy, Canahan, Nuevo Cobán, El Eden) (Annex I /32/) Annex 14 ProjectDB v2.1 138 ha : Project Participant DB carbon (Annex I /16/) - Final_Sampling june 2022_v1_0223.XLS - Boletas de evaluación de área a plantar (seen Monitoreo Grupo_22ZeroCO2 spreadsheet XLSX) (Annex I /30/) 20 samples of “Hojas de aprobación de participación al proyecto ZeroCO2” Monte Carmelo, Nuevo Horizonte, Cruze Semuy, Canahan, Nuevo Cobán, El Eden) (Annex I /32/) Site Visits and Interviews with project members and local communities(see 1.7)
Number (diversity) of plant species promoted by the project activities	Project description - Monitoreo Grupo_22ZeroCO2 spreadsheet XLSX) (Annex I /31/) 20 samples of “Hojas de aprobación de participación al proyecto ZeroCO2” Monte Carmelo, Nuevo Horizonte, Cruze Semuy, Canahan, Nuevo Cobán, El Eden) (Annex I /32/) Annex 14 ProjectDB v2.1 138 ha: Project Participant DB carbon (Annex I /16/) - Final_Sampling june 2022_v1_0223.XLS - Boletas de evaluación de área a plantar (seen Monitoreo Grupo_22ZeroCO2 spreadsheet XLSX) (Annex I /31/). Site Visits and Interviews with project members and local communities(see 1.7)

Number (diversity), distribution and quality of regenerative land use systems	Project description / Interview with managing team Site Visits and Interviews with project members and local communities(see 1.7) - Annex 17_Species list natural regeneration_Peten (Annex 1 /18/) - Propuesta ANR. zeroCARBON. V2. Pdf (Annex I /33/) - Monitoring biodiversity field form (Annex I /23/)
Relative abundance of birds	Project description - site visits (see 1.7) - Monitoring biodiversity field form (Annex I /23/)
Presence of mammals	Project description Interview with managing team Site Visits and Interviews with project members and local communities(see 1.7) - Monitoring biodiversity field form (Annex I /23/)
Soil macrofauna	Project description Interview with managing team Site Visits and Interviews with project members and local communities(see 1.7) - Monitoring biodiversity field form (Annex I /23/)

Monitoring

3.25 Monitoring Plan, Process and Sharing results

Monitoring will be conducted twice a year (March and August), with the purpose of demonstrating that:
a) The land subject to the project activity does not fall in wetland category;
The site visits have testified that no wetland is subject of project interventions.
b) Soil disturbance attributable to the ARR project activity does not cover more than 10 % of area.
The site visits have testified that no significative soil disturbance is attributed to the lands.

The main parameters to be annually monitored by project developer are:
- Amount of carbon sequestration (above and belowground), based on Plan Vivo carbon sequestration calculation
- Quantity of trees donated to farming communities
- Number of hectares of rehabilitated forest, showing progress and final results per farmer.
- Number of project-employed household members, split by gender.
- Income gains for participating farming households.
- Natural regeneration, presence of mammals and birds and soil macrofauna will be monitored annually in the month of September from year 5 onwards. The sampling size defined at this stage will be 7% of the total plots included in the project in that specific year. The sampling percentage and frequency will be revised and adjusted according to the needs of the project and results of the monitoring.

The site visits have testified that monitoring is taking place for quantity of trees donated to farming communities, number of hectares established, number of project-employed household members split by gender (project database - Annex 3_Initial project areas_v2, Monitoring biodiversity field form (Annex I /23/)). Further indicators confirmed by PD will be implemented along the project interventions and monitoring plan timetable.

The Project Developer confirms that the carbon indicators described in the project will be monitored throughout the crediting period with the following targets:
- To plant around 170 hectares within the first year. Double the area in 2023 and for the next 4 years;
- Achieve a 80 percent survival rate in the first two years after planting.
- An annual field inventory conducted by the zeroCO2 operational team .
- A field verification audit will be conducted every 3 years, before which no vPVCs will be issued.
The site visits have testified the accuracy of monitoring for rates of survival and the total amount planted by year. Further indicators confirmed by PD will be implemented along the project interventions and monitoring plan timetable.

The project developer confirms that the livelihoods indicators described in the project will be monitored throughout the crediting period with the following targets
- Train 100 percent of participants in organic farming practices and tree management.
- Promote diversified sources of income over the long term.
- Strengthen timber supply to furniture industries to enable long-term carbon immobilisation.
- Number of participants: reach +200 farming families in the first 5 years;
- Training programs: cover 100% of the participants with the training program
- Number of women participants: increase by 10% annually the number of women actively involved in the program
- Number of working groups: activate in each community at least one productive project/working group run by women and/or indigenous people connected to the program
- Employment: generate new skills and job opportunities within the communities and the program
- Additional income: duplicate income sources from the plot within 5 years of planting
The site visits have testified the accuracy of monitoring for Number of working groups, - Training programs, Number of women participants, Employment (Project Database - Annex 14_Project_DB_v2.1_138 ha / zeroCARBON_Project Agreement_model_v2, (Annex I /16/)). Further indicators confirmed by PDD will be implemented along the project interventions and monitoring plan timetable.

The project developer confirms that the ecosystem indicators described in the project will be monitored throughout the crediting period with the following targets:
- Number of ha reforested: we expect to reach between 1,000-1,500 hectares of reforested area in the next five years.
- After the first 5 years, once rooting and establishment is guaranteed, the natural regeneration of the land will be accompanied by letting wild species grow. The milestone defined at this stage is to achieve an average of 5-10 plant species after 5 years from the beginning of the project.
- Number of agroforestry systems: agroforestry systems will gradually be created in many communities by integrating herbaceous species (maize, beans, chilli pepper, yucca) and native shrubs (coffee, mother cacao, plane tree).
- Number of tree species: in terms of forest plants, the main plants will be Caoba and Cedar and in some projects Ramon but during the project period new native species will be integrated by analysing adaptation characteristics and productive performance (food, wood, medicinal uses, etc.) using the approach of natural revegetation.
- The project areas will be continuously monitored and updated through GIS tools. An updated map with the project areas will be produced annually.

- In the first five years, different management systems will be found in the communities.
- Throughout the period, the zeroCO2 operations team will ensure a presence among the communities to raise awareness of organic land management practices. We will provide the communities with 120 hours of training per year, 1 day per month.
- The communities and individual participants will still maintain management independence while having to comply with a management plan that does not allow trees to be harvested before 20 years of age.
- Presence of birds. In the first monitoring year (year 5) the milestone is to detect the presence of an average of 5 bird species.
- Presence of mammals. The milestone is to assess the presence of an average of 3 mammal species per year, from year 5.
- Soil macrofauna. The milestone is to assess the presence of an average of 20 species per year, from year 5.

The site visits have testified the accuracy of monitoring for number of ha reforested, number of agroforestry systems, number of tree species, updated map with the project areas (project database - Annex 3_Initial project areas_v2, Monitoring biodiversity field form (Annex I /23/)).

The project developer has shared the results of the monitoring with project participants, communities and stakeholders during the ongoing meetings with these affected parties. Feedback and possible improvement actions on the current trends identified will be collected for the next round of critical analysis and monitoring results sharing.

The annual report will include all new areas and participants included in the program and all updated information regarding carbon, livelihood and biodiversity benefits collected through monitoring activities.
The report will also include the financial aspects related to costs and revenues generated, as well as the amounts of PVCs issued and retired, with corresponding benefit sharing with participants.
The report will also focus on the results of the monitoring of environmental and social KPIs, as well as the results of the grievance mechanism activated.

Based on the information assessed above, the validation team concluded that the monitoring plan complies to the requirements of the approved methodology.

3.26 Reporting and record keeping

All information related to the zeroCARBON program has been collected within an initial simplified database, which includes basic information on:
- Participants
- Plots involved
- Interventions
- Carbon benefits provided and that will be included in the project agreement.

The database is available to be supplemented over time with new detailed variables (such as GPS locations of single plots/project areas, land management plan, monitoring results) and information on the different phases of the program.

The validation team confirms the correctness of the annual reporting and record keeping for project interventions.

GOVERNANCE AND ADMINISTRATION

3.27 Governance Structure and Legal Compliance

The mechanisms of the flow of communication between the parties and channels to achieve grievances and complains resolution is welll described in the project. The interviews with stakeholders and the project members revealed a good and transparent communication between the Program Technical-Administrative Committee and all other parties involved in the project intervention.

The organizational structure of the zeroCARBON program is composed by two main entities:
- *The project coordinator (zeroCO2 srl SB)*, who oversees the overall coordination of the project, financial and commercial planning and management, development of technical specifications and annual documentation for certification, and the relationship with the Plan Vivo Foundation.
- *The project developer (Vivero Mundo Verde),* which, given its widespread presence in the area, oversees the operational and technical development of the project, contributing to the design, production and definition of management plans and monitoring. Besides, it is responsible for community involvement, implementation of training programs and technical accompaniment over the life of the project.

The two entities are strongly interconnected at all stages of the program, from technical and training design to the resolution of any issues and grievances within individuals belonging to participating communities. The common governance body, the Program Technical-Administrative Committee monitor project progress with the participation of the technical and program directors.
- Community level: structure based on the democratic election of the representative body of the Board of Directors (COCODE).

Communitarian participation (e.g., Monte Carmelo or Nuevo Horizonte): Board of Directors are involved in the initial stages of the participatory process, up to the definition of the participating group. The Community Comitee consisting of a group of 3 to 5 people are democratically elected by the participants. Moreover it facilitate the communication with the zeroCARBON team and the management of project activities within the community. Furthermore, it also needs to fairly, inclusively and proportionately represent all diversity and minorities in the target community and participant group, with special attention to women's participation.
-Individual participation: each participant, based on its individual property right, has full rights and decisions over his or her own land.

In addition to the community body and based on the needs that may arise during the project, the PD plans to create gradually two additional representative bodies:
- Municipal body: representative group of collective and individual participants at the municipal level. The municipality body meetings are expected to be organized every 4-6 months and, if necessary, may request other extraordinary meeting with the Project Coordinator.

Regional body: will be in charge of presenting to zercoCO2 the complaints that emerge at the regional level and that affect participants from the different municipalities. It will meet once/twice a year to address issues of concern and, when necessary, may request extraordinary meetings at zeroCO2.

ZeroCARBON is a program promoted according to the principles of equity, inclusion, and non-discrimination. The process of engaging communities and its inhabitants interested in joining the project is carried out in full compliance with the aforementioned principles, with the aim of including people of any age, gender, sexual orientation and ethnic group who are in a situation of economic and social fragility. Involved organizations operate by following the same principles of inclusion and non-discrimination, starting with the selection process of employees and collaborators (with more than 50 percent of the workforce composed of women).

The compliance with national and international laws and regulations are correctly justified for the project intervention.

Table 11: Legal and Regulatory Compliance

Policy, Law or Regulation	Relevance	Validation Assessment
Forestry Law decree 101-96 of the Congress of the Republic of Guatemala	ARTICLE 1.- Purpose of the law. This law declares the reforestation and conservation of forests to be of national urgency and social interest, for which purpose forestry development and sustainable management shall be promoted.	PDD description Interview with stakeholders Interview with project members Site visits (see 1.7) - INAB letter of communication of Project activities (Annex I / 59/) - Interview with Project developers Agreement minutes checked for the following participants: 00016_MC_1_2020 00002_NA_1_2020 00014_MC_1_2020 00001_CS_1_2022 00002_NA_1_2022 00001_CB_1_2022 00003_NH_1_2022 00014_NH_1_2022 00025_NH_1_2022 00003_TZI_1_2022 00001_VH_1_2022 00002_CA_1_2022 00033_MC_1_2022 00001_NE_1_2022 00013_NA_1_2022 00026_NH_1_2022. (Annex I /42/) - Template of Contract - ZEROCARBON “CONTRACT OF FULFILLMENT OF COMMITMENT BETWEEN ZEROCO2 AND THE BENEFICIARY OF THE ZEROCARBON PROGRAM, ACCORDING TO "PLAN VIVO". (Annex I/56/) - Agremeent zeroCO2_Vivero Mundo Verde_eng (Annex I/8/) - Hojas de Aprobación de participacion al Programa ZeroCO2, 20 samples (Annex I /32/).

Protected Areas Law, decree 4-89 of the Congress of the Republic of Guatemala.	ARTICLE 1. *National Interest. Biological diversity is an integral part of the natural patrimony of Guatemalans and therefore, its conservation through duly declared and administered protected areas is declared of national interest.	PDD description Interview with stakeholders Communitarian leaders (see 1.7) Interview with project members Site visits (see 1.7) - INAB letter of communication of Project activities (Annex I /59/) - Interview with Project developers
Law to promote the establishment, recovery, restoration, management, production and protection of forests in Guatemala - PROBOSQUE- decree 2-2015 of the Congress of the Republic of Guatemala,	According to the Art. 2, the objectives of the law PROBOSQUE decree 2-2015 are: a. This Law shall contribute to the rural development of the country in harmony with the environment, through the promotion of public and private investments aimed at the fulfillment of the following specific objectives: a. Increase forest cover, through the establishment, recovery, restoration, management, production and protection of forests that ensure the production of goods and the generation of ecosystem and environmental services and the protection of watersheds. b. Revitalize rural economies through public investments in the forestry sector, aimed at generating employment in direct activities and services that require the establishment, recovery, restoration, management, production and protection of forests and agroforestry. c. Increase forest productivity through the establishment of forest plantations for industrial and energy purposes and the productive management of natural forests, reducing pressure on natural forests and other associated resources.	PDD description Interview with stakeholders Communitarian leaders (see 1.7) Interview with project members Site visits (see 1.7) - INAB letter of communication of Project activities (Annex I /59/) - Interview with Project developers

	d. Promote forest diversification in agricultural and livestock lands and the restoration of degraded forest lands, through agroforestry systems, forest plantations and other modalities that contribute to the provision of firewood and timber in rural areas and to the recovery of the productive and protective base in degraded forest lands. e. Contribute to guarantee livelihoods, food security, energy security, and the mitigation and reduction of risks to natural disasters associated with the effects of climate variability and change and the protection of the rural infrastructure of the Guatemalan population, through the promotion of activities for the establishment, recovery, restoration, management, production and protection of forests.	
Law on Forestry Incentives for Holders of Small Tracts of Forest or Agroforestry Land - PINPEP- decree 51-2010 of the Congress of the Republic of Guatemala	ARTICLE 2. Objectives. The present Law shall contribute to the sustainable forest management of the forests, through the fulfillment of the following objectives: a) To give participation to the owners of those extensions of land with forest or agroforestry vocation, in the benefits of the economic incentives in forestry matters. b) To incorporate the modality of establishment and maintenance of agroforestry systems to the beneficiaries of the present Law. c) Promote gender equity, prioritizing the participation of women's groups in the management of natural forests, establishment and maintenance of forest	PDD description Interview with stakeholders Interview with project members Site visits (see 1.7) - INAB letter of communication of Project activities (Annex I /59/) - Interview with Project developers

	plantations and agroforestry systems.	
Environmental Protection and Improvement Law, Decree 68-86 of the Congress of the Republic of Guatemala and its respective regulations.	ARTICLE 1. The State, the municipalities and the inhabitants of the national territory shall promote the social, economic, scientific and technological development that prevents the contamination of the environment and maintains the ecological balance. Therefore, the use and exploitation of the fauna, flora, soil, subsoil and water shall be carried out rationally.	PDD description Interview with stakeholders Interview with project members Site visits (see 1.7) - INAB letter of communication of Project activities (Annex I /59/) - Interview with Project developers

3.28 Financial Plan and Management

Field visit findings:

Since 2019 zeroCO2 has been implementing Corporate Social Responsibility and Sustainability projects and the related revenues have been used to date to fund projects in Guatemala and other reforestation projects around the world.

In 2022 zeroCO2 used internal funds obtained from other active business lines (i.e. CSR and sustainability) to cover operating and management costs related to the 2022 plantations of the zeroCARBON program. In agreement with the Project Participants, the workflow and Benefit Sharing Mechanism was defined. Since the last half of 2022, zeroCO2 has been talking to potential buyers and resellers interested in Plan Vivo certificates, focusing on the future PVC type, and finding increasing interest from the market.

The local partner, Vivero Mundo Verde is involved in the project as a local stakeholder and participates in the Benefit Sharing Mechanism only for activities directly related to generating project benefits. Specifically, the economic value corresponding to the so-called "in-kind benefits", such as tree supply and training, falls within the 60% of shared benefit, while costs related to monitoring activities are covered by zeroCO2 within its 40%. It is important to note that most of VMV's local team also benefits from the project, thus benefiting both economically and occupationally from the implementation of the zeroCARBON program and its activities.

The strategic local partner Vivero Mundo Verde was decided to use the expertise and supply to produce trees needed for the project. Benefits from carbon sales revenues are expected to support the local partner (Vivero Mundo Verde) that in 2022 was a company under Guatemalan law and is already converting to a nonprofit foundation under Guatemalan law during 2023. This will allow Vivero Mundo Verde to further expand its engagement in social projects and to generate local occupational and economic benefits in the project area.

Project Participants expressed their need to be supported in the development of the Land Management Plan, mapping and forestry management studies that would allow them to access additional state benefits from the PROBOSQUE program on sustainable land management. This process requires, among others, the submission of complex technical documentation and project-specific information, with prohibitive costs for the communities. Therefore, these operational aspects of the project are considered as in-kind benefits that the project participants are receiving as part of the 60% benefit sharing distribution, what was agreed with the understanding of the Project Members. The project participants have confirmed in the interviews that the tree supply and services, such as trainings, are direct benefits of the project, together with the direct payments related to carbon revenues.

In addition, the information attached in the financial plan is based on initial future forecasts. Thus, if total revenues are higher due to a higher price per credit or additional vPVCs emerged from the verification process, the delta of additional revenue will be recognized in the 60% to Project Participants and 40% to zeroCO2 to compensate for the economic loss generated by the project.
The first financial agreement will last for 5 years, during which time each participant will receive direct payments, in relation to the expected carbon benefits and the targets defined in the management plan. Each project agreement indicates how much will be paid, the payment method, and the corresponding timeframe.
The salaries of the local partner and project coordinator were considered as well during the validation. The volume of capacities allocated to the project seemed to be reasonable considering the project size and complexity. Salaries in X% FTE seemed to be compatible with the respective market (Europe and Guatemala). Other than that, there were no complaints raised during the stakeholder interviews with regards to salaries of the project developer or local partner. The involvement of a project developer from abroad is reasonable considering limited availability of local experts for carbon/reforestation projects in Guatemala.
The amount of fPVC generated (and thus the tons of CO2 stored) per hectare varies depending on a set of variables of each plot (such as the forest system and species used).
For 2022, it was decided to use an equal value of fPVC per hectare for all participants, considering that the breakdown of species by participant was conducted before the finalisation of the carbon modelling, from which a large variability in terms of carbon storage between species emerged. Starting in 2023, species allocation will ensure a more uniform amount of carbon benefit per hectare for each participant. The payment of the amount over the five years is linked to a set of objectives and activities included in the management plan. If the participant does not achieve the results included in the plan and the survival rate is lower than expected, the following steps are taken:
- Firstly, the causes are analysed to ensure that the losses are attributable to the participant due to improper plantation management (and not exogenous factors independent of the participant's management, e.g. both natural and anthropogenic force majeure causes). Once the participant's responsibility has been established, payment will be withheld until the defined objectives are achieved and the activities set out in the management plan are properly completed. The higher the net loss (and thus the less the target is met) the greater the percentage of money will be withheld. This mechanism will act as an incentive for participants to achieve the management goals included in the plan.
Once the annual monitoring is completed and the targets are achieved, zeroCO2 staff will transfer the amount for that particular period and pay it directly into the participant's account via internet banking. The technical staff will be present and provide support in the distribution of the funds, having calculated the amount corresponding to each participant through their management systems, checking the amount (relative to the area they manage) and making sure that every participant agrees and signs the receipt of payment.
Management of other potential revenue from the sale of the remaining PVCs
Other potential revenues generated from the sale of PVC (both fPVC and vPVC) will be included in the carbon agreement through periodic adjustments.
On these revenues, zeroCO2 agrees to pay participants 60 percent of each euro of revenues generated on top of expected for a period of 7 years, without including in this value the costs related to the activities of planting and maintenance, survival rate and diseases and fire control, once they were already covered in the first agreement.

CAR #23/03 - Direct payments to project participants must be 60% or higher. This aspect was questioned by the PV technical review in advance of the validation, so particular focus was given to it during the validation assessment. The assessment team found the financial plan and description of benefit sharing mechanism to be in line with the Plan Vivo Standard, however, corresponding updates to the PDD must be made.

The financial plan is correctly justified for the project intervention in the PDD and the related CAR can be closed.

4. VALIDATION OPINION

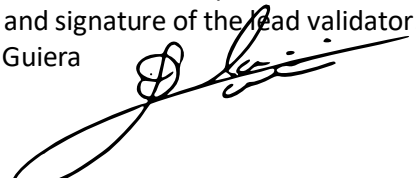
Control Union Certifications Germany GmbH has performed a validation assessment for the zeroCARBON project with regards to requirements from the Plan Vivo Standard Version 5.

The project documents represent an accurate and clear description of the project and its activities. The review of the project design documentation and additional documents related to baseline and monitoring methodology; and the subsequent background investigation, follow-up interviews and review of comments by local stakeholders have provided to Control Union Certifications Germany GmbH sufficient evidence to validate the fulfilment of the stated criteria.

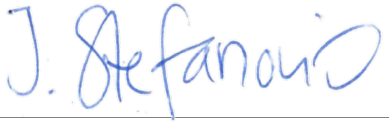
3 CARs and 1 FAR were raised, of which the CARs were successfully closed so a positive validation opinion has been issued..
The project interventions disclosed in the PDD and implemented at field level are expected to provide long-term increases in carbon storage or reductions in greenhouse gas emissions and have positive impacts on local livelihoods and ecosystems.
Given that the zeroCARBON project is implemented and maintained as designed, the project is likely to achieve the estimated total amount of emission reductions of 100,354.44 tCO2e, corresponding to 80,283.95 tCO2e PVCs, over a 20-years crediting period.

In detail the conclusions can be summarized as follows:
- The project is in line with all criteria of the Plan Vivo Standard version 5.0.
- The project additionality is sufficiently justified in the PDD.
- The Monitoring Plan is transparent and adequate.
- The analysis of the baseline emission, project emissions and leakage has been carried out in a transparent and conservative manner.
-The project is likely to achieve estimated carbon storage or reductions in greenhouse gas emissions.

Date of the validation report: 17.09.2024
Name and signature of the lead validator:
Flavio Guiera



Name and signature of independent reviewer:
Julia Stefanovic



Annexes

Annex 1 – Documents reviewed or referenced

No.	Author	Title and version	Provider
1	zeroCO2	zeroCARBON_PLAN VIVO_PDD_V3.1, July 4th 2024	PP
2	Plan Vivo	PDD non tech & tech - Macroscale - zeroCarbon - july 23	Plan Vivo Secretariat
3	zeroCO2	PDD Annex 1_Project Location_v2.1	PP
4	zeroCO2	Project areas_merged_18_07_2023	PP
5	zeroCO2	map zerocarbon (Project Locations – Petén GUA)	PP
6	zeroCO2	Plantation plots_per community_shapefile (Flores, La Libertad, Las Cruces, San Andreas, Santa Ana, Sayaxche)	PP
7	zeroCO2	Plantation plots_zeroCarbon_V1_2023 (geospatial shapefiles)	PP
8	zeroCO2	Agremeent zeroCO2_Vivero Mundo Verde_eng	PP
9	zeroCO2	Introduction of Project activities Letter to INAB – (19/5/22)	PP
10	zeroCO2	zeroCO2 s.r.l Società Benefit Register in Chamber of Commerce Italy	PP
11	zeroCO2	Participatory desing – (meetings records June 2022, Nov 2022, Dec 2022, March 2023)	PP
12	zeroCO2	Initial FPIC (meeting records January 2023, list of attendance, Meeting Act)	PP
13	zeroCO2	PDD Annex 6 _Carbon calculation spreadsheet and tech specs_v2.1_20_10_2023	PP
14	zeroCO2	Land management plan_model_updated_v2	PP
15	zeroCO2	Project Agreement_updated_v2	PP
16	zeroCO2	PDD Annex 14_Project_DB_v2.1_138 ha	PP
17	zeroCO2	PDD Annex 16_zeroCARBON_Financial Plan_v2	PP
18	zeroCO2	PDD Annex 17_Species list natural regeneration_Peten	PP
19	zeroCO2	Carbon storage mapping with remote sensing_FrancinietAl-2022_zeroCO2 plantation_	PP
20	zeroCO2	Annex 3_Initial project areas_v2.1	PP
21	zeroCO2	Organigramma-zeroCO2	PP
22	zeroCO2	Contrato posesion/ propriedade de los miembros: Mario_Cac Caal Margarita Figueroa Maria Elena Pop Ical de Cac Paulina Caal Bol Nancy Maribel Salazar Donis Anival Jimenes Castillo Aurelia_Chocooj Juc Fausto_Reyes Gómez	PP
23	zeroCO2	Monitoring biodiversity field form	PP
24	zeroCO2	Integración de regeneración natural en zeroCO2	PP
25	zeroCO2	PDD Annex 7 – Technical Specifications	PP

26	zeroCO2	PDD Annex 8 – Exclusion List	PP
27	zeroCO2	PDD Annex 9 - Environmental and Social Screening Report	PP
28	zeroCO2	PDD Annex 10 – Environmental and Social Assessment Report	PP
29	zeroCO2	PDD Annex 13 – Monitoring Plan	PP
30	zeroCO2	Boletas de evaluación de área a plantar	PP
31	zeroCO2	Monitoreo Grupo_22ZeroCO2 spreadsheet XLSX)	PP
32	zeroCO2	20 samples of "Hojas de aprobación de participación al proyecto ZeroCO2" Monte Carmelo, Nuevo Horizonte, Cruze Semuy, Canahan, Nuevo Cobán, El Eden)	PP
33	zeroCO2	- Propuesta ANR. zeroCARBON. V2. pdf	PP
34	REGISTRADOR AUXILIAR DEL REGISTRO GENERAL DE LA PROPIEDAD DE LA ZONA CENTRAL	Title of property registered in the general Property Registry of Guatemala. MARCELINO XO CUC FINCA 6176 Folio 176 Libro 13E de El Peten(SAN ROMAN)	REGISTRO GENERAL DE LA PROPIEDAD DE LA ZONA CENTRAL DE GUATEMALA
35	REGISTRADOR AUXILIAR DEL REGISTRO GENERAL DE LA PROPIEDAD DE LA ZONA CENTRAL	Title of property registered in the general Property Registry of Guatemala. MATILDA CABNAL YABAT DE CACAO FINCA 6793 Folio 293 Libro 194E de El Peten (EL EDEN - SAYAXCHÉ).	REGISTRO GENERAL DE LA PROPIEDAD DE LA ZONA CENTRAL DE GUATEMALA
36	REGISTRADOR AUXILIAR DEL REGISTRO GENERAL DE LA PROPIEDAD DE LA ZONA CENTRAL	Title of property registered in the general Property Registry of Guatemala. TEREZA CAC CAAL FINCA 9155 Folio 55 Libro 19E de El Peten (LAS CAMELIAS – SAYAXCHE)	REGISTRO GENERAL DE LA PROPIEDAD DE LA ZONA CENTRAL DE GUATEMALA
37	REGISTRADOR AUXILIAR DEL REGISTRO GENERAL DE LA PROPIEDAD DE LA ZONA CENTRAL	Title of property registered in the general Property Registry of Guatemala. INGRI LORENA CHOC ICAL FINCA 6865 Folio 365 Libro 14E de El Peten (Tezulutlan I – SAYAXCHÉ	REGISTRO GENERAL DE LA PROPIEDAD DE LA ZONA CENTRAL DE GUATEMALA
38	REGISTRADOR AUXILIAR DEL REGISTRO	Title of property registered in the general Property Registry of Guatemala. MARIO CAC CAAL Y MARÍA ELENA POP ICAL DE CAAL	REGISTRO GENERAL DE LA

	GENERAL DE LA PROPIEDAD DE LA ZONA CENTRAL	FINCA 5900 Folio 400 Libro 32E de El Peten (CRUCE SEMUY – SAYAXCHÉ)	PROPIEDAD DE LA ZONA CENTRAL DE GUATEMALA
39	REGISTRADOR AUXILIAR DEL REGISTRO GENERAL DE LA PROPIEDAD DE LA ZONA CENTRAL	Title of property registered in the general Property Registry of Guatemala. BERNARDO CAC CAAL FINCA 159 Folio 159 Libro 21E de El Peten. (LAS CAMELIAS – SAYAXCHÉ)	REGISTRO GENERAL DE LA PROPIEDAD DE LA ZONA CENTRAL DE GUATEMALA
40	REGISTRADOR AUXILIAR DEL REGISTRO GENERAL DE LA PROPIEDAD DE LA ZONA CENTRAL	**RESOLUCIÓN DE DECLARATORIA TIERRAS COMUNALES Comunidad Monte Carmelo** 27/11/2020 - REGISTRO GENERAL DE LA PROPIEDAD EMPRESA CAMPESINA ASOCIATIVA ECA MONTE CARMELO Finca Numero 1133 Folio 133 Libro 223E de El Peten – La Libertad.	REGISTRO GENERAL DE LA PROPIEDAD DE LA ZONA CENTRAL DE GUATEMALA
41	REGISTRADOR AUXILIAR DEL REGISTRO GENERAL DE LA PROPIEDAD DE LA ZONA CENTRAL	**RESOLUCIÓN DE DECLARATORIA TIERRAS COMUNALES Comunidad Nuevo Horizonte** 27/11/2020 - REGISTRO GENERAL DE LA PROPIEDAD COPERATIVA INTEGRAL AGRICOLA NUEVO HORIZONTE", RESPONSABILIDAD LIMITADA Finca número 740 Folio 99 Libro 5 de El Peten . Finca 450 Folio 59 LIBRO 4 DE EL PETÉN (SANTA ANA)	REGISTRO GENERAL DE LA PROPIEDAD DE LA ZONA CENTRAL DE GUATEMALA
42	zeroCO2	Project subscription for the agreement: 00016_MC_1_20 20 00002_NA_1_20 20 00014_MC_1_20 20 00001_CS_1_20 22 00002_NA_1_20 22 00001_CB_1_20 22 00003_NH_1_20 22 00014_NH_1_20 22 00025_NH_1_20 22	PP

		00003_TZI_1_20 22 00001_VH_1_20 22 00002_CA_1_20 22 00033_MC_1_20 22 00001_NE_1_20 22 00013_NA_1_20 22 00026_NH_1_20 22	
43	zeroCO2	Images of participatory design: DSC01640 DSC01645 DSC02031-189 Participant meeting list – 15/06/2022 ECA Monte carmelo - La Libertad.	PP
44	zeroCO2	Acta Nº 06/2022 - 15/06/2022 ECA Monte carmelo - La Libertad.	PP
45	zeroCO2	Acta Nº 07/2022 - 10/07/2022 ECA Monte carmelo - La Libertad.	PP
46	zeroCO2	Acta Nº 08/2022 - 14/07/2022 Cooperativa Nuevo Horizonte – Santa Ana.	PP
47	zeroCO2	Images of participatory design . DSC01340-80 - DSC00883-19 - DSC00878-18 ECA Se'inup, .Acta Nº 43/2022 -	PP
48	zeroCO2	- Integración de regeneración natural en zeroCARBON.	PP
49	zeroCO2	Boletas de monitoreo 2022 69 muestras.	PP
50	zeroCO2	Listado de asistencia participantes – taller 2 /22 manejo de Plagas y enfermedades – Nuevo Horizonte	PP
51	zeroCO2	Listado de asistencia participantes – taller 2 01/09/2023 manejo de Plagas y enfermedades – Nuevo Amanecer	PP
52	zeroCO2	Final_Sampling june 2022_v1_0223: Sampling_Montecarmelo2: Carbon x sampling point.	PP
53	zeroCO2	PDD Annex 11- Land management Plan	PP
54	zeroCO2	PDD Annex 18 - Assisted Natural Regeneration Proposal and CO2 estimation).	PP
55	zeroCO2	Project areas merged 18_07_2023.xlsx	PP
56	zeroCO2	Template of Contract - ZEROCARBON "CONTRACT OF FULFILLMENT OF COMMITMENT BETWEEN	PP

		ZEROCO2 AND THE BENEFICIARY OF THE ZEROCARBON PROGRAM, ACCORDING TO "PLAN VIVO".	
57	Segeplan	SEGEPLAN, 2011. Petén: Proceso de Actualización del Plan de Desarollo Integral. Diagnostico Teritorial, Tomo I. Guatemala City, Guatemala: Secretaria General de Planificación y Programación de la Presidencia, April 2011.	External reference
58	INAB	PROBOSQUE Prognma de Incentivos para elestablecimiento, Recuperación, Restauración, Manejo. Producción y Protección de Bosques (https://www.sifgua.org.gt/SIFGUAData/PaginasEstadisticas/Recursos-forestales/probosque.aspx).	External reference
59	INAB	INAB letter of communication of Project activities	PP

Annex 2 – New information requests, corrective action requests and forward action

Table 1. CARs and FARs from this validation

CAR ID	23/01	**Section no.**	3.6	**Date:** 09/11/2023
Description of CAR				
Project activities listed are not clear as the Project Proponent writes about agroforestry systems with annual crops yet are planting Cedrela odorata) and mahogany (Swietenia macrophylla) at a density of 1,111 saplings per hectare. This needs to be clarified and explained in the PDD how both agroforestry will occur within a monoculture plantation of cedar (Cedrela odorata) and mahogany (Swietenia macrophylla).				
Project participant response				**Date:** 04/07/2024

Since Plan Vivo's last review, our team has worked relentlessly to improve the biodiversity benefits of the project design. After thoughtful analysis, and considering the local environmental conditions and available resources, the team decided that gradually incorporating ANR into the forestry plantations was the most viable option to increase the number of native species per hectare while maintaining the productivity of the plantation. This will be implemented in 100% of the plots of every participant of zeroCARBON. Although the starting point in the project interventions is limited in terms of number of species, the diversity found in the field inventories (documented in the ANR proposal Annex 18) and the favorable conditions for natural regeneration within the plantations, shows that there will be a significant increase in biodiversity as the project advances.

Using dendrometric data collected from the inventories, and based on the initial management plan, a CO2 model was developed to provide an initial estimation of potential carbon benefits derived from ANR. Three different CO2 scenarios were modelled, using an average of CO2 absorption per tree that was calculated from the inventory species that had available data. The medium scenario would bring a cumulative value of 27.8 t CO2/ha in 20 years, which would amount to approximately 12% of total carbon benefits from the zeroCARBON program, which will be part of the economic benefits derived from the program. A detailed explanation of the ANR carbon assessment can be found in Annex 18.

The aim of integrating ANR is to increase the biodiversity benefits of a conventional forest plantation by allowing a certain level and form of natural regeneration that biologically enriches the forest while increasing its CO2 fixing capacity, as well as being able to gradually replace trees that are harvested for timber. Two forest rotations will be carried out, one based on tree planting and the other based on secondary vegetation management after year 20.

Integrating natural regeneration within the forestry plantations will be a gradual process starting at year 5 to ensure that there is no competition with caoba and cedro. This will depend on thoughtful management, ensuring a suitable species selection and abundance of regeneration plants. To date, there are no measures defined by Guatemalan forestry institutions regarding the integration of natural regeneration inside forestry plantations, nor reference to other projects in Guatemala that have adopted this model. Therefore, zeroCARBON will be a pioneer project in implementing this approach in Guatemala. This will require an iterative learning process to find the balance between the successful development of the project interventions, participants' needs, and requirements of Guatemalan forestry institutions. An initial proposal of management plan and implementation actions can be found in the ANR proposal in Annex 18 of the PDD. A more technical, detailed management plan that will guide the specific actions to implement ANR is in the development phase and in the process of being formally approved by INAB.

Even though the ANR intervention is currently in its development phase, it is already incorporated into the foundation of the project design of zeroCARBON. There is an initial management and monitoring plan, and a strategy for the engagement and capacity building of participants to ensure the permanence of the interventions. There will be incentives for adopting ANR in the long term, including carbon benefits and the presence of native species that are economically and ecologically valuable for participants (All relevant information can be found in Annex 18 and PDD section 1.1 and 2.4). Therefore, the foundations for a more biodiverse project interventions are being built, which will start to deliver results as a significant increase in native species diversity of every plot included in zeroCARBON. The outcomes will be monitored and documented in the annual reports from year 4 onwards.

As the validation was conducted in an early stage of ANR design, when initial consultations with participants were taking place, participants were still not fully informed about the application of ANR in their plots. This early stage makes it difficult to assess appropriately the application and outcomes of natural regeneration and the full potential in terms of biodiversity that the project will achieve.

Regarding agroforestry, there are already participants who have adopted a mixed model integrated perennial crops within the forestry plantation, but this is not registered as a separate

project intervention as the program is not actively providing those crops or incorporating them into the CO2 accounting. For the purpose of this program, we considered an agroforestry system as the other project intervention in the case of a system with forestry and fruit trees (provided by zeroCO2) that we are currently working towards, while assessing nursery production capacity and the most suitable fruit species to include.
Documentation provided by project participant
- Propuesta ANR. zeroCARBON. V2. Pdf - zeroCARBON_PLAN VIVO_PDD_V3.1 (July 4 2024) - ZEROCARBON REVIEW 3 - August 2023 - Interventions & biodiversity - Annex 17_Species list natural regeneration_Peten - Monitoring biodiversity field form
DOE assessment **Date:** 08/07/2024
Evidence provided are sufficient to close this CAR, nevertheless the FAR #23/01 is raised concerning the participatory design process in order to address further actions for the fully compliance with the requirement 2.4.2 It shall be assessed in the next verification round.

CAR ID	23/02	**Section no.**	3.15	**Date:** 09/11/2023
Description of CAR				
The Project Developer shall align the project period stated at the table "Overview" in the PDD with the crediting period calculated for the carbon model and other related data. The period from 2022 to 2042 represents 21 years and the project design is set for a 20 year period.				
Project participant response				**Date:** 04/07/2024
The project period presented in the PDD was reviewed in the version 3.1 and is aligned with the crediting period of 20 years.				
Documentation provided by project participant				
- Propuesta ANR. zeroCARBON. V2. Pdf - zeroCARBON_PLAN VIVO_PDD_V3.1(July 42024)				
DOE assessment				**Date:** 08/07/2024
Evidence provided are sufficient to close this CAR.				

CAR ID	23/03	**Section no.**	3.16.2	**Date:** 09/11/2023
Description of CAR				
Direct payments to project participants must be 60% or higher. Should the 60% include project operational costs there must be evidence provided that indicates that the local communities and smallholders explicitly requested this. Currently, it seems the project agreement proposes this and the participants had little involvement in the decision to include it in the 60%. It isstated, "so even some management costs are included in the 60%, as management is directly linked to local community support to enable their members to successfully participate in the program". On review of the financial plan 5.4, there are two items that definitely cannot be used in the 60%. Firstly, taxes must be taken away from money received from the overall sale of PVCs before the 60/40 split. Secondly, "mapping and developing forestry and agroforestry management plans" would have to fall under the 40%. The PDD must be updated accordingly to include any additional justification and explanation.				
Project participant response				**Date:** 04/07/2024

Tree production and mapping and development of forest and agroforestry management plans, were included in the 60 percent as in-kind benefits of fundamental importance and value to participating communities and local partner Vivero Mundo Verde.

In fact, program beneficiaries value these services as direct benefits of the project, on a par with direct payments related to carbon benefits. Thus, the inclusion of these in-kind benefits stems from a direct demand by project participants, as they enable them to gain new future opportunities in addition to direct benefits.

On the one hand, tree production strongly favors the start of the project and the interest of communities to participate, even considering the objective difficulties in starting community nurseries of this scale and the lack of skills related to tree production. In addition, the entire tree production has been outsourced to a local organization, Vivero Mundo Verde, located in one of the participating communities (Nuevo Horizonte),thus promoting local development in terms of employment and the generated economy.

On the other hand, the activities of mapping the areas and drafting the technical management plan represent a fundamental support to access the national incentive system, which requires, among other things, the submission of technical documentation and project-specific information, with prohibitive costs for the communities.

With regard to local taxes, they have been eliminated by 60% and deducted from the total forecast revenues generated by the sale of PVCs, according to article 3.16.2 of the PV standard. More details have been included in the updated annex 17 and described in chapter 5.4 of the PDD.

The Benefit Sharing Mechanism forms the foundation of the zeroCARBON program, enabling the sharing of economic benefits and expertise to ensure long-term sustainability.

Its structure and operation are meticulously described in version 3 of the Financial Plan, which has been completely revised from the previous version. This revision included a detailed analysis of cost and revenue projections for the entire 20-year crediting period, as well as a clear breakdown of the Benefit Sharing Mechanism with a 40-60 split.

To facilitate understanding of the Financial Plan, we provide a series of guidelines and premises below.

1. Expansion Plan: The FP v3 includes a plan for average expansion of 400 hectares per year until 2028.

2. Revenue Calculation: Revenues are calculated based on the tCO2/ha value derived from the carbon model (annex 6 PDD), considering storage from forest plantations and hard wood products. However, additional tons corresponding to the ANR, though calculated using predictive models, currently do not contribute to credit production to avoid potential overestimation of revenues and to maintain a conservative approach.

3. Cost Itemization: All expenses have been divided and detailed into various items, qualitatively included in the "Notes and Assumptions" sheet, to meet the request made during the August review. This restructuring included the use of project costs actually incurred until 2023, providing greater solidity to the projections.

4. Participation of the Local Partner in the BSM: The local partner, Vivero Mundo Verde (VMV), is involved in the project as a local stakeholder and participates in the Benefit Sharing Mechanism only for activities directly related to generating project benefits. Specifically, the economic value corresponding to the so-called "in-kind benefits", such as tree supply and training, falls within the 60% of shared benefit, while costs related to monitoring activities are covered by zeroCO2 within its 40%. It is important to note that most of VMV's local team also benefits from the project, thus benefiting both economically and occupationally from the implementation of the zeroCARBON program and its activities. All details of what is included and what is not are specified in the Financial Plan.

5. Mapping Tools: Among the services offered by zeroCARBON as in-kind benefit, there is support in the preparation, presentation and approval of land management plans to access the PROBOSQUE incentive program by INAB. This program provides economic incentives based on meeting specific eligibility criteria and achieving goals in forest restoration and conservation. For instance, in the case of forest plantations, INAB disburses a total fund of approximately €3.000 /ha over 6 years.
zeroCARBON's technical team is available to assist participants not only in land assessment and technical drafting of management plans but also in overcoming bureaucratic, organizational, and financial obstacles that may be insurmountable for program beneficiaries (small landowners with few resources and technical knowledge). This process can be costly (around 650 euros per area) and, without an intermediary, time-consuming. Additionally, it does not include the provision of trees or a training program to develop technical skills on the field. Therefore, zeroCARBON acts as a facilitator in accessing this additional income source.
It's important to note that participation in the PROBOSQUE program is voluntary, so every beneficiary (if not already part of the program) can decide whether to join and request this additional service from zeroCARBON. The service cost is included in the benefit-sharing mechanism and is therefore deducted from the direct economic value of those requesting the service.

6. Sales Assumptions: Sales are calculated based on various assumptions, including:
a. 80% of sellable credits net of the risk buffer and Achievement Reserve for each cohort are sold as fPVCs at the end of the planting year (following the multi-year pre-purchase agreement model); payment for this quota of credits will be made according to a multi-year plan specified in the attached financial model.
b. The remaining 20% of sellable credits net of the risk buffer and Achievement Reserve for each cohort are sold as vPVCs and distributed according to the carbon absorption curve during verifications. This quota of credits remains in the maturation years to cover any "future risk loss" that may not be covered by already established reserves.
c. Credits allocated to the Achievement Reserve are sold as vPVCs once matured and distributed according to the carbon absorption curve during verifications. During the maturation period, they naturally serve the same function as the credits described in point b.

7. Financing of the BSM: Revenues allocated to the Benefit Sharing Mechanism (BSM) are closely tied to sales assumptions and divided into two Funds. The Base Fund, covering direct payments for the first 7 years of the project, will be funded by revenues from assumption a. sales, while the Additional Fund, covering at least the subsequent 5 years, will be funded by revenues from assumptions b. and c. sales and any other margins. It is important to note that while the Base Fund does not correspond to 60% of the generated revenues, as it also includes a portion of payments to the Local partner (in-kind benefits), the latter does. All details regarding the calculation and allocation of funds are presented in Annex 5 of FP, along with a conservative estimate of the amount of each fund on a unit scale (per hectare) and a qualitative description of their characteristics.

8. Human Resources Plan: A detailed plan for human resource management has been developed, clearly outlining the gradual expansion of different teams over time and the participation of each resource in the project. Overall, we anticipate a progressive increase in the local team over time, with a particular emphasis on field technicians engaged in engagement, design, and monitoring activities in the field. As for the team in Europe, the goal is to maintain a similar cross-sectional structure to the current one, with few significant changes, in addition to optimizing skills based on accumulated experience.
Documentation provided by project participant
- zeroCARBON_PLAN VIVO_PDD_V3.1_(July 2024) - ZEROCARBON REVIEW 3 - August 2023 - Benefit Sharing Mechanism and Financial Plan - zC_FinPlan_PDD_v3.XLSX - Annex 6 _Carbon calculation spreadsheet and tech specs_v2.1_20_10_2023.XLSX - *zeroCARBON_Project Agreement_model_12_v3_CLEAN_eng.pdf*
DOE assessment **Date:** 08/07/2024
Evidence provided are sufficient to close this CAR.

Table 2. FARs from this validation

FAR ID	23/01	**Section no.**	2.4.2	**Date:** 08/07/2024
Description of FAR				
The Project Coordinator shall include all interventions promoted by the Project Logic in the participatory design and review of the project, thus the ANR (Assisted Natural Regeneration) as proposed to be implemented after the 5th year of starting the project. The Project Interventions reviewed must be discussed in collaboration with the Project Participants, who must work in partnership to explore and identify preferred options of natural regeneration and also discuss about biodiversity monitoring process.				
Project participant response				**Date:** DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				**Date:** DD/MM/YYYY

Annex 3 – Other additional information: Carbon Calculations spreadsheet, stakeholder meeting list

List Of Project Participant Communities and total members

Project Participant Communities	Participant Type*	Location of Residence Municipalities	Typical Land Holding Hectares	Land and Natural Resource Use	Participants per community
Agua Chiquita	Type 1	Sayaxche	4	Agriculture	4
Canahan	Type 1	Sayaxche	4	Agriculture	5
Caserio La Isla	Type 1	Sayaxche	30	Livestock	1
Cooperativa La Palma	Type 1	Las Cruces	4	Livestock	1
Cruce Semuy	Type 1	Sayaxche	4	Agriculture	1
El Buen retiro	Type 1	Santa Ana	4	Livestock	2
El Caoba	Type 1	Flores	4	Agriculture & Livestock	2
El Eden	Type 1	Sayaxche	4	Agriculture	3
El Juleque	Type 1	Santa Ana	4	Agriculture	1
El Polol	Type 1	La Libertad	4	Livestock	1
El Rosalito	Type 1	Sayaxche	4	Agriculture	3
Entre Rios	Type 1	Sayaxche	4	Agriculture	1
Km 40	Type 1	Santa Ana	4	Livestock	2
La Laguna Perdida	Type 1	San Andrés	4	Livestock	1
La Pita	Type 1	Santa Ana	4	Agriculture	1
Las Camelias	Type 1	Sayaxche	4	Agriculture	4
Las Mojaras	Type 1	El chal	4	Agriculture	1
Las Pozas	Type 1	Sayaxche	4	Agriculture	1
Los Angeles	Type 1	Santa Ana	4	Livestock	1
Monte Carmelo	Type 1	La Libertad	4	Agriculture & Livestock	30
Nueva Colorada	Type 1	Flores	4	Livestock	1
Nueva Esperanza	Type 1	Sayaxche	4	Agriculture	3

Nueva Libertad	Type 1	Sayaxche	4	Agriculture & Livestock	2
Nuevo Amanecer	Type 1	La Libertad	4	Agriculture	8
Nuevo Coban	Type 1	Sayaxche	4	Agriculture	1
Nuevo Horizonte	Type 1	Santa Ana	4	Livestock	96
Parcelamiento Acte	Type 1	San Andrés	4	Agriculture	1
Parcelamiento El Sinte	Type 1	La Libertad	4	Agriculture	1
Paso del Norte	Type 1	Flores	4	Agriculture	1
Poptun	Type 1	Poptun	10	Livestock	2
Purucila	Type 1	Santa Ana	4	Agriculture	1
Purushila	Type 1	Santa Ana	4	area agricola en descanso	1
San Antonio Seinup	Type 1	La Libertad	10	Livestock	1
San Francisco	Type 1	San Francisco	4	Livestock	1
San Juan de Dios	Type 1	La Libertad	4	Livestock	1
San Juaquin	Type 1	Sayaxche	4	area agricola en descanso	1
Santa Ana	Type 1	Santa Ana	4	Agriculture & Livestock	4
Santa Melia	Type 1	El chal	4	Agriculture & Livestock	7
Santa Rita	Type 1	La Libertad	4	Agriculture	1
Santo Domingo	Type 1	Sayaxche	4	Agriculture	1
Saragoza	Type 1	Sayaxche	4	Livestock	1
Setul	Type 1	Sayaxche	4	Agriculture	1
Tezulutlan I	Type 1	Sayaxche	4	Agriculture & Livestock	5
Tezulutlan II	Type 1	Sayaxche	4	Agriculture	1
Tierra Blanca	Type 1	Sayaxche	4	Agriculture	4
Unión Maya Itza	Type 1	Las Cruces	4	Agriculture	1
Vista Hermosa Los Chorros	Type 1	Las Cruces	4	Agriculture	1

Project Participant Communities	Participant Type*	Location of Residence Municipalities	Typical Land Holding Hectares	Land and Natural Resource Use	Participants per community
Agua Chiquita	Type 1	Sayaxche	4	Agriculture	4
Canahan	Type 1	Sayaxche	4	Agriculture	5
Caserio La Isla	Type 1	Sayaxche	30	Livestock	1
Cooperativa La Palma	Type 1	Las Cruces	4	Livestock	1
Cruce Semuy	Type 1	Sayaxche	4	Agriculture	1
El Buen retiro	Type 1	Santa Ana	4	Livestock	2
El Caoba	Type 1	Flores	4	Agriculture & Livestock	2
El Eden	Type 1	Sayaxche	4	Agriculture	3
El Juleque	Type 1	Santa Ana	4	Agriculture	1
El Polol	Type 1	La Libertad	4	Livestock	1
El Rosalito	Type 1	Sayaxche	4	Agriculture	3
Entre Rios	Type 1	Sayaxche	4	Agriculture	1
Km 40	Type 1	Santa Ana	4	Livestock	2
La Laguna Perdida	Type 1	San Andrés	4	Livestock	1
La Pita	Type 1	Santa Ana	4	Agriculture	1
Las Camelias	Type 1	Sayaxche	4	Agriculture	4
Las Mojaras	Type 1	El chal	4	Agriculture	1
Las Pozas	Type 1	Sayaxche	4	Agriculture	1
Los Angeles	Type 1	Santa Ana	4	Livestock	1
Monte Carmelo	Type 1	La Libertad	4	Agriculture & Livestock	30
Nueva Colorada	Type 1	Flores	4	Livestock	1
Nueva Esperanza	Type 1	Sayaxche	4	Agriculture	3
Nueva Libertad	Type 1	Sayaxche	4	Agriculture & Livestock	2
Nuevo Amanecer	Type 1	La Libertad	4	Agriculture	8

Nuevo Coban	Type 1	Sayaxche	4	Agriculture	1
Nuevo Horizonte	Type 1	Santa Ana	4	Livestock	96
Parcelamiento Acte	Type 1	San Andrés	4	Agriculture	1
Parcelamiento El Sinte	Type 1	La Libertad	4	Agriculture	1
Paso del Norte	Type 1	Flores	4	Agriculture	1
Poptun	Type 1	Poptun	10	Livestock	2
Purucila	Type 1	Santa Ana	4	Agriculture	1
Purushila	Type 1	Santa Ana	4	area agricola en descanso	1
San Antonio Seinup	Type 1	La Libertad	10	Livestock	1
San Francisco	Type 1	San Francisco	4	Livestock	1
San Juan de Dios	Type 1	La Libertad	4	Livestock	1
San Juaquin	Type 1	Sayaxche	4	area agricola en descanso	1
Santa Ana	Type 1	Santa Ana	4	Agriculture & Livestock	4
Santa Melia	Type 1	El chal	4	Agriculture & Livestock	7
Santa Rita	Type 1	La Libertad	4	Agriculture	1
Santo Domingo	Type 1	Sayaxche	4	Agriculture	1
Saragoza	Type 1	Sayaxche	4	Livestock	1
Setul	Type 1	Sayaxche	4	Agriculture	1
Tezulutlan I	Type 1	Sayaxche	4	Agriculture & Livestock	5
Tezulutlan II	Type 1	Sayaxche	4	Agriculture	1
Tierra Blanca	Type 1	Sayaxche	4	Agriculture	4
Unión Maya Itza	Type 1	Las Cruces	4	Agriculture	1
Vista Hermosa Los Chorros	Type 1	Las Cruces	4	Agriculture	1