Project Design Document – Scolel'te

Version 2.0 – Last update: June 18, 2019

Cooperativa AMBIO S.C de R.L., Emiliano Zapata #4, Col. El Relicario
San Cristóbal de Las Casas, Chiapas, México.
C. P. 29286

P: + 52 (967) 6788409
www.ambio.org.mx | info@ambio.org.mx | www.planvivo.org

Plan Vivo

Contents

Executive summary

Scolel'te is a forest carbon offsetting program that operates in rural Mexico. According to the data reported in the Scolel'te Annual Report 2018 to the Plan Vivo Foundation, it covers an area of 9,150 hectares, distributed across different ecological and cultural regions of Mexico. These areas are characterized by a high cultural and environmental value, since they comprise indigenous peoples and local communities, as well as several natural protected areas such as Sierra Madre, Selva Lacandona and Selva El Ocote -Cañón del Sumidero National Park.

Scolel´te started in 1994 from a feasibility study with the objective of assessing the carbon sequestration potential in rural communities in Chiapas, as well as the socioeconomic factors that influenced the management of natural resources. In 1997, the project made its first sale of carbon credits in the Voluntary Carbon Market to the International Automobile Federation (FIA), thereafter starting its operations formally.

Scolel'te is a successful program that has been in operations for 22 years, representing the first experience of forest carbon capture national-wide and the oldest at the international level.

Scolel'te, a pioneer in climate change mitigation, is result of the collaboration of several independent organizations and led by two entities: the AMBIO Cooperative, which establishes and maintains the link, coordination and organization of field activities with local farmers; and the Plan Vivo Foundation (FPV), which is in charge of validating the actions carried out by Scolel'te to mitigate climate change and carbon sequestration.

Scolel'te is a carbon sequestration and emissions reduction program that implements the following activities: afforestation, reforestation, implementation of agroforestry systems, conservation, as well as the protection and restoration of forests and rainforests. The program works with 27 native species from its different regions of influence. Several complementary activities are added in the households of the families participating in Scolel'te, in order to complement the efforts for mitigation and adaptation to the effects of climate change.

From a social perspective, Scolel'te is a program that strengthens rural communities in their actions towards the sustainable use of their natural resources, based on the needs of each community. Similarly, Scolel'te has as a global objective the long-term protection of ecosystems and their resources.

Section A: Goals and objectives

A1 Description of goals and objectives

The general objective of the Scolel'te program is to help mitigate climate change and increase social welfare by strengthening local capacities and promoting the establishment of forestry or agroforestry systems, as well as the management of community forest areas, from a comprehensive perspective of territorial management and community participation that contributes to the generation of sustainable livelihoods and strategies in rural communities in Mexico.

Its particular objectives are: the promotion of natural resources management; the operation of carbon sequestration mechanisms to promote the sustainable management of forests and rainforests; the implementation of restoration and conservation actions through the payment for environmental services (PES) scheme, as well as, the design and execution of strategies to cope with the deforestation problem in Chiapas, through local planning tools and under the Plan Vivo System[1] , with emphasis on carbon capture. The above includes:

1) Agroforestry systems of timber and fruit species
2) Protection of endangered forests
3) Restoration of degraded habitats.

Agroforestry and forestry systems are planned either individually or collectively, by the project participants under the Plan Vivo methodology, with the aim to promote the sustainable management of local resources.

The AMBIO Cooperative, project coordinator, conceives Payment for Ecosystem Services (PES) as an incentive for local communities to protect and provide a long-term sustainable management of their natural resources, preserving at the same time their cultural heritage and improving their livelihoods. Accordingly, the specific goals of the program are the following:

- Promotion of sustainable land management
- Strengthening of local capacities
- Adoption of agroforestry and forestry systems
- Conservation of biodiversity and watersheds, protection of native flora and fauna, management of hydrographic basins and prevention of soil erosion
- Promotion of community forest management for the maintenance of forest areas.
- Contribute to climate change mitigation
- Reduce pressures on local forest
- Support complementary actions for the improvement of the living conditions of family units.

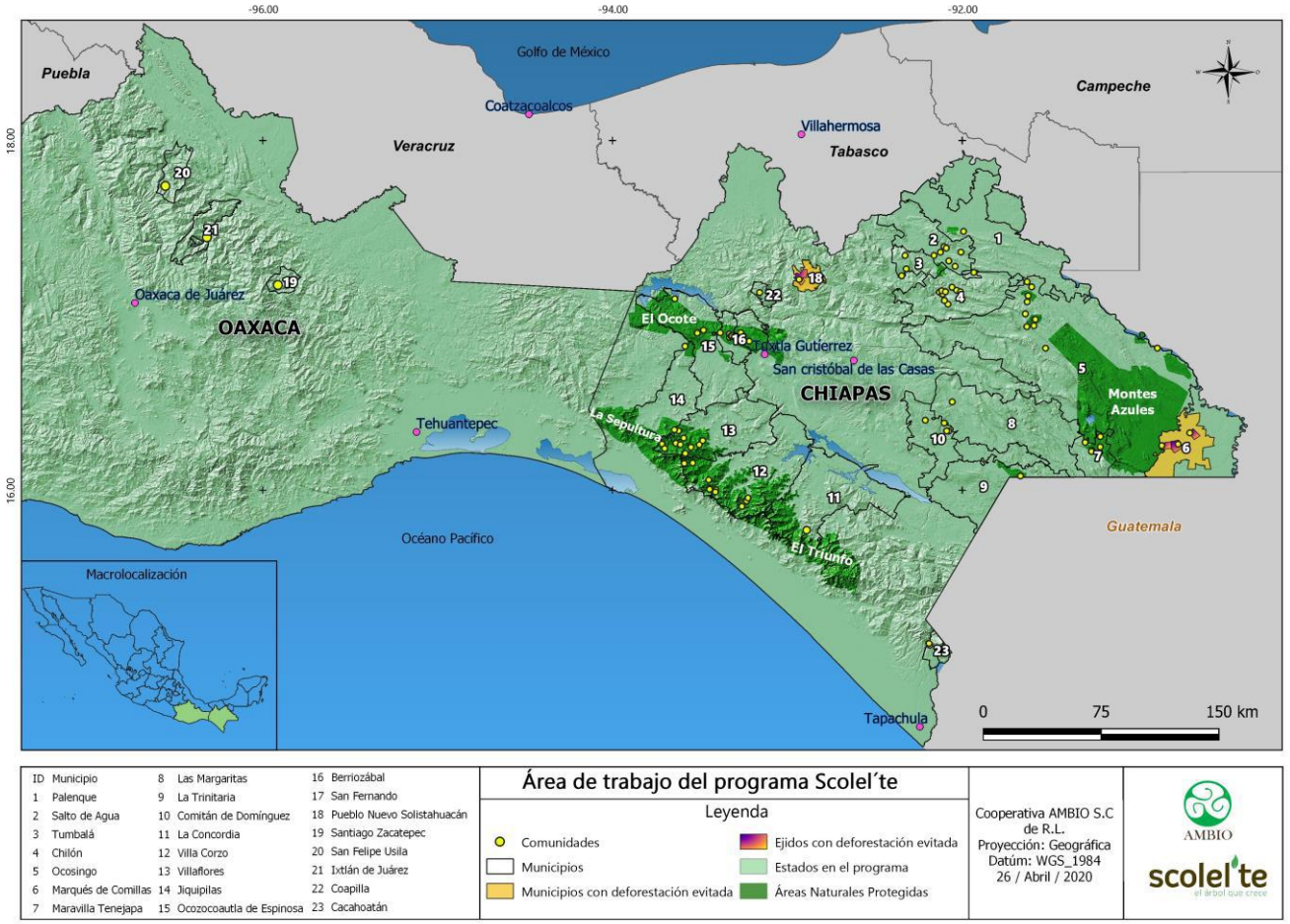
[1] The Plan Vivo System is a framework of tools, procedures, guidelines and standards that allow rural communities in developing countries to access payments for environmental services. These payments strengthen the local capacities of communities to promote and support the restoration and improvement of natural and productive ecosystems that provide public goods and on which these communities depend.

Section B: Site information

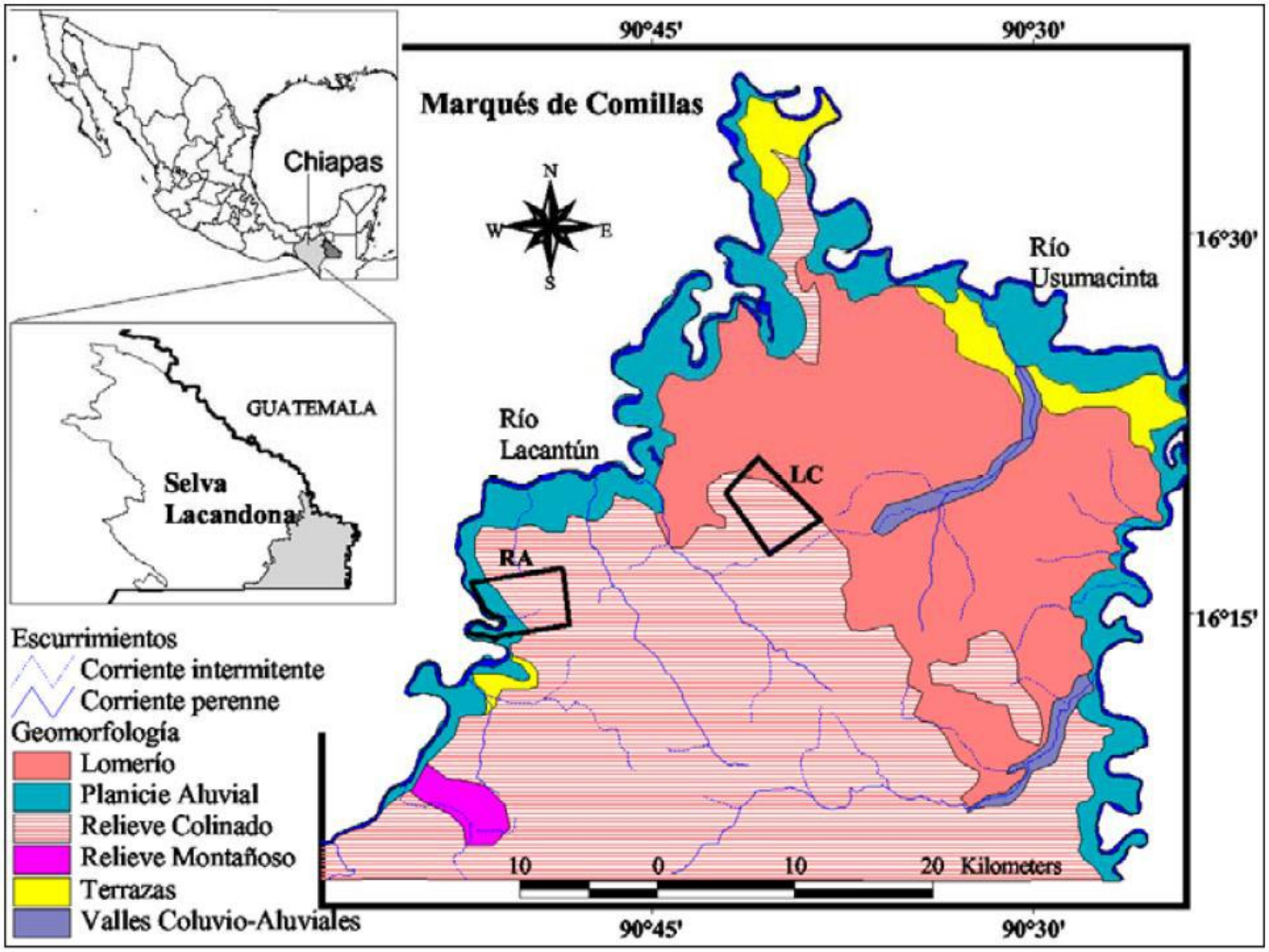
B1 Program location

The Scolel'te program has its area of action in the states of Chiapas and Oaxaca, located in southern Mexico. It covers 21 municipalities distributed in the physiographic regions of, Altos de Chiapas, Sierra Madre de Chiapas, Mountains of the North, Mountains of the East and Central Depression. An important number of rural communities participating in the Program are within Natural Protected Areas, such as "El Ocote" Biosphere Reserve, "Lagos de Montebello" National Park, "Cañón del Sumidero" National Park, "Villa de Allende" Forest Protection Area, "La Pera" Area Subject to Ecological Conservation, "Metzabook and Naha" Protected Areas for Flora and Fauna, "Montes Azules" Biosphere Reserve, "La Sepultura" Biosphere Reserve, "La Frailescana " Protected Area for Natural Resources and "El Triunfo" Biosphere Reserve.

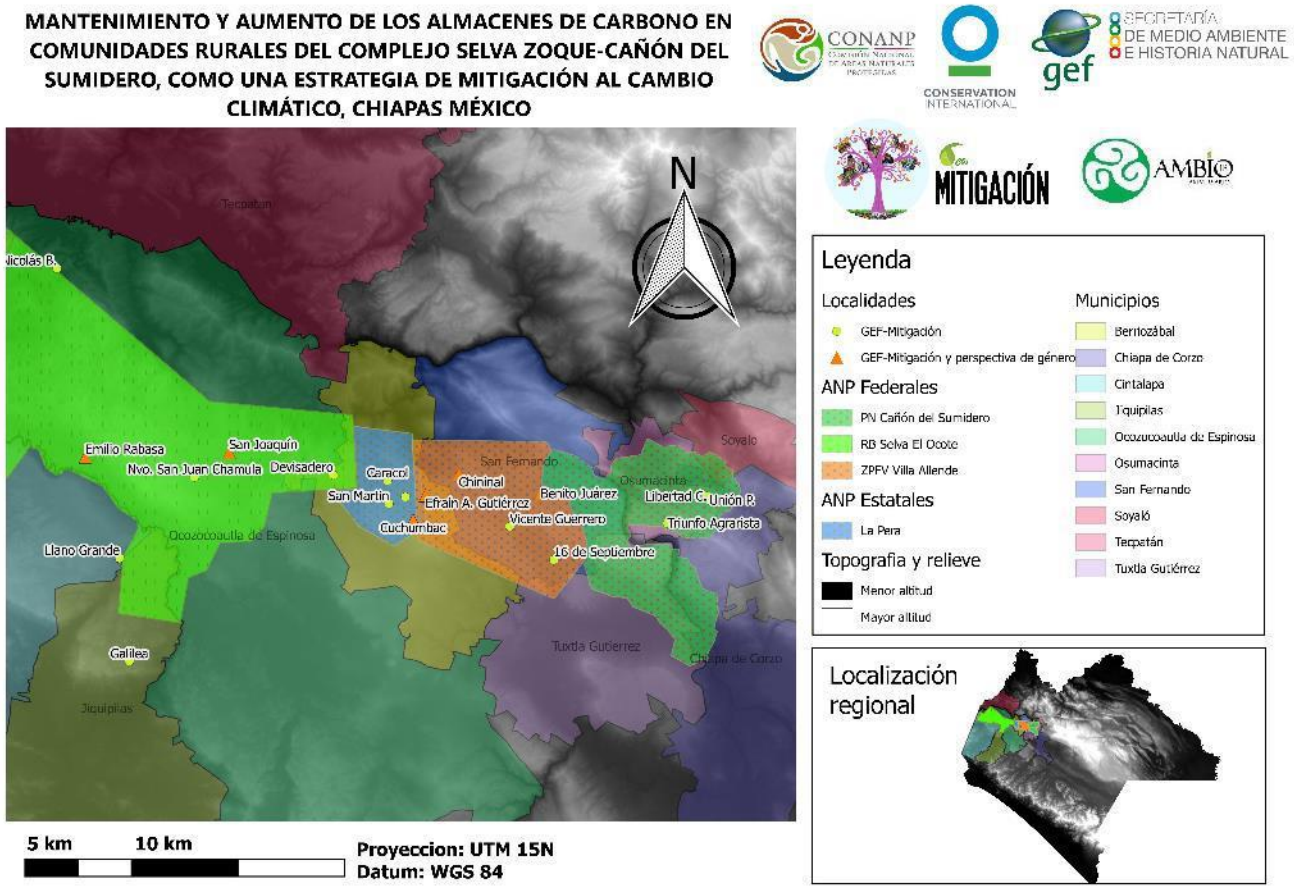
B1.1. Intervention sites of the Scolel'te program



B1.2. Avoided emissions scheme in Marqués de Comillas, Chiapas



B1.3. Avoided emissions and agroforestry sites in the Selva Zoque-Cañón del Sumidero Complex



B2 Description of the program area

B2.1. Physical conditions, climate and precipitation

The state of Chiapas is located in South-eastern Mexico, between 14- and 18-degrees north latitude and 94- to 90-degrees west longitude. It borders to the East with Guatemala; to the West with the states of Oaxaca and Veracruz, to the South with the Pacific Ocean and to the North with the state of Tabasco. It covers an area of 74,415 km^2 (the eighth largest state in Mexico) equivalent to 7,441,500 hectares. (INEGI, 2019).

Chiapas has a heavy rainfall pattern in the Northern and Eastern Mountains, as well as in the Highlands (Altos de Chiapas), with ranges from 1200 to 4000 mm annual average. A common characteristic is washed soils or luvisols, which represent 28% of the state territory, which can be used only in perennial crops such as coffee and fruit trees, and whose management must be controlled since they are easily erodible. (Chiapas State Development Plan 2019-2024, pp. 17 and 18, 2019). In the Northern and Eastern Mountains, as well as in the Central Depression and the Coastal Plain, these soils are also common. Those with greater capacity and agricultural yield, such as vertisols and phaeozem, only cover 15% of the territory. (IBID)

The National Commission for Knowledge and Use of Biodiversity (CONABIO, 2013), places Chiapas as the second states in Mexico with the greatest biodiversity. According to the Map of Land Use and Vegetation of the National Institute of Statistics and Geography (INEGI), Chiapas has an extension of 12,025 square kilometres (km^2) of primary rainforests and forests, 23,231 km^2 of secondary forests and rainforests and 586 km^2 of mangroves. A total of 61 Natural Protected Areas have been declared, representing 22% of the state's surface. (IBID)

In the other hand, the state of Oaxaca is located in the southeast portion of Mexico, between 15° 39' and 18° 42' North latitude and between 93° 52' and 98° 32' West longitude. It limits to the North with the states of Puebla and Veracruz, to the South with the Pacific Ocean, to the East with Chiapas and to the West with the state of Guerrero.

Oaxaca covers an area of 95,364 square kilometres, with formations such as mountains, beaches, plains, caves and canyons. The mountainous system of Oaxaca is basically formed by the convergence of Sierra Madre del Sur, Sierra Madre de Oaxaca and Sierra Atravesada, thus forming a knot or mountainous massif (National Institute for Federalism and Municipal Development, 2019)

Nonetheless its localization in a tropical range, tempered climates are common in Oaxaca, since usually the height of the entity exceeds the 2,000 meters above the sea level. The average temperature in the state - except for the coast- is 18 °C. These factors are of great importance for agriculture, since they allow the development of crops that require both, hot and cold conditions. Pluvial precipitation fluctuates between 431 to 2,710 millimetres depending on the region. (IBIDEM, 2019)

Oaxaca ranks in first place for national concentration of species, and amongst the top five states of the country with highest biodiversity rates, as well is in fourth place according to the largest forest area nationwide. (Oaxaca General Directorate of Population, 2013, p. 11.)

Technical specifications for the project intervention are designed for temperate and tropical areas. For temperate climate, with main forest species like pine (*Pinus sp*.), oak (*Quercus sp*,) and cypress (*Cupressus sp*.). Meanwhile, for tropical climate, key species for afforestation and reforestation are cedar (*Cedrela odorata*), maculis (*Tabebuia rosea*) and mahogany (*Swietenia macrophylla*)

Agroforestry systems, such as living fences and improved fallows are also part of intervention actions, which will be explained further in more detail. For temperate areas, forest restoration and regeneration actions are also promoted. Tropical zones also consider for improved coffee crops and taunya systems. There is an additional scheme for avoided emissions, where both climates are considered, but with a technical specifications developed for each particular implementation area.

B2.2. Flora and fauna species in some protection category

A number of forest species promoted by Scolel'te are categorized as threatened or endangered, according to the Mexican Norm 059 by the Ministry of the Environment and some others registered by the IUCN Red List, as follows:

Table 1. Promoted species under some protection category

Common name	Scientific name	Status under Mexican law (NOM 059)	Status in the IUCN Red List
White Cedar	*Cedrela odorata*	Special protection	Vulnerable
Red Cedar	*Cedrela salvadorensis*	Special protection	
Mahogany	*Swietenia macrophylla*		Vulnerable
Caobilla	*Swietenia humilis*		Vulnerable
Armargoso	*Vatairea lundellii*	In danger of extinction	
Chiapas pine	*Pinus chiapensis*	Special protection	Endangered
Black cork	*Guatteria anomala*	Endangered	Near threatened
Walnut	*Juglans pyriformis*	Endangered	Endangered

Scolel'te is also present in several biodiversity hotspots, such as Marqués de Comillas, Maravilla Tenejapa, Sierra Madre and Selva Lacandona. In these areas, the program works to raise awareness to the local people about the importance of protecting and give proper management to the native flora and fauna, given the risk due to the accelerated loss of natural habitats. In addition to reforestation activities, key biological corridors are rehabilitated by Scolel'te.

B2.3. Other critical factors affecting the management of the project, for example roads, infrastructure, climate threats

One of the most important aspects affecting the management and development of the program is the lack of governance within the communities, due to internal social weakness and also as a consequence of paternalistic and poorly structured public policies, as well as the absence of follow-up and performance indicators.

Another threat is climate change, mainly affecting the periods for seed collection, since these are often out of phase with the right season for handling the plant in the field. Currently this process is under adaptation, learning and feedback, however it demands an additional investment of time, labour and financial resources.

B3 Recent changes in land use and environmental conditions

The interest of rural communities for developing new productive activities has made them to start massive production in soils unsuitable for medium and large-scale agriculture and livestock, leading to unsustainable practices, such as land use change of forest areas. Among the main causes of deforestation at national level, are the slash and burn agriculture, forest extraction for the production of firewood and charcoal, conversion of forest areas to extensive ranching, as well as the occurrence of wildfires. (Lambin, 1994).

Economic activities in Chiapas are concentrated in the third sector (services), but the primary sector still has an important participation. Main products include coffee (first national place in organic production), honey (along with Yucatan, Chiapas is one of the main producers), corn (for subsistence) and sheep cattle. (SAGARPA, 2019).

Additionally, the State of Chiapas presents a strong population dispersion: 70% of towns have less than 100 inhabitants, putting them in a high vulnerability to natural disasters, such as landslides, floods, earthquakes or volcanic eruptions (Chiapas State Development Plan 2019-2024, p. 40, 2019).

Population dispersion is explained by the conditions of irregular human settlements, which result in low or no territorial planning and the deforestation of areas with forest potential. In the case of Chiapas, such circumstances result in a high rate of invasions to Natural Protected Areas (ibidem, p. 40, 2019).

For Oaxaca, likewise, economic and productive activities have their highest concentration in the third sector (services). However, the primary sector also shows a high participation in that state, alongside with mining, and electricity generation, transmission and distribution. (Oaxaca Government State Plan 2016-2022, p. 19). Regarding the agricultural sector, coffee production is remarkable (third national place) as well as beans (eighth national place), livestock and corn. (General Directorate of Population, 2016).

A direct consequence of deforestation is the increase in droughts. In 2019, according to the National Water Commission (CONAGUA), 96 out of 124 municipalities in Chiapas presented some degree of drought, which is a common driver of wildfires (Heraldo de Chiapas, 2019). The short-term scenario is similar for Oaxaca, given that 75% of its territory suffers from high to very high droughts. (NVINoticias, 2019).

The increasing number of wildfires, is another serious consequence of the anthropogenic impact in forest territories. According to the Global Forest Watch Fires portal, from January 1 to July 22, 2019, a total number of 46,872 fire alerts were presented only in the state of Chiapas, with an additional sum of 31,649 fire alerts in the same period corresponding to Oaxaca. (Global Forest Watch Fires, 2019).

The above factors, alongside with soil degradation, represent serious risks for the forest cover and biodiversity in Chiapas and Oaxaca, leading to low yields and worsening the conditions of poverty for the majority of rural communities in both states.

Degradation and unsustainable management of forest ecosystems have important consequences, such as the loss of biodiversity and ecosystem services, generating the subsequent loss of natural capital, higher greenhouse gases emissions, as well as an increased soil erosion and desertification. Similarly, the social wellbeing is affected with the loss of economic opportunities and jobs, becoming reflected in a rising rate of poverty and migration.

B4 Causes of deforestation and degradation

A total 57% of the carbon emissions in Chiapas come from land use change due to deforestation and forest degradation for agriculture purposes (Programa de Acción Climática ante el Cambio Climático del Estado de Chiapas PACCCH, pág 13, 2011). To the above are added forest fires, firewood extraction, bad agricultural practices (agricultural burning, use of agrochemicals), poorly applied policies, forest bans, pests and diseases.

As part of its analysis on deforestation and degradation drivers, the Chiapas Climate Program (PACCCH, 2011) identifies that areas with secondary vegetation are the most prone to deforestation, since they are easily convertible to agricultural use.

This document also states that dense forest areas can be found nearby Natural Protected Areas, as well at a distance of more than 2.5 kilometres to a road or close to human settlements of less than 10 inhabitants per square kilometres. However, forest areas in subtropical regions and in flat zones have the highest rates of land use change, especially for livestock grazing.

In contrast, the main sources of carbon emissions in Oaxaca come from the energy sector (54%), followed by land use change activities (24%). (Inventario de Emisiones de Contaminantes Criterio y Gases de Efecto Invernadero del Estado de Oaxaca, 2008, pág. 35).

In more detail, the carbon emissions sources in Oaxaca are located in the manufacturing sector, and in transport activities. Residential sources are also important, since 87% of its contributions come from firewood burning. On the other hand, land use change emissions are linked to subsistence agriculture and agribusiness, such as mezcal, maguey and coffee crops, as well as overgrazing, leading in conjunction to an increase in forest degradation and in the loss of forest cover. (IBIDEM, pp. 38-40).

The National Forestry Commission (CONAFOR, 2014), identifies the following as the main drivers of forest degradation in Mexico:

1. Land conversion towards short-term productive activities
2. Unstainable forest management, explained by the lack of technical knowledge, poor infrastructure, low levels of funding and crediting, weak social organization and high transaction costs due to strict regulations.
3. Prevalence of wildfires
4. Pests and illness affecting forest sanity.

In addition, marginalization, rural poverty, alongside with low levels of local governance, accelerate land use change in favour of agriculture, industries, tourism and higher urbanization

Among the project intervention areas, Marqués de Comillas (Selva Lancandona) is critical for conservation actions, since it is a buffer zone of the Montes Azules Biosphere Reserve, recognized by the Government of Mexico, as one of the most biodiverse Natural Protected Areas of the country (CONANP, 2019). Marqués de Comillas has the same high biodiversity, but is under constant pressure of deforestation, mainly by extensive ranching, palm oil plantations and wild fires.

According to the final report of the project "Carbon capture and emissions reduction in Ejido la Corona, Municipality of Marqués de Comillas, Chiapas (2010)", AMBIO identified after the analysis of the area and the systematization of its experience, several mechanisms to secure the continuity of activities in areas under the avoided emissions scheme.

Scolel'te found that the improvement of local capacities and technical support are critical to implement a payment for environmental services mechanism, alongside with maintaining a local operative structure responsible for the project. As a result, we experienced lower costs and greater permanence, independently of the rotation of local authorities.

The local technical capacity developed, in conjunction with the use of Plan Vivo as a central approach for land management, also opened the door to raise governmental funds for community conservation actions.

The implementation of the carbon capture and avoided emissions scheme required a strong relationship between the technical staff and the community members, but above all, the willingness of all the ejido residents to stick to the commitments made at the beginning of the project.

Under this framework, the community started health programs, home improvement activities, the formalization of agreements for access to resources, for fire control, for care and maintenance of forest areas and for the improvement of paddocks, and specially, they instituted a medium and long term planning for productive activities, thus allowing the ejido to control its rates of land use change.

Section C: Communities and livelihoods

C1 Communities and target groups

The Scolel´te program works with smallholder farmers, (land owners), either at individual or community level (under the ejido, a communal ownership and rights scheme, widely used in Mexico). Project participants inhabit in rural areas with little access to governmental aid, facing conditions of social, economic and climatic vulnerability.

Scolel'te has its intervention area in Chiapas and Oaxaca, both states with a fragmented territorial division due to their geographical conditions. Chiapas is administered in 16 economic regions, covering a total of 124 municipalities. In the case of Oaxaca, the state has 8 economic regions, and a political division of 570 municipalities. (INEGI Statistical and Geographical Yearbook, 2017 and 2016 respectively).

The state of Chiapas has a total population of 5,217,908 inhabitants, contrasting with 3,967,889 people in Oaxaca (INEGI, 2015). According to the United Nations Development Program, about 50% of the population in both states live under conditions of low development, measured through the Human Development Index (UNDP, p. 7, 2014).

Scolel'te worked during its early years with a group of communities in Oaxaca (three communities), but due to logistics and monitoring costs, since 2010 the program determined that further expansions would take place only in the state of Chiapas.

In addition to the conditions of poverty and marginalization in both states, the gender gap is the largest in the country, as observer in the following table, based on information from the Gender Atlas of the National Institute of Statistics and Geography (INEGI).

Table 2. Socioeconomic outlook

Social indicator	Women	Men
Chiapas		
% of population (by sex distribution)	51.38	48.62
Average schooling (number of years attended).	6.92	7.69
% of population of more than 12 years old that performs unpaid jobs	90.06	42.70
% of total women population, victim of gender violence	43.53	
Oaxaca		
% of population (by sex distribution)	52.40	47.60
Average schooling (number of years attended).	7.25	7.86
% of population of more than 12 years old that performs unpaid jobs	87.89	50.93
% of total women population, victim of gender violence	55.65	

Regarding social participation, the program is conceived to allow every family unit and its members, to better understand their plots, economic activities and livelihoods, as well as the climatic, economic and social benefits they will receive for participating in the Scolel´te program.

Neighbour communities are also benefited, since resources management is based on community and ecological systems, providing results from the implementation of social and environmental planning schemes. The outcomes of the program are not only limited to the environmental context, but are also reflected in the livelihoods of local populations. Similarly, the inclusion of nearby communities is widely promoted, in order to generate and strengthen agroforestry systems and ecological connectivity.

About 60% of the project participants belong to an indigenous ethnic group of a total of six registered in the program, distributed in the states of Chiapas and Oaxaca. These groups are characterized by a strong cultural connection, as well as a cultural heritage linked to small scale agriculture and livestock grazing. However, their socioeconomic conditions are highly vulnerable due to highly persistent levels of marginalization.

C2 Socio-economic context

C2.1. Livelihoods

Economic activities in the project intervention regions, are mainly agriculture, livestock, forestry, fishing and hunting. Communities base their livelihoods on seasonal agriculture and low to medium scale livestock.

Alongside with small-scale agricultural production, characteristic of rural areas, complementary economic activities include local commerce and construction jobs. These regions report high rates of migration due to structural conditions of exclusion and poverty. Oaxaca and Chiapas are in a double status, both as expelling states of the local population and as recipients of the international migrant population in transit.

Local communities also present recurring common practices of unsustainable management of their natural resources. Agriculture is performed in a traditional manner, with little or no technology, and it is based on seasonal rainfall. Livestock is mainly for dual purpose (to obtain meat and dairy) but with low rates of production for large land extensions. Both economic activities have as a common denominator a low productivity rate with high environmental impacts such as soil degradation and carbon emissions.

The activities promoted by Scolel'te aim to raise awareness among rural communities to promote the sustainable management of their natural resources. The program seeks that farmers understand the potential of maintaining trees in their plots, considering that in the medium and long term, they can obtain benefits of forest products such as firewood, construction materials, medicinal plants, water availability, and scenic beauty, among others.

C2.2. Cultural and religious context

In Chiapas, 32% of its population belongs to an indigenous group (Instituto Nacional de Pueblos Indígenas, 2015), while in Oaxaca the rate is 44%[2]. Only in Chiapas can be found 11 different ethnic groups, meanwhile in Oaxaca there are a total of 15, considering an overall number of 68 indigenous groups officially recognized in Mexico.

The indigenous peoples who participate in Scolel'te belong to the Tojolabal, Chol, Tzeltal, Tsotsil and Lacandon ethnic groups in Chiapas, as well as to the Zapoteco and Chinanteco peoples in Oaxaca. However, in both states the program also works with an important number of mestizo population.

Both states also report high rates of Catholic population, 81% in Oaxaca and 58% in Chiapas. Other religious denominations like Adventists, Presbyterians and Protestants are also professed in both states. In the particular case of Chiapas, there is report of a Muslim community in the Highlands region (Altos de Chiapas). (Insituto Nacional de Información Estadística y Geográfica, 2010).

Chiapas and Oaxaca also show a great cultural and religious diversity. Every ethnic group has its own particular characteristics, leading Scolel'te to develop a flexible framework, adapted to different needs and beliefs. In addition, the program plays a central role to raise environmental awareness at local and regional levels, having into special consideration that an important number of communities registered in the program are located within biodiversity hotspots.

[2] Information based on the total population data from the National Institute of Statistical and Geographical Information's (INEGI) Population and Housing Census 2015 and the National Institute of Indigenous Peoples' data on the indigenous population by state to 2015.

C2.3. Assets, income and poverty status

According to CONEVAL, (the governmental body in charge of the evaluation of social development policies in Mexico), about 19.4% of population in Chiapas falls under food poverty status (2016)[3] and 68.4% has an income below the market basket[4]. Additionally, the state is in third highest in Mexico by social marginalization (2015)[5].

In the case of Oaxaca, 31.4% of its population suffers food poverty (2016) and 61.4% has an income below the minimum to cover the market basket. Oaxaca also reports in first national place by social marginalization (2015). In conjunction, Chiapas and Oaxaca are the states with the highest rate of poverty at national level.

Per capita income for the first quarter of 2019 in Chiapas is 48 USD per month, or a daily rate of 1.58 USD (CONEVAL, 2019). This income is below the 1.90 USD stated by the World Bank as a measure to the poverty line. The results for Oaxaca are very similar, with a mean monthly income of 54 USD or 1.81 USD a day, also below the poverty line.

Picture 1. Scolel'te participant from a Tojolabal community

In the case of the participants of the Scolel´te Program, we have identified through our technical staff (during the design of Plan Vivos) that the mean income of the participants is about 1.25 USD a day, equivalent to 38 USD monthly. It should be noted that, according to INEGI, registered communities are populations with high or very high marginalization levels, which places them below the national poverty line.

In collaboration with the technical staff of the Scolel´te program, a quantitative questionnaire was developed in 2018, in order to better understand how carbon payments are spent on. During a first surveying to 65 respondents (equivalent to 4.6% of the total project participants) we obtained the following results:

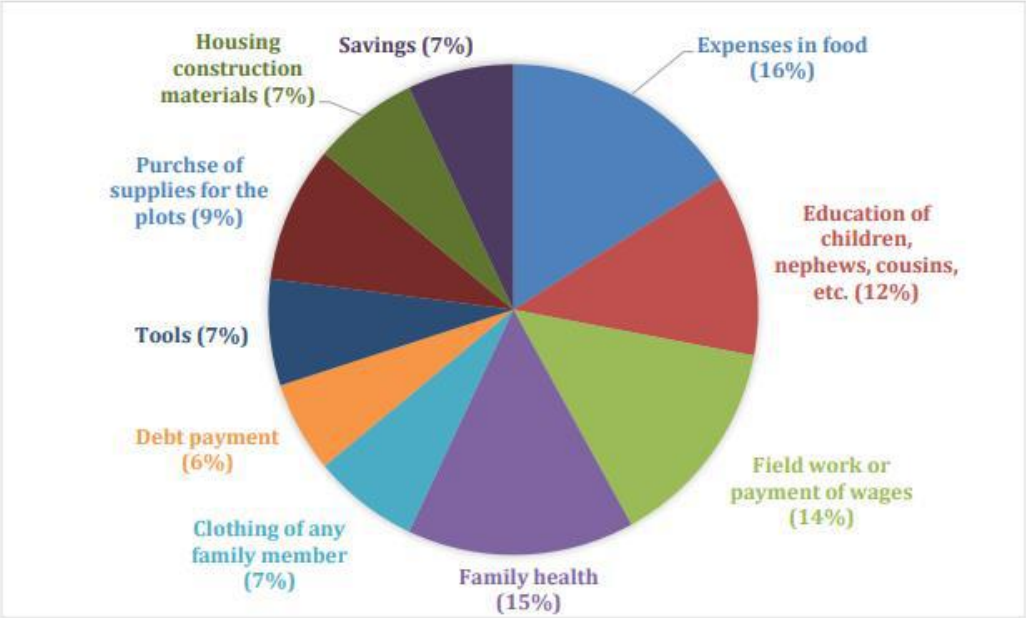
Note: the numbers presented below only represent an approximation, since they had some methodological difficulties in their collection. During the data gathering, we were able to identify that smallholders have some troubles in describing and analysing their daily budget, as well as their annual income and expenses. Some of the inputs detailed below were obtained from their own productive activities, or paying a to third party, but they are still not fully identified

[3] It measures the lack of money and resources of adults and children who had a diet based on little variety of foods; it also consideres whether they stopped eating breakfast, lunch or dinner; they ate less than they thought they should; they ran out of food; they felt hungry but did not eat, ate once a day or stopped eating for a whole day.

[4] It shows a quarterly trend in the proportion of people who cannot afford the food basket with their work income

[5] It is a measure in which a single index aggregates variables of education, access to health services, basic services as well as quality and spaces in housing, and assets in the household. It provides the summary of four social deficiencies of the CONEVAL's poverty measurement: educational gap, access to health services, access to basic services in housing and the quality and spaces in housing.

Table 2.1 Carbon Payments Spent



C3 Land tenure and carbon rights

Most of farmers in Mexico are classified as smallholders, given that their plots are between averages of 20 hectares, with rights to make individual decisions on them. The use of forest areas, in general, is a collective decision, but tends progressively to an individual approach (Soto-Pinto, 2004).

Some of the common limitations for carbon capture programs, are the availability of land, given the small size of the parcels and the existence of multiple land use activities. However, since Scolel'te is based on the establishment of agroforestry systems considering the needs and interests of landowners, these limitations are strongly reduced.

One of the requirements to participate in Scolel'te is the existence of clear land use rights, either collective or individual, which must be legally demonstrated, since carbon accreditation benefits are directly related to land ownership. All these commitments are stated in the PES agreement (contracts for the payment of ecosystem services), which are established between the AMBIO Cooperative and each of the farmers prior to enrolling in the program.

Given that the program is developed at working group and community level, conflicts are expected to be minimal. When disagreement arises, community and regional technicians will reconcile the situation through assemblies and mutual agreements with individual farmers or with the group in general.

The Scolel'te program works in the “ejidos” [6] (communities with a commonwealth land ownership system), with “ejidatarios” [7] (members of the communal land ownership system) and small independent "neighbouring" owners [8], who have legal possession over land with forest resources. The project area (until the 2018 Annual Report) covers 9,150 hectares spread over various ecological and cultural regions.

[6] The ejido population centres or ejidos have legal personality and their own patrimony, and they are the owners of the lands that have been given to them or of those that have been acquired by any other title (Article 9, third title, Agrarian Law). The ejido consists of three bodies: the Assembly, the Ejidal Commissioner and the Supervisory Council.
[7] Ejidatarios are those men and women who hold ejido rights (Article 12, second section "Ejidatarios and neighbors", Agrarian Law).
[8] Those Mexicans of legal age who have resided for one year or more on the lands of the ejidal population nucleus and who have been recognized as such by the ejidal assembly or the competent agrarian court (Article 13, second section "Ejidatarios and neighbors", Agrarian Law).

According to the article 10 of the Agrarian Law: *the collective exploitation of ejido lands can be adopted by an ejido when its assembly so decides, with previous delimitation of the provisions regarding the way of organizing the work and exploitation of the ejido resources, as well as the mechanisms for the equitable distribution of benefits, the constitution of capital reserves, social welfare or services and those that make up the common funds. The collective ejidos already constituted or those that adopt collective exploitation may modify or terminate the collective regime by resolution of the assembly, in the terms of article 23 of this law* (Agrarian Law, Article 11, DOF 25-06-2018).

Likewise, *ejidatarios have the right to use and get benefited by their land use, with those rights that the internal rules of each ejido grants them over other ejido lands as well as other pertinent legal figures* (Agrarian Law, Article 14, DOF 25 -06-2018).

Ejido lands, for their use and purpose, are divided into: *I. Lands for human settlement; II. Common use lands; and III. Parcelled lands (Agrarian Law, Article 44,). The ejido lands may be the object of any association or exploitation contract agreed by the nucleus of the ejido population, or by the titular landowners, depending on whether it is a common land or parcelled, respectively. The agreements that imply the use of ejido lands by third parties will have a specific duration according to the corresponding productive project, of no more than thirty years, renewable prior to termination* (Article 45, Agrarian Law). The above article is of central importance for the farmer's commitments to the program, since, by law, the term for the conclusion of contracts was established at 30 years, (the period for which the permanence of the plot is guaranteed), according to the contract signed between the local farmers and AMBIO to participate in the Scolel´te program.

Similarly, the Article 50 of the same law states that *ejidatarios and ejidos may form federations of ejidos, rural associations of collective interest and any kind of commercial or civil companies or of any other nature that are not prohibited by the law, for the best use of ejido lands, as well as for the commercialization and transformation of products, the provision of services and any other objects that allow ejidatarios the best development of their activities.*

On the other hand, the policy framework for the Scolel'te program and for the country mitigation and adaptation climate actions is the General Law for Climate Change, which outlines a set of interventions for the three levels of government, in order to reduce the greenhouse gases emissions and promote the transition to a low carbon economy. Among its strategies, it establishes the creation of a National Emissions Trading System, which starts up its initial phase (not including offsets), in January 2020. In its Article 34, section III (June 2019 update), on reducing emissions and carbon sequestration in forests, it states the following objectives:

> a) Maintain and increase carbon sinks.
>
> b) Stop and reverse the deforestation and degradation of forest ecosystems and expand the areas of vegetation cover and organic carbon in soils, applying sustainable management practices for livestock and agriculture.
>
> c) Gradually incorporate more ecosystems into conservation schemes, such as: payment for environmental services, natural protected areas, sustainable forest management units, and schemes for the reduction of emissions from deforestation and avoided degradation.

The specific mechanism designed by this strategy is the Special Program on Climate Change (PECC 2014-2018), instituted by the former federal administration with no further update until now. However, there are currently some guidelines derived from the National Development Plan (2019-2024) (Climate Change: main adaptation and mitigation actions in Mexico, 2019, page 23):

Indicator 2.5.2: National territory covered by forests and rainforests. Description: It measures the result of all the conservation, management and recovery actions of forest cover and allows to evaluate whether deforestation decreases (loss of forest cover). Baseline (2018): 33.36% Target (2024): 33.29%"

In this sense, the Intended Nationally Determined Contribution (INDC) of Mexico outlined a general route for addressing the role of forests in the context of international climate commitments, such as the Paris Agreement (Commitments of Mitigation and Adaptation to Climate Change 2020-2030, 2015, p. 11). The established goal for Mexico is the reduction of greenhouse gases emissions at 22% to 2030. For the agriculture and forestry sector, the following are the specific measures to achieve the emissions reduction goal:

1.- Reach a zero-deforestation rate by 2030
2.- Improve forest management (synergies with REDD+ actions are included)
3.- Promote the sustainable technification of the rural sector
4.- Promote biodigesters in agricultural farms
5.- Recover grasslands

However, despite having this route, there are still no policies, programs and funding mechanisms that clearly describe how the country will achieve these goals or the registration process for INDCs, as well as on the REDD+ registry of actions related to avoided emissions with respect to the fulfilment of national goals.

Although carbon rights are still under discussion, the land property rights of ejidos and communities (and therefore, carbon rights), are protected by the Article 27 of the Mexican Constitution, which states:

VII. The legal personality of the communal and ejido population centres is recognized and their property on the land is protected, both for human settlement and for productive activities.

In this sense, the Mexican Centre for Environmental Law (CEMDA) carried out an evaluation of the climate policy in Mexico (CEMDA, 2019, p. 19), with the following main findings:

1.- The design of the Special Program on Climate Change (PECC 2014-2018) managed to satisfy most of the formal elements required by the General Law for Climate Change. However, the absence of budgets, entities responsible for established goals and a robust measurement system (in particular, quantification methodologies), reporting and verification mechanisms for mitigation and adaptation actions, limits its effectiveness.

2.- Once defined and published, the PECC did not include flexible mechanisms that allow it to align its actions to the international commitments adopted after its issuance, such as the Paris Agreement, the Nationally Determined Contribution and the Sustainable Development Goals (SDGs).

C3.1. Actions in Natural Protected Areas

Natural Protected Areas (NPAs) are a delimited territory instituted for the responsible management of natural resources and habitats. These are administered by federal or state agencies, with mixed funding (public and private), and in partnership with different entities and civil society organizations, such as AMBIO.

In Mexico federal NPAs are under the administration of the National Commission for Natural Protected Areas (CONANP). Unlike in other parts of the world, in Mexico more than 80% of the NPAs have human settlements at their interior legally established, which makes it difficult to manage and make decisions within the NPAs, since the populations also have recognized rights for the use of their resources, which must be consistent with the NPAs management plans, a situation that unfortunately not always happens.

According to the General Law for Ecological Balance and Environmental Protection, NPAs have the following status (2000, page 3):

Article 6. Natural protected areas will be administered directly by the Federal Ministry of Environment and, in the case of national parks established in the Mexican marine zones, it will take place in coordination with the Ministry of Navy. This may, once the respective management program is issued, grant to the state governments and municipalities, as well as ejidos, agrarian communities, indigenous peoples, groups and social and business organizations, universities, centres of education and research and other interested

individuals or companies, with the prior opinion of the Council, concertation agreements or coordination agreements in the terms provided in Chapter VI of this Title.

Natural Protected Areas also contemplate the inclusion of ejido or private lands in the conservation scheme, through the figure of Areas Voluntary Intended for Conservation. These areas are recognized as zones that their owners voluntarily decided to institute for responsible management (ejido, community or private entities), but without becoming part of CONANP jurisdiction, such is the case of some of the ejidos registered in Scolel'te.

To date, AMBIO has extensive record of actions in Natural Protected Areas, mainly in partnership with CONANP, which makes the use of human, economic and material assets more efficient, having also a greater impact on the implementation of conservation strategies

The active participation of Scolel'te since its early years in different Natural Protected Areas in Chiapas (both of state and federal jurisdiction), with a current participation in 11 areas, has shown the strengthening of collaboration mechanisms with government entities, as well as making more efficient the execution of financial and operational resources.

As an example, AMBIO developed the GEF Project *Maintenance and increase of carbon stocks in agroforestry systems in rural communities of the Complex Selva Zoque – Cañón del Sumidero, as a climate change mitigation strategy*, where it identifies that deforestation and forest degradation problems, as well as the over-exploitation of natural resources, greater greenhouse gases emissions, climate change and the loss of biodiversity are all interconnected issues that cannot be analysed in isolation.

The project diagnosed that, in the complex of Natural Protected Areas in the region Selva Zoque-Cañón del Sumidero there was an inefficient institutional coordination between local stakeholders, which translates into an ineffective territorial management. In addition, the governmental staff within the NPAs have insufficient information and lack of public resources for their operational activities, including the sustainable management of natural resources.

In sum, the actions promoted by Scolel'te in Natural Protected Areas support previously planned activities, helping to overcome economic barriers for the local operation and providing a productive alternative for communities and ejidos within NPAs, with economic incentives such as payment for ecosystem services (PES).

Finally, as described in the previous section, there is still no information on how carbon rights, REDD+ schemes, avoided emissions and several additional efforts carried out in Natural Protected Areas will be integrated into the accounting and compliance with the INDC of Mexico committed to the Paris Agreement.

Section D: Project activities and interventions

D1 Summary of project interventions

Picture 2. Elaboration of Plan Vivos

The Scolel´te program promotes a set of land management interventions, such as forestry, reforestation, agroforestry, conservation, protection and restoration of forests and rainforests, employing native tree species that are culturally relevant in the working areas.

This scheme is implemented in degraded or deforested soils, previously used for agriculture. Participants must prove land ownership, in order to prevent community or family conflicts. All the activities of the Plan Vivos are jointly designed by the participants and the AMBIO technical staff, which subsequently evaluates and validates the viability of their participation, based on the technical specifications of the program.

Scolel'te also develops an avoided emissions scheme, which prevents the conversion or degradation of forest soils, by estimating the land use change rate in a business-as-usual model versus a carbon emissions scenario after the intervention. It offers an alternative for improved land management at the individual and community level.

Under this approach, carbon assignment is based on the analysis of the documentation of the area, to establish the level of risk from deforestation. It is also mandatory that the participant (either an induvial or a community) demonstrates the legal accreditation of land ownership, in order to be a beneficiary of the carbon issuance to the market.

Special surveillance and maintenance agreements are developed under this scheme, to ensure an effective approach for fire management, protection of flora and fauna, as well as for the development of local internal regulations to prevent poaching and the extraction of natural resources, all the above by strengthening local capacities and governance.

On the other hand, carbon sequestration is carried out in temperate and tropical climates, for the establishment and maintenance of forestry and agroforestry systems. This is implemented through six different models, according to the specific climatic conditions, as detailed below:

Picture 3. Plot in Marqués de Comillas (Selva Lacandona)

D2 Description of the project interventions

Table 3. Field interventions under the Scolel program

Type of intervention	Type of activity	Objectives/ description	Target area/group	Eligible for Plan Vivo accreditation	Number of participant communities
Shade grown coffee AF-CAFE-TROP	**Agroforestry** *Cedrela odorata* (Cedar) *Sweitenia macrophyla* (Mahogany)	• Establishment of timber trees • Shade management for coffee plants • Harvesting of shade grown coffee • Establishment or renovation of coffee plantations	Low and medium scale coffee farmers	Yes	34
Subtropical live fence AF-CERVI- TEMP	**Agroforestry** *Pinus spp.* (Pine tree) *Cupressus benthamii* (Cypresses)	• Improved use of space within agriculture or livestock plots. • Protection of crops to the crossing of animals and/or people • Prevention of erosion • Promotion of biological corridors for fauna and flora • Natural wind-breakers • Obtention of poles and construction materials.	Smallholder farmers with agriculture and livestock grazing as main economic activities	Yes	5
Tropical live fence AF-CERVI-TROP	**Agroforestry** *Cedrela odorata* (Cedar)	• Harvesting of wood with high commercial value • Improved use of space within agriculture or livestock plots. • Protection of crops to the crossing of animals and/or people • Prevention of erosion • Promotion of biological corridors for fauna and flora • Natural wind-breakers • Obtention of poles and construction materials. • Fodder production	Smallholder farmers with agriculture and livestock grazing as main economic activities	Yes	42

Taungya **AF-TAUNG-TROP**	**Agroforestry** *Cedrela odorata* (Cedar) *Sweitenia macrophyla* (Mahogany)	• Harvesting of wood with high commercial value • Firewood supply • Improved use of space by combining a forestry activity with an agricultural activity, for a time period	Smallholder farmers focused on agriculture activities	Yes	42
Subtropical improved fallow **FOR-ACME- TEMP**	**Agroforestry** *Pinus oocarpa* (Pine tree) *(Quercus sp.)* (Oak)	• Production of wood, firewood and other non-forest products • Rapid renewal of a forest system • Increased awareness of the natural regeneration systems • Establishment of native species	Smallholder farmers focused on agriculture activities	Yes	12
Tropical improved fallow **AF-ACME-TROP**	**Forestry** *Cedrela odorata* (Cedar) *Swietenia macrophylla* (Mahogany)	• Production of wood, firewood and other non-forest products • Use of agricultural techniques to improve productivity and preserve soil fertility • Conservation of existing forest areas • Recovery of vegetation cover • Establishment of native species • Scenic beauty	Smallholder farmers with agriculture and livestock grazing as main economic activities	Yes	46
Forest restoration (reforestation and natural regeneration) **FOR-REST- TEMP**	**Forestry** *Pinus oocarpa* (Pine) *Cupressus benthamii* (Cypress) *Quercus spp.* (Oak)	• Natural recovery of forested areas through their protection, as well as by natural and induced restoration • Improvement and increase in density of commercial trees • Procurement of forest and non-forest products	Farmers with large extensions of land Communities Farmers organized in groups	Yes	17
Forest management and conservation **FOR-MAN**	**Forestry** Tropical and subtropical forest species	• Improved management of forest areas • Sustainable management of timber and non-timber species • Restoration of degraded forest and rainforest areas • Management and prevention of forest fires • Improvement of local productive systems	Ejidos and/or communities with forest areas	Yes	-Complex Selva Zoque-Cañon del Sumidero: 5 NPAs distributed in 9 municipalities -Marqués de Comillas: 3 communities -Rincón Chamula: 1 community (municipality at the same time)

Complementary activity	Local livelihoods	• Establishment of organic coffee plots • Sustainable livestock • Installation of firewood saving stoves • Use of forest products (palms, cocoa and honey)	Registered participants and community groups	No	Varies every year depending on the complementary projects
Complementary activity	Capacity Development	• Workshops on knowledge and management of medicinal plants • Workshops on apiary management • Workshops on mushrooms production • Gender perspective actions • Climate change awareness • Pest management • Agroforestry workshops • Environmental education for young people • Sustainable livestock	Registered participants and community groups	No	Varies every year depending on the complementary projects
Complementary activity	Strengthening of local governance	• Formation of community working groups • Strengthening of community leaders • Participation in regional and state level committees	Registered participants and community groups	No	Varies every year depending on the complementary projects

D3 Effects of the activities on biodiversity and the environment

The activities developed by the Scolel´te program involve the constant presence of the technical staff in the plots, in order to guarantee that the planned activities are carried out correctly and in time. An important step is monitoring, which allows us to obtain environmental and biodiversity information from the working sites.

Through monitoring we can track the forest species planted, their individual numbers and growth rates, the natural regeneration sites, the presence of flora and fauna species, as well as the surrounding watersheds. Collaboration with local communities, both within and outside Natural Protected Areas has contributed to the strengthening of biological corridors in the working areas.

Through complementary projects, the Scolel'te Program has been able to monitor the presence of fauna in Marqués de Comillas and El Ocote regions through trap cameras, such as: the ocellated turkey (*Meleagris ocellata*), collared peccary (*Pecari tajacu*), jaguarundi (*Puma yagouaroundi*), toucans (*Ramphastidae*), several amphibians, (*Amphibia*), gray fox (*Urocyon cinereoargenteus*), howler and spider monkeys (*Alouatta Caraya y Ateles*), white-nosed coati (*Nasua narica*), margay (*Leopardus wiedii*), fruit bats (*Artibeus jamaicensis*), greater grison (*Galictis vittata*), Wilson's warbler (*Wilsonoa pisilla*), Kentucky warbler (*Oporornis formosus*), wood thrush (*Hylocichla musculata*), black-throated green warbler (*Setophaga virens*), red-throated ant tanager (*Habia fuscicauda*), green parakeet (*Aratiga holochlora*), blue bunting (*Cyanocompsa parellina*), Keel-billed toucan (*Ramphastos sulfuratus*), blue-crowned motmot (*Momotus momota*), black hawk-eagle (*spizaetus tyrannus*), king vulture (*Sarcoramphus papa*), among others.

Similarly, with 27 native forest species under management, the program has increased its working area contributing to the protection of endangered species. Reforested plots have also improved soil productivity, with native palms, cocoa, some fruits and coffee.

Picture 4. King vulture (Sarcoramphus papa)
Observed in the Scolel'te community of San Joaquin

Section E: Participatory design of the project

E1 Recognition and contact with communities

The program starts with the delimitation of intervention areas, in communities that have some characteristics such as: ecosystems with high biodiversity, climate change risk, population with high levels of poverty or some degree of vulnerability (social, economic or climatic), or those recognized as indigenous peoples.

Following this, the early contacts with the community include visits and trainings to explain in detail the aims and scope of Scolel'te for groups and/or organizations that have previously expressed their interest in the program.

Such trainings aim to raise awareness on issues of high relevance to the communities enrolled in the carbon program (climate change in general, the design and implementation of Plan Vivos, technical specifications of the agroforestry systems, among others). The Plan Vivo plays a critical role, as an element that allows to comply with the free, prior and informed consent of individual or community participants. Through meetings and workshops, information is provided on the commitments, obligations and rights that both parties (AMBIO and the farmers) acquire as part of this initiative.

After the AMBIO technical staff makes the first visit to the communities, the process starts with each interested community or group, in order to describe and assess the social and environmental conditions of the sites. This stage allows to verify the information of the Plan Vivos provided by the local people, with the aim to evaluate if the systems and tree species proposed by the farmers are suitable.

Once the availability as well as the social and environmental conditions of the place have been evaluated, the selection and training of community technicians continues. These technicians are chosen by consensus with the local farmers, given that they are the direct contact with the community for the development of planned activities, establishment of plantations, monitoring, verification and carbon payments according to the commitments made. Besides, there is the figure of the regional technicians, which coordinate and support the activities of community technicians, also serving as a training mentor.

Technical training is carried out through workshops and field visits, and a careful description of the Plan Vivo methodology is provided, as well as the minimum social and environmental conditions for the development of the program. The agroforestry and forestry systems more suitable for the community are discussed with the local farmers, considering the following criteria:

- Land quality and availability
- Previous experience with forestry or agroforestry systems established in the community
- Assessment of timber species with potential benefits for the community
- Degree and level of participation: individual, communal or through organized groups
- Number of families involved
- Coordination capacity at community level

After one or two meetings, local farmers determine if they want to continue to the next stage, and prepare their Plan Vivos, otherwise there is a separation of both parties without generating any type of commitment. Following this scheme, AMBIO ensures that the establishment of Plan Vivos is done in a consensual manner and under freedom of choice.

A key element to overcome the usual barriers to participation is the central role of community and regional technicians, who are also registered farmers in the Scolel´te Program. They live within their communities and have participated actively in the Program; therefore, they can share the work of Scolel´te to other interested farmers from their first-hand knowledge and experience,

E2 Collective involvement in the implementation and development of the program

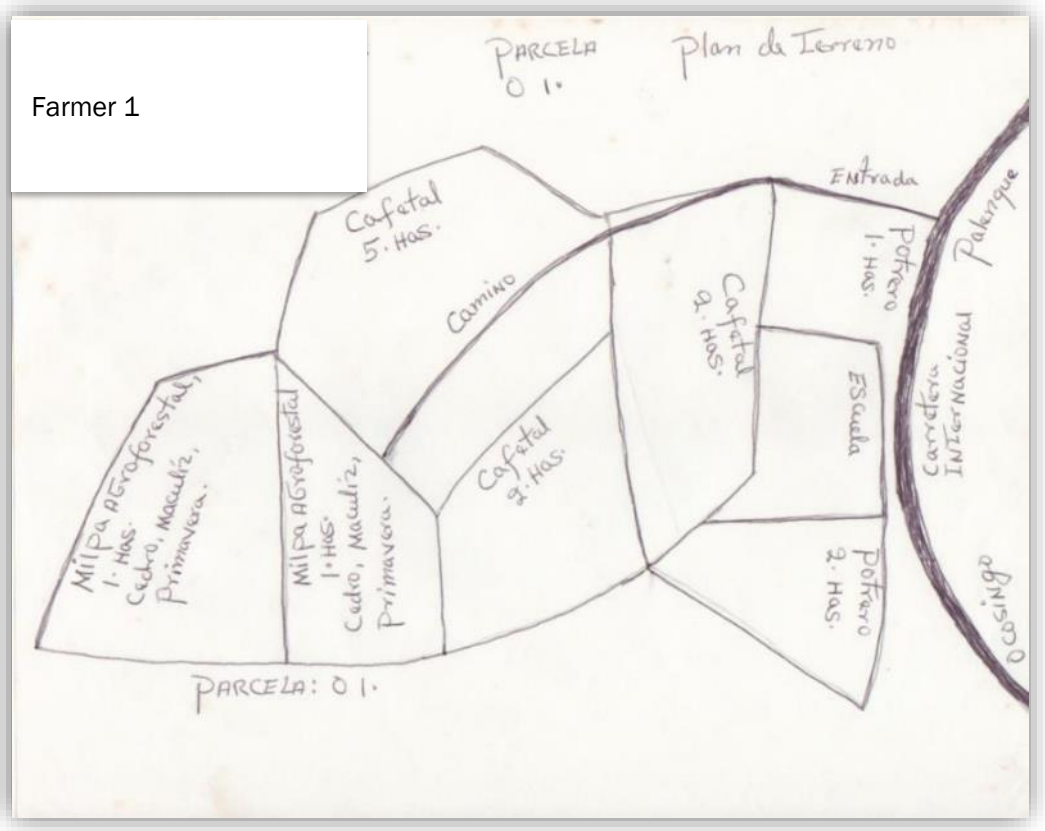
E2.1 Design and registry of Plan Vivos

One of the initial stages of the program is diagnosing the land use in the plots of the interested farmers, in order to assess the social, environmental and economic viability of the sites. The second step is identifying the suitable area to start carbon sequestration activities under the Plan Vivo methodology.

Plan Vivo is a planning, management and carbon monitoring tool for the agroforestry systems proposed by the farmers by themselves. Its preparation, design and implementation are based in the needs and opportunities of each household, considering also the use of native forest species in the selected interventions.

Below is presented a Plan Vivo (Picture 5), with all the plots hold by the farmer, detailing information for every plot such as the surface and land use. The plot selected for reforestation is delimited, also registering the technical information of the selected agroforestry system and a schedule of activities. Such planning is set according to the own dynamics of every farmer. Another important characteristic is that the Plan Vivo is designed taking into account the opinion of every household member.

Picture 5. Plan vivo for a household unit



E2.2. Evaluation system for a Plan Vivo

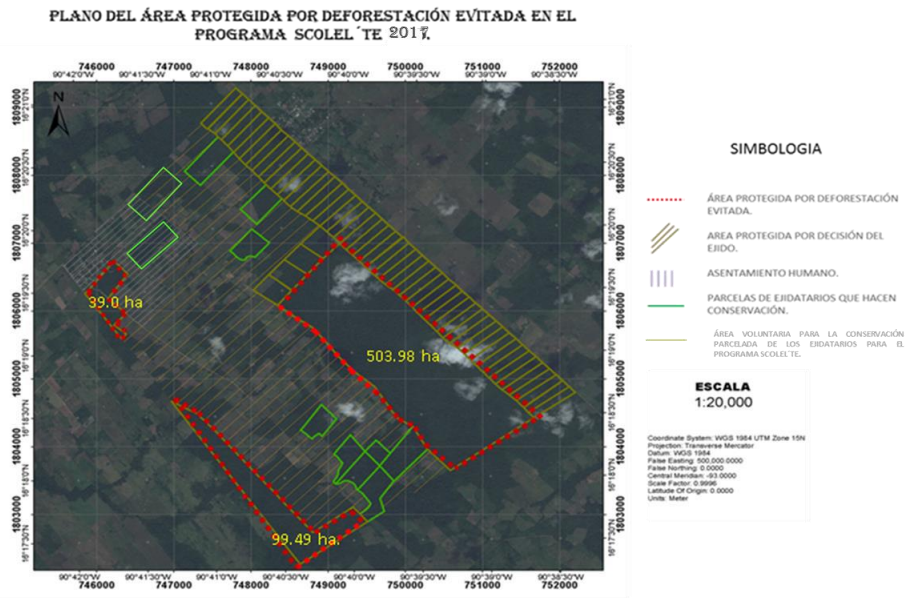
With the data obtained through the Plan Vivo it is evaluated:

- Whether the farmer does not sacrifice an area necessary for the subsistence of the family (food security).
- Whether the farmer's draft proposal does not threaten carbon "leaks", like the displacement of carbon emitting activities to another surface, meaning zero net sequestration.
- Whether the farmer's proposal has no impact on neighbouring plots (e.g. excessive shade)
- The most important agricultural activities for the farmer
- The agroforestry or forestry system and the technical specifications in use
- The schedule of activities and assigned times necessary to establish the proposed system

The second scale of participation and Plan Vivo design is at the community or ejido level, where the entire community or ejido participates. At this level of participation, the community is required to prepare its community Plan Vivo, in which the areas where the community will develop activities for the program must be identified. These can be restoration, forest management or forest protection activities. When the community is very large, the Plan Vivo is prepared only with the authorities of the ejido or the community, and then it is agreed with the entire ejido.

It is also possible that the community plan is harmonized with the individual plans for each interested farmer, in order to obtain more robust information and agreements. The above is more expensive and time-consuming, therefore is normally carried out when, in addition to carbon capture actions, it is intended to develop other complementary activities such as the improvement of productive systems or schemes of avoided carbon emissions.

Picture 6. Community Plan Vivo for Ejido La Corona



The community Plan Vivo must identify:

- The ejido or community total area
- The areas to be registered in the program
- The activities to be developed in each area of the ejido
- Management actions to prevent carbon leakage
- A calendar of activities
- A set of proposed strategies to increase the permanence of the area

When possible, the information is collected at household level and reflected in the community Plan Vivo

E2.3 Assignment and registration of Plan Vivos

Once the Plan Vivo is completed by every farmer or group, these are organized by community and submitted to the AMBIO technical team for review and evaluation. If there are no observations or corrections, an alphanumeric code for each Plan Vivo is assigned, according to its region. In the program database, the basic information of the farmer and the plot is registered for further accreditations, monitoring and allocation of carbon buyers.

E3 Community governance of the project

Consultations for the development and establishment of the program in the intervention sites are organized through community and regional technicians. Scolel'te has a community technician by locality and/or group, noting that these technicians are chosen in community or group assemblies.

E3.1. Meetings with community and regional technicians. Involvement and consensus of participation in the program

The degree of participation of community technicians will depend on the experience and the presence they have in the communities. In addition to supporting technical activities, they are responsible for providing information to the AMBIO staff on the socio-economic conditions in their assigned communities.

Community technicians report to the regional technicians those issues that arise in their working areas and, if necessary, regional technicians report to AMBIO any internal conflict in the communities that could affect the fulfilment of the objectives of the program. Some of these conflicts may have a political and/or religious background, or they might be rules or customs that discriminate the participation of some members. Likewise, they must communicate in the event that any farmer has decided to participate in the program under some type of social and/or economic pressure, meaning that his/her participation was not voluntary.

Regional technicians are the people with more experience and involvement in the program, which is why they supervise and provide support to community technicians. Regional technicians are in direct communication with AMBIO, they participate in planning meetings every 3 months and are also in constant training. Some of them also carry out specific activities such as seed collection, training to community technicians and working groups, nursery management, and verification of monitoring activities, among others.

Picture 5. Meeting of Scolel'te technicians

As an evidence that communities or farmers are voluntarily joining the program, an assembly act is drawn up, in which they state that they have knowledge of the program, its objectives, goals and commitments, as well as the rights that they acquire by being part of Scolel'te. This act is jointly signed between the farmers and AMBIO.

E3.2. Complaints and grievance mechanism

As a result of the improvements made to the program in 2016, a complaint mechanism was developed, with the aim to receive and address complaints that may arise in communities as a consequence of the activities and outcomes of the project. This mechanism will be reported with the most relevant complaints and the solution mechanisms in the Scolel'te Annual Report to the Plan Vivo Foundation.

Complaints can be submitted to community and regional technicians and then delivered to the AMBIO representatives. Complaints will be dealt, as long as they are linked to the project, either presented in writing or verbally, but by an informant source from the community. The complaint must be addressed within a period of no more than 30 business days, having in mind that anonymous complaints will not be addressed.

Follow-up will be developed at the local level through the representative of the project, which in first place is the community technician, and at second level, the regional technician, who at the same time will inform to the Scolel'te Technical Coordinator. During quarterly technical meetings those complaints under pending resolution will be addressed and possible solutions will be provided, describing any related issue in the act of the meeting.

If the complaint can be solved and a solution can provided by the technical coordination of the program, it will be given. Otherwise, based on its complexity, the complaint will be forwarded to the program's Technical and Administrative Committee (made up of AMBIO technical and administrative staff). If necessary, an extraordinary meeting will be held with all the regional technicians, to give a response or position about it. The response to the complaint must not exceed a time greater than 60 business days, and it will be provided in writing. Complaints are stored in the folders of the producers, together with a description of the attention mechanism.

Complaints will be addressed as long as:

- They are within the program's area of influence.
- They occur within the time of implementation of the program.
- The letter of complaint is signed by one of the owners or holders of the accredited plots.

Section F: Ecosystem services and other benefits of the project

F1 Carbon benefits

Scolel'te protects and conserves a total area of 9,150.75 hectares of forests, rainforests and reforested plots, with benefits of more than 550,331 tons of carbon dioxide sequestered and issued as Plan Vivo Certificates (Scolel'te Annual Report, 2018).

Table 4 summarizes the quantification of carbon benefits (by hectare) for each registered intervention, as employed by the project during the period 1997-2017.

Table 4. Carbon benefits assigned to local communities (1997-2017)

	1	2	3	4	2-(1+3+4)
Type of intervention (technical specification)	**Carbon absorption baseline without the project (tCO_2e/ha) ***	**Storage/ reduction of emissions with the project (tCO_2e/ha) ****	**Expected losses (leakages) (tCO_2e/ha) *****	**Buffer risk reduction (tCO_2e/ha)**	**Net carbon benefit (tCO_2e/ha)**
Improved coffee AF-CAFE-TROP	378.01	143.13	-0	14.31	128.82
Subtropical live fence AF-CERVI-TEMP	488.11	102.393	-0	10.23	92.16
Tropical live fence AF-CERVI-TROP	315.62	157.81	-0	15.78	142.03
Taungya AF-TAUNG-TROP	330.3	363.33	-0	36.33	327.00
Subtropical improved fallow FOR-ACME-TEMP	666.105	167.719	-0	16.77	150.94
Tropical improved fallow AF-ACME-TROP	341.31	352.32	-0	35.23	317.09
Forest restoration (natural regeneration and restoration) FOR-REST-TEMP	770.7	164.049	-0	16.40	147.64
Forest management and conservation FOR-MAN (AE) Marqués de Comillas		Variable range (depending on regional analysis)	-0	Variable range (depending on regional analysis)	Variable range (depending on regional analysis)

- Please note that the calculations presented in this table come from the technical specifications described in Section G
- Normally, there will be a technical specification for each intervention (in the case of REDD+, a group of activities implemented together is considered as a single intervention[9]

[9] * tC/ha x 3.67 | ** tC/ha x 3.67 | *** Carbon sequestration/emissions reductions (t CO2e / ha) – Losses per ha, estimated (leaks) (t CO2e / ha)

Table 5 summarizes the carbon benefits per hectare for each intervention during the project's crediting period starting in 2018. These data are the result of updating the technical specifications approved by the Technical Committee of the Plan Vivo Foundation.

Table 5. Carbon benefits per hectare for each intervention during the project's crediting period starting in 2018.

	1	2	3	4	2-(1+3+4)
Type of intervention (technical specification)	**Carbon absorption baseline without the project (tCO_2e/ha) ***	**Storage/ reduction of emissions with the project (tCO_2e/ha) ****	**Expected losses (leakages) (tCO_2e/ha) *****	**Buffer risk reduction (tCO_2e/ha)**	**Net carbon benefit (tCO_2e/ha)**
Temperate improved fallow FOR-ACME-TEMP	341.31	136.71	-0	13.67	123.04
Temperate live fence AF-CERVI-TEMP	488.11	71.38	-0	7.14	64.24
Tropical live fence AF-CERVI-TROP	315.62	100.3	-0	10.03	90.27
Taungya AF-TAUNG-TROP	330.3	209.7	-0	20.97	188.73
Tropical improved fallow FOR-ACME-TROP	666.105	190.88	-0	19.09	171.79
Improved coffee AF-CAFE	378.01	136.49	-0	13.65	122.84
Forest restoration (natural regeneration and restoration) FOR-REST-SUBT1	770.7	164.05	-0	16.40	147.64
Forest management and conservation FOR-MAN (AE) Selva Zoque -Cañón del Sumidero Complex					Pending tech spec review
Forest management and conservation FOR-MAN (AE) Marqués de Comillas					Pending tech spec review
Forest management and conservation FOR-MAN (AE) Rincón Chamula					Pending tech spec review

- Please note that the calculations presented in this table come from the technical specifications described in Section G
- Normally, there will be a technical specification for each intervention (in the case of REDD +, a group of activities implemented together is considered as a single intervention[10]

The data in the final column in tables 4 and 5 it is based on the commitment times for the program. For table 4 the estimation was made on a 100-year commitment (for both tropical and temperate systems), while in table 5 it corresponds to a 40- and 50-years commitment (for tropical and temperate systems, respectively). Such time adjustment occurred due to regulations under Mexican laws, as well as the experience in the field considering a feasible agreement for all parties

[10] * tC/ha x 3.67 | ** tC/ha x 3.67 | *** Carbon sequestration/emissions reductions (t CO2e / ha) – Losses per ha, estimated (leaks) (t CO2e / ha)

F2 Livelihoods benefits

One of the main expected impacts of the program is the improvement in the quality of life of rural households, given that forestry and agroforestry systems provide raw materials used for food, shelter, construction and support materials (poles, boards) and firewood for cooking.

The degree of organization of the communities and groups that participate in the program has also been identified as an indirect benefit. It is not immediately perceived, but it sets a framework to manage other programs, besides to contributing to the local capacities and social capital that the program promotes.

Table 6. Livelihoods benefits identified in the program

Food and agriculture	Financial assets and income	Ecosystem services (water, soil, etc.)	Energy	Timber and non-timber forests products (including aliments)	Land tenure security	Rights of use to natural resources	Social and cultural assets
Agroforestry systems strengthen agriculture and agriculture activities also support agroforestry	By improving productive systems, these are strengthened and diversified, which gives the opportunity for greater financial assets and income, since their productivity is not affected	The improvement of productive systems enhances the provision of environmental services. The connection of biological corridors is also widely promoted	Firewood plays an important role in rural areas. It is not affected by the program but on the contrary, some activities promote the sustainable production of firewood.	The establishment of local forest species is favoured, for its future harvesting. Non-timber species are also promoted, as a strategy to guarantee the permanence of the plot.	The land is owned by the community or individual farmers. The program does not intervene in areas where land tenure is not defined	No right of use is affected. Those that can reverse or impact the agroforestry or forestry system are only regulated by local governance agreements.	These are not affected. The preparation and evaluation of Plan Vivos, allows their prior identification and design of management strategies

The benefits identified in the table above are based on the smallholder farmers and households affiliated to the program.

The Scolel'te Program, administered by the AMBIO Cooperative, generates a series of socio-economic and environmental co-benefits in its working areas. It has been identified that carbon payments contribute to the participants' family finances, since they are used in areas such as: food, health, clothing, children's education or for buying supplies and tools for their plots.

F3 Benefits for biodiversity and ecosystems

Amongst the main program activities are the strengthening of local capacities as well as the increasing environmental awareness about the conservation and protection of biodiversity. The program contributes to the development of forest and agroforestry systems in several priority conservation areas. In addition, it supports the generation of direct and indirect benefits from ecosystems and to the livelihoods of smallholder farmers.

F3.1. Direct benefits:

Through the program is strongly promoted the use of native and/or naturalized species from southern Mexico in order to contribute to their conservation. Special attention is paid to tree species whose populations and genetic variety have been greatly reduced by their overexploitation and poor management. In the same sense, the program is implemented in different regions, several of them adjacent or within natural protected areas.

Agroforestry and forestry systems for restoration purposes are particularly promoted, avoiding the degradation of ecosystems, alongside with comprehensive measures for the improvement of local productive systems, both for subsistence and market-oriented (corn, beans, livestock, mushrooms and bee-keeping) including also the revaluation of traditional knowledge about medicinal plants.

In order to provide an alternative source of wood and to decrease the pressure on forests and rainforests, the program also implemented the installation of wood-saving stoves, as a mechanism to reduce the use of firewood and to improve the health of the families.

Additionally, land-use planning is promoted with the help of the Plan Vivo methodology, taking into account the local interests and needs in the medium and long term.

F3.2. Indirect benefits

Due to the nature of the systems that the program promotes, it supports the conservation of forests and rainforest, as well and the maintenance of several of their ecological functions, such as biodiversity, hydrographic basins, soil conservation, among others. Given that the establishment of trees enhances soil conservation, the development of a Plan Vivo contributes positively to the restoration and protection of habitats in southern Mexico. By increasing forest cover in different regions, the program also contributes to the improvement of watershed functions. Regarding its impacts on biodiversity, the program promotes native tree species, some of them in danger of extinction, generating biological corridors that facilitate the geographical dispersion of animals and plants.

It is expected that in the medium and long term, the program will restore, protect and sustainably manage territories whose ecosystems are degraded and/or threatened. The program also promotes institutional arrangements of the communities with governmental agencies with an active presence in the region, in such a way that activities are collaboratively designed for the conservation of local biodiversity and its rational management.

Table 7. Summary of expected impacts of the program activities on key ecosystem services.

Name of the technical specification	Impacts on biodiversity	Impacts on water availability/quality	Impacts on soil conservation	Impacts on air quality
Improved coffee AF-CAFE-TROP1	- Increased protection and diversity of trees - Greater number of ecological layers to generate niches for species of birds, reptiles and amphibians. - Dispersal of seeds and exchange of soil nutriments - Habitat conservation - Establishment and strengthening of biological corridors	- Reduced pressure on water resources - Decrease in the use of agrochemicals and its dispersion to surface and underground water sources	- Contribution to soil nutriments and to the natural cycle of the ecosystem - Reduction of soil erosion and degradation - Increase of underground carbon due to the accumulation of organic matter	- Air purification - Mitigation of extreme climatic events
Subtropical live fence AF-CERVI-SUBT1 Tropical live fence AF-CERVI-TROP1	- Establishment and strengthening of biological corridors - Reduction of the recovery time of ecosystems - Greater number of ecological layers to generate niches for species of birds, reptiles and amphibians. - Food supply - Increased organic matter	- Improvement in the supply of water to natural reservoirs	- Decrease of soil compacting - Lower erosion - Contribution of soil nutriments and organic matter	- Greater absorption of atmospheric carbon
Taungya AF-TAUNG-TROP1	- Crops supress or reduce the number of pests and illness - Increased diversity of forests species - Ecological niches for various animal species - Forest recovery of agricultural plots	- A higher density of forest cover improves underground water filtering	- Contribution of soil nutriments and organic matter as an effect of agroforestry systems - Decrease of soil compacting - Lower soil contamination given the reduced use of agrochemicals	- Air purification as a result of carbon capture and photosynthesis
Subtropical improved fallow FOR-ACME-SUBT1 Tropical improved fallow AF-ACME-TROP1	- Conservation and increase of habitat for animal and plant species - Reduction in the use of fire, avoiding harmful effects on the surrounding habitats. - Protection and promotion of species that serve as a food for wildlife - Recovery of forest ecosystems - Establishment and strengthening of biological corridors - Management of local ecosystems for natural regeneration	- Decrease in the use of agrochemicals (fertilizers and pesticides) - Improved water filtering	- Higher fertilization - Lower erosion and soil degradation - Promotion of soil protection	- Decrease in the practice of “slash and burn” - Increased carbon capture

Forest management and conservation FOR-MAN FOR-MAN_Corona Forest restoration (reforestation and natural regeneration) FOR-REST-SUBT1	- Promotion of responsible management of forest resources - Increased protection and diversity of trees - Maintenance of forest coverage - Recovery of ecological niches - Protection and promotion of species that serve as a food for wildlife - Provision of habitats for flora and fauna - Recovery of ecosystems - Recovery of populations of flora and fauna - Establishment and strengthening of biological corridors	- Improvement in the supply of water to natural reservoirs - Recovery of gallery/ riverside forests	- Generation and regeneration of soils - Contribution of organic matter - Lower erosion and soil degradation	- Reduction of carbon emissions from deforestation and forest degradation - Mitigation of climate change as a result of greater protection to existing carbon sinks

Section G: Technical specifications

Technical specifications are the guidelines that provide direction for the management of reforestation activities, maintenance of agroforestry systems and forest management interventions implemented by the Scolel'te program, securing the estimated benefits of carbon sequestration.

In addition to guaranteeing the projected carbon sequestration over time, technical specifications aim to provide a justification of the socioeconomic and environmental benefits associated with the sustainable management of the systems for each land use proposed in the Plan Vivo.

Table 9 summarizes the area and the estimated CO2 for each project intervention with agroforestry systems during the two periods of accreditation: a first phase from 1998 to 2017, and a second period starting in 2018 with the updated specifications.

The Technical Specifications for Agroforestry Systems are based on the Shamba Methodology v1.1, which was approved by the Plan Vivo Foundation as an Approved Approach in 2017. The SHAMBA software, developed by a research team at the University of Edinburgh, was used to estimate carbon sequestration rates for a set of variables such as the forest species, the agroforestry system and the project lifespan. Estimations are based on combined measurements of the carbon pools within above ground and below ground biomass.

G1 Program activities and interventions

Technical specifications for the program are published in the Plan Vivo website (https://www.planvivo.org/project-network/scolelte-mexico/). Some general points are applicable for all the interventions, as described below. Given the geospatial amplitude of the regions where the program intervenes, two different kinds of specifications for restoration activities are required, for temperate and tropical climates, respectively. Besides, there are specific technical specifications for avoided emissions actions in natural carbon sinks.

Table 8. List of interventions for the Scolel'te Program

F1.1 List of interventions for the Scolel'te Program on agroforestry systems	
Temperate climate systems	**Tropical climate systems**
– Improved fallow – Live fence – Forest restoration and regeneration	– Taungya – Improved fallow – Live fence – Improved coffee plantation

G1.1 Interventions for temperate climate

G1.1.2 Improved fallow

Management of secondary vegetation (fallow) for the production of timber, firewood and other products as a result of the improvement induced through *Pinus sp* and thinnings for the release of oaks (*Quercus sp.*). This system is more convenient for vegetation where the height average is less than 3 meters, in order to reduce the need for thinnings in the gaps of the planting.

G1.1.3 Live fence

Pine and cypress are the species most used as a live fence. They offer services of protection against the passage of animals and people to crops, prevent erosion and runoff and also serve as a windbreaker. In addition to these ecosystem services, such species also provide timber, construction materials and firewood.

G1.1.4 Forest restoration

Forest restoration is the natural recovery of open areas previously disrupted by natural or anthropogenic disasters. The increase of the forest coverage is achieved through commercial species. It can be accomplished through the planting of trees in open areas (reforestation) and/or helping the natural regeneration with the

use of fences to exclude cattle (regeneration), as well as other activities to promote soil regeneration.

G1.2 Interventions for tropical climate

G1.2.1 Taungya

This agroforestry system is based on the association of timber trees (cedar, mahogany, maculis, and bojón) with annual crops (corn, beans and pumpkins). Food crops provide an extra income in the early years of the plantation, while trees receive the benefit of the maintenance done to crops. After 3 or 4 years old, trees provide shade to the crops, so the system continues as normal forest plantation, concluding the establishment of crops in favour of fruit trees (orange, lemon) and palms.

G1.2.2 Improved fallow.

Management of secondary vegetation (fallow) for the production of timber, firewood and other products as a result of the improvement induced through cedar (*Cedrela odorata*), maculis (*Tabebuia rosea*), mahogany (*Swietenia macrophylla*) and other tropical timber species with commercial value and for local use.

G1.2.3 Live fence

Live fences consist of tree-planting around livestock or agriculture areas, aimed at maximizing the use of the available space. Employed species include cedar and maculis, which offer services of protection against the passage of animals and people to crops, prevent erosion and runoff and also serve as a windbreaker.

G1.2.4 Improved coffee

Coffee crops traditionally are set in spaces under shade, which in most of cases cover different needs for the households. For the purpose of increasing the potential carbon capture and aimed at reducing the effects of market volatility, affectations by pests and others, Scolel'te promotes the intercalation of coffee crops with timber trees such as cedar (*Cedrela odorata*) and Mahogany (*Swietenia macrophylla*) helping to obtain extra benefits, both for the household and for the optimal shade conditions that coffee requires. In addition, the conservation of biodiversity and ecosystem services are enhanced with local timber species promoted by the program.

G1.3 Forest management for conservation

This system has two variants, given that that in the case of Mexico and Chiapas there are tropical forest and temperate forests. It is also important to bear in mind that diversified management generates a series of specific opportunities.

G1.3.1 Forest management to promote reforestation

This system is developed for forest areas, both tropical and subtropical, where legal timber extraction takes places, which leads to restore such areas with reforestation activities. The additionality factor in these areas is justified with the improvement of management actions, from seed collection to timber logging. Such improvement allows the sustainability of the system, both in environmental and economic terms. On the other hand, wood extraction ensures long term carbon capture, through the elaboration of domestic, commercial and other final goods, such as handcrafts.

G1.3.2 Forest management to avoid carbon emissions

An important number of communities in Mexico are holders of forest resources for conservation, established under local agreements that limit their agriculture use. However, the changes in local governance systems as well as internal threats (local wildfires, land use change, increase of the agricultural frontier, internal land redistribution, lack of technology to improve production or forest sanity), additionally to external threats (impacts of nearby communities, regional wildfires, land invasions, implementation of governmental programs) put these areas at high risk. For the above, the objective of this intervention is the promotion of activities to mitigate such threats, alongside with actions to guarantee the permanence of natural forests.

Table 9. Summary of surface and carbon capture estimations

Agroforestry systems						
	1998-2017			2018 onwards		
Intervention	Estimated CO2 sequestration	Area (hectares)	2. CO2 capture	Estimated CO2 sequestration	Area (hectares)	2. CO2 capture
Improved coffee AF-CAFE-TROP	128.82	217.6	28,030.91	122.84	-	-
Temperate live fence AF-CERVI-TEMP	92.15	6.25	575.96	64.24	-	-
Tropical live fence AF-CERVI-TROP	142.02	826	117,315.95	90.27	23	1477.6
Taungya AF-TAUNG-TROP	327.00	212.5	69,486.86	188.73	24.5	4,623.89
Temperate improved fallow FOR-ACME-TEMP	150.95	318.25	48,038.91	123.04	14	1,722.55
Tropical improved fallow AF-ACME-TROP	317.09	480.5	152,360.78	171.79	-	-
Forest restoration (reforestation and natural regeneration) FOR-REST-TEMP	147.64	118.9	17,554.88	147.65	40.25	5,492.71
TOTAL		**9049**	**433,363.94**		**101.75**	**13,766.74**

Avoided Emissions (AE)		
Intervention	Expected CO2 capture Area (hectares)	CO2 sequestration
Forest management and conservation FOR-MAN (AE) Marqués de Comillas		Pending tech spec update
Forest management and conservation FOR-MAN (AE) Selva el Ocote-Cañón del Sumidero Complex		Pending tech spec update
Forest management and conservation FOR-MAN (AE) Rincón Chamula		Pending tech spec update
Total		

G2 Additionality and environmental integrity

The activities promoted by the Scolel'te program for the establishment of agroforestry systems have additionality, and not might be performed in the absence of the project, based on the economic and environmental regional context. Local farmers do not have enough financial resources and technical support for the establishment of agroforestry systems and their maintenance. Therefore, in the absence of the project there is a high probability that plots are employed only for subsistence agriculture (without the arboreal component) and/or for extensive livestock, with the consequent loss of soil fertility and biodiversity, as well as the increasing degradation of the environment.

In addition to the following considerations:

- The governmental support programs are not usually sufficient in their implementation and monitoring, in consequence, many of them do not ensure the permanence of promoted forestry systems
- Some of these programs also have special requirements (they only cover some regions and have limits to participation due to the minimum land area they require) and environmental limitations (the species they require to establish are not of the interest of the local communities).
- In case of being able to participate in some type of governmental incentive, these are destined for a short period of time and are insufficient to give continuity to a beginning job, which tends to be abandoned.
- The Plan Vivo methodology of participatory planning, allows the productive management of the plots of the participants in an ordered way, decreasing the risk of land use change or geographical displacement of activities.
- The monitoring system of the program ensures the permanence and follow-up of the established agroforestry and forest systems in order to reduce their vulnerability (10 years of permanent monitoring implemented).
- The financial scheme of the program allows payments in advance for the establishment of forestry and agroforestry systems, with a continuous follow-up for at least 10 years.
- Thanks to the development and strengthening of capacities, the program participants are able to obtain additional income.

Farmers who participate in Scolel'te have as a common characteristic living in conditions of high social, economic and climate vulnerability, as well as the lack of access to funding to cope with these harsh conditions. Therefore, the activities promoted by the Scolel'te program contribute to deal with such vulnerability, proving another component for additionality.

Another source of additionality is the promotion of different activities, so that the local communities can obtain some kind of benefit (environmental, social or economic), which could hardly be developed without the intervention of the program, given the lack of financial resources.

The amount of initial carbon per plot is variable according to factors like the intervention system, surface and the surrounding ecosystem. The purpose of obtaining a baseline for every system is to standardize goals and payments agreed with local farmers, with a sole registration platform, facilitating the administration of the same and avoiding future conflicts.

The program operates under the national regulatory framework for the promotion of sustainable rural development, according to the following laws:

- General Law for Ecological Equilibrium (Chapter V-Section VII). On the activities for the preservation and restoration of the ecological balance and the protection of the environment.
- Law for Sustainable Rural Development (Chapter II-Article 37-Section XVI). On the use of natural resources, the increasement of ecosystem services and sustainable production.
- Law for Sustainable Rural Development (Chapter IV-Article 57). On the sustainable productive reconversion.
- General Law for Sustainable Forest Development (Chapter I, Sections XI and XXXIX). On the promotion of sustainable forest management, climate change adaptation and the reduction of emissions from deforestation and forest degradation.

The activities of the program also are implemented under the laws and regulations for land management and tenure, which outline that the actions developed must not be illegal.

On the other hand, after the signing of the Paris Agreement, the ecosystem services for carbon capture take great relevance. The signatory parties, among them Mexico, commit to reduce their greenhouse gases emissions as established in their Intended Nationally Determined Contributions (INDC's), which in the case of Mexico the projected scenario is 22% below business-as-usual by 2030.

There is still uncertainty about how the Government of Mexico will address the implementation of the Paris Agreement and its INDC, as discussed in Section C3. However, the activities that contribute to the fulfilment of the goals, such as, achieving net zero-deforestation by 2030, increasement of carbon capture, reforestation of high and low basins, conservation of ecosystems that serve as a connection for Natural Protected Areas and promotion of sustainable productive activities, all are actions that Scolel'te has developed for more than 20 years.

Based on the Plan Vivo methodology, AMBIO provides technical assistance to registered farmers to carry out forestry and agroforestry systems at community level. This scheme favours that smallholder farmers to achieve a higher degree of self-sustainability.

G2.1 Barriers for the implementation and continuous operation of the program

The main barriers for the implementation and continuous operation of the program are social, political and technical affairs. At social level, farmers and their families need be really convinced to participate in the program and to carry out the planned activities, as agreed in the Plan Vivo. Besides, there is the limitation of land areas, which are determined by the farmers, alongside with internal conflicts in the communities, which in conjunction delay the operation of the program.

At political level, the main barrier is the lack of inter-institutional arrangements for the activities of conservation and reforestation with other policies promoted by governmental institutions, specially subsistence programs. These not only lack of a real commitment to the farmers, but also promote a political paternalism that slows regional development, weakens local governance and limits capacity building.

At technical level, the main challenge is to maintain the permanent presence of community and regional technicians in those areas where the program is implemented, making it an important limitation to the capacity of communication and presence of AMBIO. The geography and the distances also limit the access to some communities, making difficult to undertake monitoring and evaluation in time. Another barrier is that many communities are not familiar with forestry systems, which reduces their performance in field activities.

Table 10. Analysis of barriers for the Scolel'te Program

Barrier Analysis		
Type of barrier	**Description of the barrier**	**How barriers will be overcome by project activities**
Financial/economic barriers	Carbon offsetting supply and demand don't match given to market failures	Slow expansion of the program. Strengthening of the sales area Promotion and marketing mechanisms for carbon credits offered by the program
Technical barriers	Reduced presence in the different working areas due to geographic and economical barriers	Field activities planned with the technicians at the beginning of the year Seasonal jobs for specific activities
Institutional/political barriers	Lack of regulations regarding forestry and land-use, or poor enforcement of such regulations.	Guiadance to participants for the improvement of the governance and rules for community forest management
Ecological barriers	Droughts, forest fires, pests and Illnesses	Replanting, firebreaks, trainings, pruning, forest management

Social barriers	Lack of interest due to more attractive economic activities and governmental programs that promote livestock and other agricultural activities such as palm oil and conventional coffee production	Promotion of complementary economic activities that could attract smallholders, like honey and coffee production Awareness, accompaniment, training and continuous capacity building
Cultural barriers	Indigenous languages and barriers of communication due to participants that do not speak Spanish	By the recruitment of local people as community technicians, a better communication with the use indigenous languages

G3 Program duration

Scolel'te has approved all the stages for a for carbon offsetting pilot project, so it is now in full operation as a program positioned in the voluntary carbon market under the framework of payment for ecosystem services (PES), or as an independent scheme based on results from reforestation, afforestation, and reduction of deforestation and forest degradation.

For agroforestry systems, the accreditation period is set to 40 years for carbon capture (with a rotation in the year 20 for tropical climate), depending on the established forests species. In the case of the community forest management (avoided emissions), the accreditation periods are set to 5 years, with option to be renewed up to 4 times, having into account the baseline and the scenario of reference set out in the technical specification.

In any case, the accreditation period works in the same way. Each farmer has also his/her own record, which contains the results of all the carbon monitoring and accreditation periods.

Accreditation and payments are made in 5 and 7 periods, respectively. They represent a total 90% of the potential tCO2 captured in the plot of the farmer. The remaining 10% is held by AMBIO as a risk buffer.

G4 Measures to deal with carbon leakages

The main threat to the program is that, for multiple reasons (policies, natural disasters or changes in the interests of local farmers), long- term commitments might not be reached. Therefore, the level of engagement of the farmers plays a key role in the fulfilment of goals and in the prevention of the displacement of emissions to the surrounding areas (carbon leaks).

Even though Scolel'te is a program that aims to prevent deforestation, its main component is the implementation of agroforestry systems for the capture of carbon emissions. Reforestation programs are shaped by a wide range of possibilities and benefits such as diversified agroforestry systems to cover the local needs, restoration of degraded soils, as well as the conservation of areas with primary and/or secondary vegetation.

Such actions might cause leakage by displacement of activities (farmers who go outside of the program area to cut down trees in another place). However, the program is based on the planned use of the natural resources through the Plan Vivo tool, which prevents to some extent the displacement of activities. The planning made by the communities, groups and farmers considers the current land use and the identification of potential activities for these areas. In case of potential displacement, farmers receive different options, so that leaks can be controlled or minimized as much as possible. Otherwise, these farmers cannot be registered in the project. The monitoring also shows all the field information, including possible leaks.

A mitigation measure consists of raising awareness on the conservation of natural resources, as another aspect covered in the work done with local communities. In addition, given that farmers diversify their production and do not sacrifice their land for subsistence agriculture, the risk of leakage by the displacement of productive activities is significantly reduced.

Other mitigation measures to deal with carbon leaks include:

a) Selection of farmers and intervention sites
b) Support and evaluation in the design and implementation of the Plan Vivo
c) An internal system of monitoring and verification.

Scolel'te integrates activities such as the conservation of forests and rainforests, fire management programs, restoration of the forest coverage, capacity building, community development, plantations of commercial timber, among others.

The program also has explored the possibility of expanding the geographic scale of the monitoring (beyond the polygons of the project area) in order to capture the regional effects through a combination of remote sensing and in-site monitoring to measure the impacts of leakage by displacement of activities. However, it is often difficult to distinguish between the direct leakages of the program and other exogenous factors that modify land use (population growth, policies and governmental programs, subsidies, market dynamics).

Section H: Risk management

H1 Measures to cope with risk and ensure permanence

The program evaluates the technical, environmental and social feasibility of a Plan Vivo, in order to identify potential risks, as well as to assess the permanence of the system proposed by the farmer, given the adopted commitment to participate in the carbon market. For this evaluation AMBIO has an established format which considers technical, environmental and social aspects.

Permanence is achieved when the proposed system covers the needs and interests of the farmer and his/her family, and when the system responds to different purposes (food, supply of products such as firewood, fruit, etc.), and not only to the purpose of carbon capture. By this way, risks decrease and the permanence of the systems is higher.

With the aim of achieve the carbon capture goals for each forestry and agroforestry system, plots are respectively monitored and evaluated. The monitoring activities are defined and assessed for each system in its technical specification, seeking to ensure that the carbon estimated is captured.

Although the systems are different in nature, they are monitored from the year 1 to the year 10, after the establishment of the forestry or agroforestry system. Monitored aspects include the density of the planting, the survival rate and the state of the trees, as well as any technical problem that might appear. Under this scheme it is guaranteed that the management is done in accordance with the initially agreed activities stated in the Plan Vivo.

In addition, as part of the internal regulations of the program, before making any purchase commitment, it is signed a previous agreement between AMBIO and the farmer, where it is established, for agroforestry systems, the trade of 90% of the carbon aggregate that can be stored in the plot, while the remaining 10% is considered as a non-saleable risk buffering for the plot (see sections F.1, tables 4, 5 and section G.3). For the avoided emissions scheme, the proportions of the risk buffering are around 20% for communities in Marqués de Comillas and Rincon Chamula (80% of saleable carbon), while a 17% corresponds the Selva Zoque Cañon del Sumidero Complex (83% of saleable carbon). This risk buffer serves as a carbon contingence instrument in case of any event that might put in direct risk the carbon capture commitments by plot or even at a program scale

Table 11. Main risks identified for the agroforestry systems and their management measures.

Type of risk	Description	Management and mitigation measures	Severity/Impacts	Score
Environmental risks = Level of risk= Medium				
Wildfires	Uncontrolled use of fire for agricultural practices may cause forest fires. Change in climate cycles.	Firebreaks breaches; fire prevention campaigns in conjunction with municipal, state and federal governments. Training and equipment of fire brigades at community level.	Social and cultural aspects influence differently depending on the region. Natural Protected Areas have fire prevention and control mechanisms. Even in sites with high occurrence of fires where Scolel'te has plots, these are under control, since the smallholders perform continuous surveillance. Occurrence of fires is prevented collectively. Payment for Ecosystem Services (PES) promotes the prevention and control of fires. The National Commission for Natural	0.5 Low

Type of risk	Description	Management and mitigation measures	Severity/Impacts	Score
			Protected Areas (CONANP) supports the prevention of fires and promotes the opening of firebreaks. Presence of community agreements on no-burn and a system of fines and sanctions. Plots are clearly delimited, allowing each farmer to take care of his/her land.	
Pests and illness	Some tree species are prone to pests and diseases. When attacked, the trees delay their growth, wood quality and fork.	Pruning and forest management as pest prevention activities.	Cultural management to control the pest (spatial arrangements for species to be separated). Annual pruning and replacement of affected plants.	1.0 Medium
Droughts	Dry periods and change in weather patterns.	Replanting	It mainly affects new plantations (1 to 3 years), mostly in tropical areas (cedar). Its impacts differ depending on the region.	1.0 Medium
Social risks: Level of risk = Low				
Non-compliance and voluntary departure of farmers.	Lack of interest in continuing with the program.	Accompaniment and informed consent.	Constant information about the Program. Training and access to workshops and capacity building activities. Payments for carbon sequestration throughout the monitoring period of 10 years. Presence of community technicians.	0.5 Low
Increase in opportunity costs of other land uses, as opposed to government programs that promote livestock and other agricultural activities such as oil palm and conventional coffee production.	The offer of these activities could result more interesting for smallholders.	Accompaniment, awareness and informed consent.	Complementary training in forestry schemes. Increasing of the benefits of Scolel'te, by diversifying plots with fruit trees and other non-timber species.	0.5 Low
Economic and financial risk: Level of risk = Medium				
Carbon offsetting supply and demand don't match	Increase in the number of plots registered in the program, but the lack of buyers makes it impossible to comply with the payments.	Slow expansion of the program. Strengthening the sales area.	Domestic Carbon Market (changes with companies) and the Mexican Carbon Standard. Interest from new participants in rural communities, but there are not enough buyers. Scenario of increased competition in the corporate environment. Promotion of business participation in forestry projects	1.0 Medium

Type of risk	Description	Management and mitigation measures	Severity/Impacts	Score
Risk of market dynamics: Level of risk = low				
Market failures	National fiscal reforms impact the payment structure.	Strengthening of the promotion and commercialization mechanisms of the carbon credits offered by the program.	The absence of markets, translates into no revenues for the program and consequently, the program could not continue operating. The lack of sales limits the purchase of necessary items for its development and implementation.	0.5 Low
Technical risks: Level of risk = low				
Reduced adaptation of planted trees (due to rain cycles) and their sequestration potential.	Changes in rainfall patterns cause the planting season to be affected and trees do not survive.	Management by the local farmers Adequate use of tree species depending on the climatic region.	Survival rates are not reached, and replanting activities are not successful. Research on the new productive cycles of the managed species.	0.5 Low
The non-execution of relevant forest and agroforestry management activities.	That the farmers do not carry out the management activities planned for their plots with agroforestry systems.	Accompaniment, training and monitoring.	Perform pruning to ensure the growth of the trees. It is up to the farmers to carry out the management activities in their plots. Constant training and implementation of community exchanges to motivate farmers for management actions.	0.5 Low
Administrative risks: Level of risk = Low				
Impossibility to continue in the coordination of the program.	It is not perceived as a risk since the processes are consolidated within the operating organization and with the network of community and regional technicians. The administrative process is in continuous improvement.	Awareness, accompaniment, training and continuous capacity building.	There is a consolidated structure in technical, administrative and coordination processes.	0.5 Low
Risk definition Lower than 5 = 5% Greater than 5 = 10% Greater than 10 = 15%				6.5
Risk buffering				10%

* Risk analysis chart based on the project Management Institute methodology (PMI or PMBOK) for risk management, with a matrix of impact scales. Adapted to the results of the participatory workshop with partners and technicians of the Scolel'te Program, carried out in January 2018.

Table 12. Main risks for the avoided emissions scheme and their management actions

Risk	Mitigation action	Impact of the mitigation action	Risk likelihood
Socioenvironmental			
Increase in livestock farming as an economic activity	Livestock reconversion, supported by training and follow-up Recovery of livestock areas through reforestation Implementation of silvopastoral systems Establishment of living fences	By giving a comprehensive management to livestock, with training and equipment, it can continue to be profitable with a lower environmental impact, in addition to releasing land for restoration or forest recovery *Impact of the measure: High*	Moderate: livestock farming is spread across the region. Without proper management and production, it will continue to impact the loss of forest cover
Agricultural extension and production	Crop diversification Technical support to improve management Alternative production systems Promotion of conservation agriculture	Having an agriculture based on basic crops is not enough for food security and income generation. Therefore, giving crop alternatives for subsistence can help to minimize the impact of burn and slash, as well as promote a more sustainable agriculture. *Impact of the measure: High*	Moderate: agriculture in the area covers the basic food demand, but it applies techniques of high environmental impact, pressing new lands to be opened for agriculture as a result of accelerated soil degradation
Extraction of firewood, organic material and wood	Proper management and reforestation through species suitable for firewood production Management of organic fertilizers Training and equipment for the production of fertilizers Production of ornamental plants Promotion of sustainable use alternatives Establishment of wood-saving stoves	Firewood is extracted for sale and self-consumption, so it can be very well accepted by the communities that this can be produced legally and under plantations for that purpose. The extraction of organic material is for its sale as a fertilizer. Local communities have equipment to make organic fertilizers for sale, therefore their capacities must be strengthened to sustain this income. *Impact of the measure: Medium*	Moderate: This is an economic activity that takes place illegally. There are few economic options in the working areas, then regulation is critical to maintain a source of income without degrading local resources.
Wildfires	Proper fire management Strengthening of inter-institutional coordination for fire prevention Strengthening of community brigades Dissemination of the NOM 015 (on extreme temperature conditions) Campaigns for the prevention and integral management of fire	Fire management has an important progress within the Selva Zoque-Cañón del Sumidero Complex, with local capacities developed for fire prevention and combat. Coordination actions have been carried out, as well as different campaigns on the impact of fire on ecosystems, but still this is an area that could be improved.	Low: The use of fire as a tool for land preparation is not easy to eradicate, since it is a traditional practice, however it is possible to regulate its use and management.

		Impact of the measure: Medium	
Weakness of local governance	Strengthening of community organization, regulations and governance	Communities have their internal rules and agreements, however, many times these are violated due to the lack of precise information or because they are not updated periodically. Therefore, the continuous update is critical *Impact of the measure: High*	Low: Traditionally the most important decisions on land management are taken in community or ejido´s assemblies. Unfortunately, these spaces have been weakened, so it is important their strengthening
Institutional			
Invasions to forests in protected areas	Land tenure regulation and formalization Modification of reserve polygons Law enforcement Increase of interinstitutional surveillance Enforcement of property rights	Land invasions by outside actors has produced different responses. In the case of CONANP-SEMAHN and others, they have requested the intervention of the public force (police authorities) for the release of invaded lands. *Impact of the measure: Medium*	High: The lack of institutional presence and vigilance in some areas makes them vulnerable to invasions by external people, which translates into an increasing deforestation.
Policies			
Policies that promote deforestation	Policies consistent with conservation efforts Alignment and improvement of policies for community development Promotion and development of better policies for land management	CONANP and SEMAHN are aware of the application of public policies contrary to sustainable management. However, on some occasions these policies might be outside of their jurisdiction or they are in execution without being notified. In NPA's the Technical Advisory Councils sometimes help to regulate or halt policies contrary to the objectives of good management. *Impact of the measure: Medium*	Low: policies are applied at the territory level, without analysing the impact they may have, so they can be detrimental to the objectives of conservation and sustainable management.
Financial			
Lack of economic resources within the communities for the development of alternative activities	In order to generate income for the communities or ejidos, it is necessary to identify productive alternatives for the inhabitants so that they no longer sell their land	It is important to generate a series of productive alternatives for the communities, so that their livelihoods are not affected, nor the income they receive from them Impact of the measure: Medium	Moderate: It is not possible to make improvements in productive activities, if an investment is not made for productive improvement

Public budget reductions	Procurement of complementary resources becomes necessary for the management of Natural Protected Areas	Inter-institutional alliances have been one of the most effective alternatives to overcome this limitation. *Impact of the measure: Medium*	Moderate: Financial cuts in institutions limit their presence, monitoring and surveillance in the area.
Technical			
Weak territorial planning	Increased awareness for the application of good practices and territorial planning Constant and focused training for territorial planning and management	Territorial planning is carried out in the communities where AMBIO works, through the Plan Vivo tool. However, there are missing communities that are strategically located, where it becomes necessary to apply this tool to improve landscape management. *Impact of the measure: High*	Low: It is necessary to strengthen and promote territorial planning, according to the specific conditions of each area.

*This risk analysys is based on the Technical Specification Selva Zoque Cañon del Sumidero Complex, and it´s similar for the other areas of intervention.

H2 Buffer to deal with risks of non-permanence

AMBIO has identified some risks to achieve the permanence of the program (considering a risk buffer of 10% of the carbon benefits), as well as some actions to reduce or mitigate them:

- Displacement of subsistence agriculture: evaluation under the Plan Vivo methodology allows to make an early identification of these potential risks

- Increase of the opportunity costs due to commercial agriculture: It is necessary that project participants can diversify their income, in order to reduce their vulnerability to change.

- Implementation of financial and technical strategies to strengthen established agroforestry systems, in order to ensure permanence and achieve the long-term objective of timber production under sustainable management.

Section I: Program management and coordination

I1 Organizational structure of the program

The program coordinator is the AMBIO Cooperative, a Mexican organization with a trajectory of more than 20 years, which has been in charge of the technical and administrative management of the Scolel'te Program since 1998.

Table 13. Program participants

Main role	Involved organization/ groups	Status and legal constitution	Brief description of activities
Program administration	Cooperativa AMBIO S.C. de R.L.	Cooperative society of limited responsibility	**Technical activities:** • Technical operation of the Bioclimatic Trust Fund (FBC) • Supervision of the implementation and development of the program • Development of community participation within the program • Monitoring and recording of activities implemented by farmers • Evaluation and registration of Plan Vivos • Coordination and monitoring of activities in the field • Evaluation of the carbon capture potential • Training on agroforestry systems and environmental services for farmers, technicians, students and academics • Promotion of the program among local communities • Communication of the program in academic spaces, as well as dissemination of the experience at national and international forums **Administrative activities** • Management / administration of the Bioclimatic Trust Fund (FBC) • Registration of approved Plan Vivos to the FBC • Maintenance of the database of the program • Trade of carbon credits • Allocation of payments to project farmers • Negotiations of terms with carbon buyers • Submission of reports to the Plan Vivo Foundation • Coordination of external reviews • Promotion of the program with buyers and brokers • Report the progress of the program to the Plan Vivo Foundation and to carbon buyers.
Technical operation of the program	Cooperativa AMBIO S.C. de R.L.	Cooperative society of limited responsibility	• Diagnostic, design, implementation and evaluation of agroforestry and forestry systems according to the Plan Vivo methodology • Technical support and training to local farmers • Planning and implementation of field activities • Local capacity building (training and support to the community) • Coordination with community technicians to develop Plan Vivos • Reception of the monitoring results • Analysis and processing of the program information • Collection of data required by the program • Update of the technical specifications when necessary • Report to the Steering Committee of the Plan Vivo Foundation the outcome and follow-up of the program activities.
Participation and execution of the program	Communities, ejidos, smallholder farmers and organized groups	Communities, ejidos, smallholder farmers and organized groups	• Participate in the program under free, prior and informed consent • Conduct the activities registered in the of the Plan Vivo as agreed, such tree planting under the chosen system and provide the appropriate maintenance

			• Upkeep the agroforestry system in the long term • Organize working groups • Participate in the follow-up meetings of the program

AMBIO receives support and collaborations from several governmental institutions involved in the program. One of them is CONANP (the National Commission for Natural Protected Areas), responsible for managing the forest areas located in protected zones. Within Natural Protected Areas there are ejidos and communities, whose unique land owners are local farmers and communities.

I2 Administration

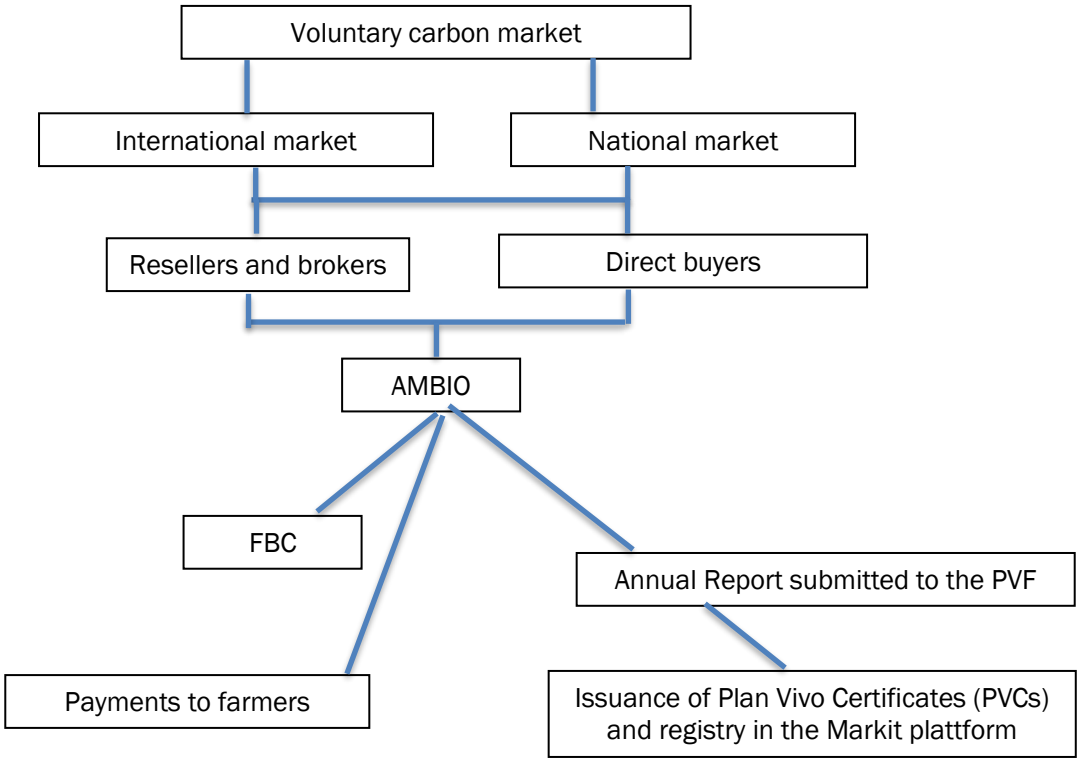
AMBIO is a Mexican organization in charge of establishing and maintaining ties, enable coordination and organize the field work alongside with social organizations, groups and farmers involved in the sale of the ecosystem services.

AMBIO is responsible for the administrative and technical aspects of Scolel'te, as well as to report the progress of the program to the Plan Vivo Foundation. The Bioclimatic Trust Fund (FBC), works as a small banking institution. This trust aims to advise, manage and administer the financial resources generated from the trade of carbon credits. Since 2019, AMBIO was accredited as a trustor of the trust fund, given that this figure was kept independent to the Cooperative in the past.

Table 14. Relevant actors for the development of the program

Institution	Status	Role in the development and implementation of the project
Communities	Rural communities	They are the key actors for Scolel´te. Their contribution to the program is with land, labour and the commitments for forest conservation
National Commission for Natural Protected Areas National Forestry Commission	Federal Government	Technical and operative partners for the implementation of the program. They provide support for monitoring and implementation of activities and help strengthen negotiations with communities.
Secretariat of Environment and Natural History	State Government	Technical and operative partner for the implementation of the program. It provides support for monitoring and implementation of activities and helps strengthen negotiations with communities.
Southern Boarder College (Ecosur) and Autonomous University of Chiapas,	Academia	Carbon studies, cooperation and work with communities.
Ecometrica, UNDP, GEF, USAID, US Forest Service, and others	Cooperation Partnerships	Cooperation with funds for the development of activities that contribute to climate change mitigation and adaptation, such as trainings in the project area
Buyers and brokers	Stakeholders of the voluntary carbon market	Carbon credits represent a financial source for payment for ecosystem services (PES) schemes

Picture 6. Full cycle for the sale of carbon credits



Coordination and direct work with the communities are supported by community and regional technicians, who are in charge of promoting, executing and monitoring the progress of the program in the field. These technicians are also previously trained in the key aspects of the program.

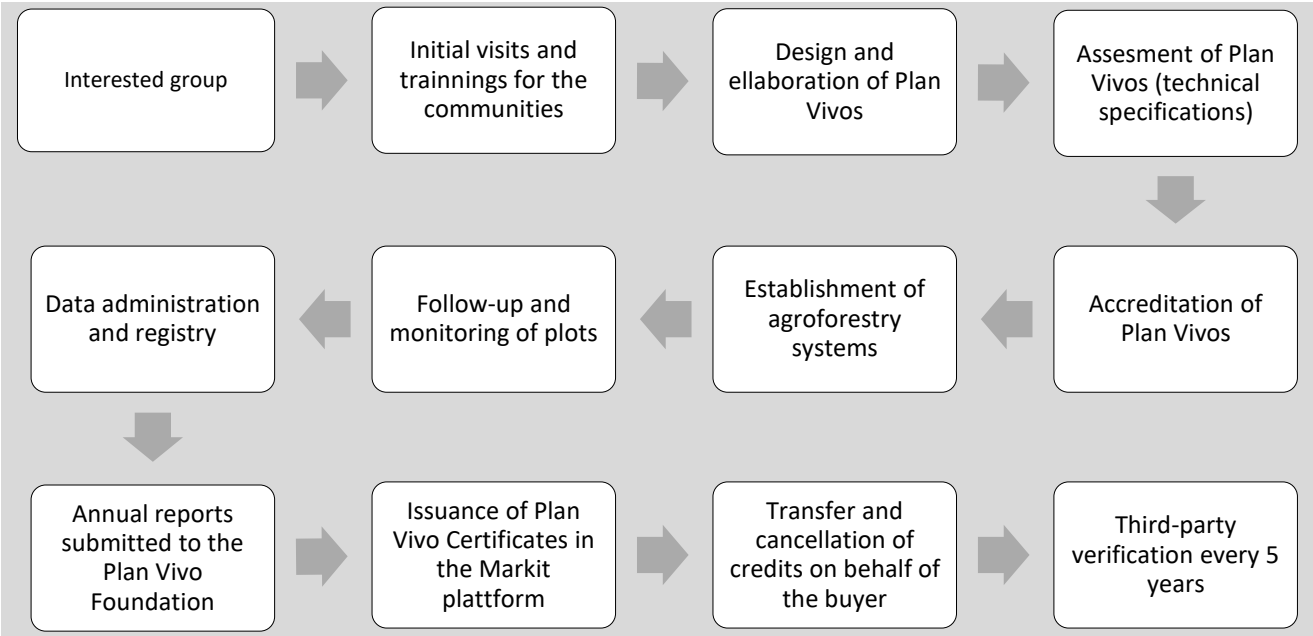
Most of registered farmers carry on conservation of forests and rainforests, under any of the six agroforestry systems promoted by the program. All the agroforestry systems managed in Scolel'te capture more carbon than the traditional systems of corn and beans, as well as those with grasslands or degraded forest areas. Additionally, these improved systems provide other benefits, such as the production of firewood, fruits, water supply, increased wildlife and provision of construction materials, in addition to recreation and scenic beauty, which motivates farmers to participate and maintain the systems in the long term.

Besides, AMBIO has developed a process for the registration of plots, evaluation of progress in the field and carbon payments to farmers. It has also established an internal monitoring system to review the progress in the accredited plots against the agreed carbon capture (based on the technical specifications of the program).

Given the nature of the program, farmers and communities get involved in Scolel'te, having into special consideration that, registered plots aimed at reforestation and/or agroforestry systems must remain for over a period of 30 years, in accordance with the signed agreements between the farmers and AMBIO.

The participation process is inclusive and voluntary, open to those farmers interested in joining. The overall process consists of 9 stages, including the preparation and submission of reports to the Plan Vivo Foundation, as well as quarterly meetings with regional technicians and bi-annual meetings with farmers, technicians and the AMBIO administrative staff. All the process is done in a transparent manner, with the full participation of farmers, technicians and the administrative personnel.

Picture 7. Operative cycle for the Scolel'te Program



I3 Partnerships with national and international organizations

One of the first partnerships established by AMBIO took place with the Southern Border College (ECOSUR), an academic and research institution focused on social and environmental issues in Southern Mexico. Scolel'te also had at its beginning support from *The Institute of Ecology and Resource Management* (IERM) of the Edinburgh University and from the Mexican Government through the National Institute of Ecology.

Additionally, several governmental and non-governmental organizations have taken part in the development, improvement and impacts of the program, through a mutual collaboration that has included funding, marketing, support in the field implementation of the program and specific tasks. These organizations include, Conservation International, The Nature Conservancy, the United Nations Development Program, the Mexican Fund for the Conservation of Nature, the US Forest Service and Ecometrica Ltd, only to mention a few.

AMBIO is also a member to the International Union for Conservation of Nature (IUCN), which amplifies the scope of the organization to take part and promote initiatives in favour of indigenous peoples, local communities and endangered ecosystems.

As a result, the program has increased its working area and extended its impacts. Given the rationale of the program, some governmental organizations are key partners for the implementation of Scolel'te, such as the National Commission for Natural Protected Areas (CONANP)[11] and the National Forestry Commission (CONAFOR)[12].

It is important to stress that, the relations established with these institutions are under the terms of a collaboration, therefore, the actions implemented are set with common objectives and according to the technical and financial capacities as well as the available time provided by every partner.

[11] The National Commission for Natural Protected Areas (CONANP) is a decentralized body of the Ministry of Environment and Natural Resources (SEMARNAT).
[12] The National Forestry Commission (CONAFOR), created in 2001, is a decentralized public body of SEMARNAT, whose objective is to develop, favor and promote productive, conservation and restoration activities for the forestry sector, as well as to participate in the formulation of plans, programs, and the application of a sustainable forestry policy.

Picture 8. Acknowledgement to AMBIO by the National Forestry Commission (CONAFOR).

MEDIO AMBIENTE | CONAFOR

Coordinación General de Planeación e Información
No. de oficio CGPI-0174/2020
Zapopan, Jalisco, a 7 de abril de 2020

Maestra Eva Schoof
Gerente de Programa
Fundación Plan Vivo
Presente

Por este medio, hacemos de su conocimiento que la Cooperativa AMBIO SC de RL ha colaborado de manera relevante con la Comisión Nacional Forestal (CONAFOR), en la implementación de actividades que promueven la conservación de los bosques en el estado de Chiapas en México.

Conforme en lo establecido en la Ley General de Desarrollo Forestal Sustentable, la CONAFOR es la entidad de la administración pública federal responsable de implementar las políticas y programas públicos en materia forestal, con el objetivo de desarrollar, favorecer e impulsar las actividades productivas, de protección, conservación, restauración, aprovechamiento sustentable, producción y comercialización forestal, de bosques; asimismo, es la entidad encargada de diseñar estrategias, políticas y medidas para transitar a una tasa cero por ciento de pérdida de carbono en ecosistemas forestales al año 2030, para su incorporación en los instrumentos de planeación de la política forestal para el desarrollo sustentable, tomando en consideración el desarrollo sustentable y el manejo forestal comunitario.

La Cooperativa AMBIO ha colaborado de manera conjunta con la CONAFOR en la implementación actividades tales como; restauración, reforestación, prevención de incendios y manejo de bosques; así como en la ejecución de proyectos de cooperación internacional como es el caso del Programa Forests 2020 en el estado de Chiapas, donde CONAFOR y AMBIO fueron socios nacionales en su exitosa implementación.

La experiencia de colaboración la CONAFOR se extiende por más de 15 años, cuando dio inicio la implementación del programa de Pago por Servicios Ambientales en México, de cuyo Comité Nacional formó parte la Cooperativa AMBIO.

A través del Programa Scolel´te ha sido pionero en México en el uso de mecanismos de compensación de emisiones a través de proyectos forestales de conservación y restauración para la generación de bonos de carbono.

Actualmente, el Gobierno de México ha puesto en marcha un programa de prueba del sistema de comercio de emisiones en el que se ha previsto la elegibilidad del uso de bonos de carbono derivados de proyectos forestales para la compensación de emisiones, entre los cuales podrán incluirse los provenientes de proyectos del Programa Scolel´te.

La Cooperativa AMBIO ha sido un importante aliado de la CONAFOR en la implementación de actividades orientadas a promover el desarrollo rural sustentable, enfocado a la conservación de capital forestal de México.

Sin otro particular, le envío un saludo.

Atentamente

Ing. Jorge David Fernández Medina
Coordinador General de Planeación e Información

C.c.e.p. Ing. León Jorge Castaños Martínez. Director General. CONAFOR.

JDFM/JAAR*

Periférico Poniente 5360, Col. San Juan de Ocotán, CP. 45019, Zapopan, Jalisco.
Tel: (33) 3777 7000 www.gob.mx/conafor

2020 LEONA VICARIO

MEDIO AMBIENTE | CONAFOR

Coordinación General de Planeación e Información
No. de oficio CGPI-0174/2020
Zapopan, Jalisco, a 7 de abril de 2020

M.Sc. Eva Schoof
Programme Manager
Plan Vivo Foundation

I would like to inform you that Cooperativa AMBIO, S.C. de R.L. has had a relevant collaborative role with the National Forestry Commission (CONAFOR), in implementing activities aimed to promote the conservation of forests in the state of Chiapas, Mexico.

Per the provisions of the General Law on Sustainable Forest Development, CONAFOR is the entity of the federal public administration responsible for implementing public policies and programmes in forestry to develop, promote and facilitate forest productive activities, protection, conservation, restoration, sustainable use, production, and commercialization. Furthermore, CONAFOR is the entity in charge of designing strategies, policies, and measures to achieve a zero percent rate of carbon loss in forest ecosystems by 2030, for its inclusion into the planning instruments of the forest policy for sustainable development, taking in consideration sustainable development and community forest management.

Cooperativa AMBIO has collaborated with CONAFOR in implementing activities such as restoration, reforestation, wildfire prevention, and forest management; as well as in executing international cooperation projects such as the Forests 2020 Programme in the state of Chiapas, where CONAFOR and Cooperativa AMBIO were national partners in their successful implementation.

Cooperativa AMBIO collaboration experience with CONAFOR spans for more than 15 years when the implementation of Mexico's Payment for Environmental Services programme began, in which Cooperativa AMBIO participated as a member of the National Committee.

Through the Scolel´te Programme, Cooperativa AMBIO has been pioneering the use of offset mechanisms in Mexico through forest conservation and restoration projects for generating carbon credits.

Currently, the Government of Mexico has launched a test program of the emissions trading system in which the use of carbon credits derived from forestry projects for offsetting emissions has been foreseen may be eligible, including offsets from projects under the Scolel´te Program.

Cooperativa AMBIO has been an important ally of CONAFOR in the implementation of activities aimed at promoting sustainable rural development, focused on the conservation of forest ecosystems in Mexico.

Without any further, I send you a greeting.

Sincerely,

Ing. Jorge David Fernández Medina
General Coordinator of Planning and Information

C.c.e.p. Ing. León Jorge Castaños Martínez. Director General. CONAFOR.

JDFM/JAAR*

Periférico Poniente 5360, Col. San Juan de Ocotán, CP. 45019, Zapopan, Jalisco.
Tel: (33) 3777 7000 www.gob.mx/conafor

2020 LEONA VICARIO

*Complete documents, see annexes.

I4 Legal compliance

At international level, the program promotes GHG mitigation actions, according to the policies and measures established by the Intergovernmental Panel on Climate Change (IPCC) and the United Nations Framework Convention on Climate Change (UNFCCC).

Scolel'te is an option for rural populations, given that, through an economic incentive the program allows the restoration of their plots, which have been cultivated for several years, leading to the transformation of many of these lands into forest of shade coffee systems.

The program is harmonized with the national legislation, in areas such as agrarian laws, environmental regulations, as well as those on climate change, forest management, sustainable development, labour conditions and land tenure, also in accordance with the international treaties signed by the Mexican government.

Regarding national laws, the program is circumscribed to the following legal framework:

I4.1 General Law on Change Climate, issued in 2012. Last reformed on July, 2018.

It establishes in its Article 33, Chapter III (Mitigation Actions), that *mitigation policies must address environmental protection, sustainable development, and the right to a healthy environment*. In its Article 34, Chapter III, it states that, *the reduction of emissions in the agriculture sector, forests and other land uses, must have the objective of maintaining and increasing carbon stocks, halt and reverse deforestation and forest degradation, as well as increase the vegetation coverage and carbon in soils, through activities for the sustainable management of agriculture and livestock systems; reconvert degraded lands to sustainable agriculture or to conservation areas and for water provision*.

This law also considers the creation of a Carbon Trading System in its Article 94, *established progressively and gradually, with the aim of promote the reduction of emissions, following the criteria or affordability, quantification as well as being subject to report and verification, without harming the competitivity of those participant sectors against the international markets.*

I4.2 Federal Law on Sustainable Rural Development, issued in 2001. Last reformed on December, 2018.

In its article 7, it states that, *those holders and legitimate owners of forest areas that implement actions to promote the sustainable management forest to maintain and/or improve the environmental services, will receive the economic benefits that result of these*.

I4.3 General Law on Sustainable Forest Development, issued in 2018.

In its article 5, it establishes that, *ownership of forest resources within the national territory, corresponds to ejidos, communities, indigenous peoples, private individuals or entities and the federal, state and/or local governments. Those procedures established by this law does not alter the regime of ownership of such lands*.

I4.4 Agrarian Law, issued in 1992. Last reformed on June, 2018.

The agreements of the program are legally consistent with the Agrarian Law, which in its article 11, it states that, *the collective operation of ejido lands can be adopted by decision of the ejido assembly. In such case, those regulations about labour organization, resources management, equitable sharing of benefits, capital and social funds, must be previously agreed. Those legally established ejidos that adopt collective operation, could modify or conclude this regime by resolution of its assembly, in the terms of the article 23 of this law*.

In addition, *it corresponds to ejidatarios the right to use and manage their plots, as well as those rights granted by the internal statutes of the ejido and by other applicable regulations*. (Agrarian Law, article 14).

I4.5 Federal Law on Labour, issued in 1970. Last reformed on July, 2019.

In its article 2, it establishes that, *labour norms aim to achieve a balance between the factors of production and social justice, as well as to promote decent work in all employment relationships. Decent work is defined as that work in which the human dignity of the worker is fully respected; there is no discrimination on the basis of ethnic or national origin, gender, age, disability, social status, health conditions, religion, migration status, opinions, sexual preferences or marital status; there is access to social security and a fair wage; there is continuous training to increase productivity with shared benefits; and there are optimal health and safety conditions to prevent occupational hazards*.

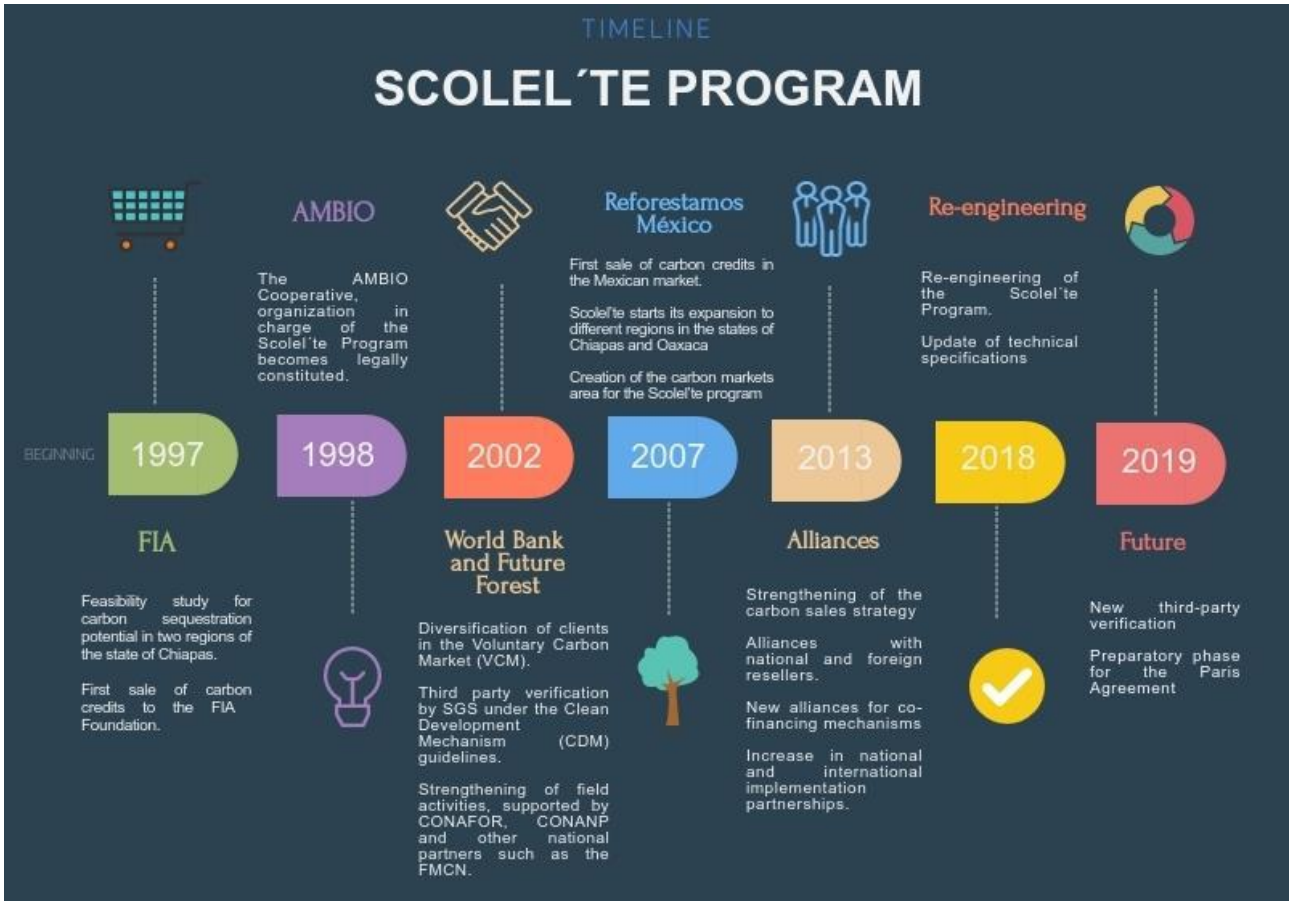
These legal instruments, aim to regulate and promote the conservation and improvement of environmental services, based on the premise of guaranteeing the safeguards recognized by international laws, such as the free, prior and informed consent of ejidos, communities and indigenous peoples, the equitable distribution of benefits, respect for property rights, access to natural resources of the owners and legitimate holders of the land, as well as seeking territorial, cultural and social inclusion and equity. The above also includes social participation, transparency, access to information, accountability, recognition and respect for the forms of internal organization, coordination and complementarity between policies and instruments of the three orders of government.

I5 Project management and coordination

I5.1 Project timetable

The following image (see next page) summarizes in a general way the evolution and permanence of Scolel'te, as well as the key actors and milestones during the 22 years of life of the program. It highlights the first carbon sale of the program in 1997, as well as the incursion in the national market in 2007, which has played a more active role in recent years.

Picture 9. Timeline of the Scolel'te Program



I5.2. Registry system and database

After monitoring and verification in the field, and according to the results and the technical specification, carbon is accredited to the farmer's plot.

The first mechanism for recording this compliance is the Plan Vivo, which indicates all the commitments made by the farmer and the activities he/she will carry out during the period of time established in the signed contract with AMBIO.

The information is then captured in the program's database, which uses Microsoft Access 2013 software. This database details the farmer's record, as well as the system to be established and its commitments, which will be assessed against monitoring and field verifications.

The carbon notebook, is a document delivered for each farmer and plot registered in the program. It contains the information of all the carbon accreditations and transactions for each plot of the farmer, as well as additional information that can be relevant for further monitoring.

Of the total carbon accredited to each plot, 90% is registered as saleable carbon. The remaining 10% takes part of the carbon buffer of the program. The amount of carbon accredited depends on the potential capture per plot and agroforestry system, as well as the percentage of tasks completed at each stage by the farmer.

I5.3. Registry in the IHS Markit Platform

The IHS Markit Platform is a global information provider based in London, UK. It offers services about financial information for organizations around the world, to have a transparency mechanism, reduce investment risks and improve the operational efficiency of the markets.

The Scolel'te Program and the Plan Vivo Foundation have accounts registered on this platform, where all certificate issuances, purchases and sales are recorded. Once the Scolel'te Program's Annual Report has been approved by Plan Vivo Foundation, an issuance certificate is requested at the IHS Markit Platform.

IHS Markit is then asked for the total number of carbon credits sold (holdings) throughout the year, to generate a vintage certificate for that year. Once approved by IHS Markit, AMBIO proceeds to transfer the certificates to the accounts of those customers registered in the platform. For those clients who do not have accounts, retirements are made on their behalf, stating the amount of certificates (carbon credits) they purchased during the vintage period.

After obtaining the registration number of the certificates retire (Markit Serial Number), this number is shared with the Plan Vivo Foundation, along with the buyer's information and the quantity of carbon tons acquired, for the issuance of the Plan Vivo Certificate.

I6 Management and financial structure

AMBIO is the contact between individuals and/or companies interested in offsetting their CO2 emissions and farmers in Mexico that offer the ecosystem service for carbon capture.

The income from carbon sales is distributed to cover the costs of four main concepts of the program:

1. AMBIO's technical and administrative costs (salaries, transaction costs, establishment and maintenance of nurseries, payment of verifications, etc.)
2. Carbon payments to registered farmers (from 60 to 70% approximately)
3. Issuance of carbon certificates by the Plan Vivo Foundation
4. Accreditation of Plan Vivo Certificates in the Markit environmental registry.

In addition to the income from the sale of carbon credits, AMBIO works with several financial institutions to reduce the operative costs of the program and to increase the benefits to the communities.

I6.1. The Bioclimatic Trust Fund and AMBIO as a trustor

The Bioclimatic Fund Trust (FBC), is the trust that safeguards the funds that come from the sale of carbon credits. The FBC has 3 trustors, two individuals and AMBIO, which in 2017 became the third member. The FBC is administered by the commercial banking sector, with Banco del Bienestar as trustee. In order to be transparent and efficient, the FBC has two accounts in its name, one for investment in US dollars (which concentrates the sales and the payments made in the agreed terms), and the other in dollar checks, which helps to bridge the resources between the first one and another account in Mexican pesos, from which the resources for current expenses are taken.

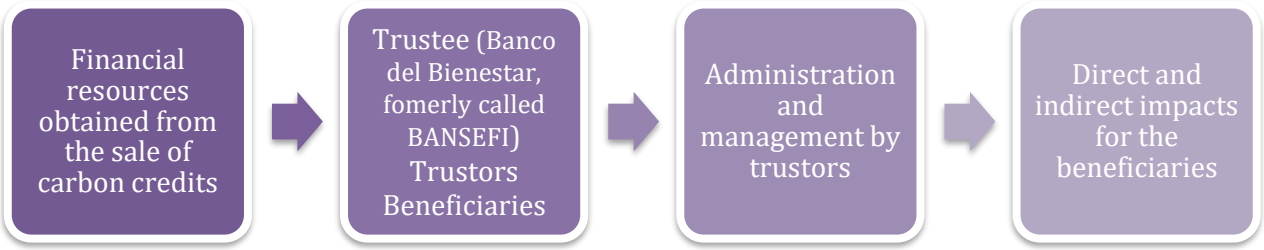
The main objective of the trust is: *to create an autonomous patrimony that allows to assure the carbon payments to the farmers, as well as to support them, in the research, development and implementation of forest and agricultural projects of carbon capture in collaboration with social organizations and scientific, technical and financial institutions in Mexico and abroad*.

The trust safeguards the funds from the carbon sales, so that they are paid according to the fulfilment of the goals of the farmers, following the schedules established with them.

I6.2. Financial traceability and accountability

The income of the Scolel'te program is based on the carbon sales, where 60% of these are used for direct payments to the participating communities and farmers, and the rest 40%, is used for the direct and indirect costs of the program. At the same time, AMBIO also implements parallel projects to strengthen the actions of management, permanence, training, monitoring, governance and follow up of the program. It is important to note that at each stage of the movement of financial resources, the destination and use of them is monitored.

Picture 10. Traceability of the financial resources of the Scolel'te Programme



I6.2. Program budget and financial plan

The main expenditures of the program are regular expenses, salaries of the technical and administrative staff of the program, as well as those for regional and community technicians, allowances (food, fuel and lodging), besides additional support for training sessions and farmer-to-farmer community exchanges for the strengthening of local capacities.

The above also includes the purchase of equipment and tools for the management of the plantations. Another important activity is the collection of seeds and the production of plants, which require payments for materials and to cover the manual labour of the people who intervene. Finally, the governance of the communities is also supported by informative meetings every 3 months, held directly in the working areas or in the offices of AMBIO.

In order for the program to continue, baseline studies and technical specifications of the agroforestry systems in use have also been covered with carbon offsetting revenues. Another continuous cost is the verification of the program, which must be given every 5 years.

I6.3. Co-financing

Since its early years, the Scolel'te program has worked in coordination with different government and non-government agencies and international institutions, allowing to maximize the impacts and results of the project, in addition to lessening the costs of the program.

Co-financing helps in the development of different activities, such as: the collection of seeds, the production of nursery plants, training activities and community exchanges, as well as for the design of training materials. It also supports the collection of data from agroforestry systems established in the different regions of the state and the identification and implementation of alternative productive systems.

The introduction of the gender perspective in Scolel'te has been recently initiated, as a result of the collaboration with another AMBIO initiative. Noteworthy is that such inter-institutional cooperation for the strengthening of the Scolel'te Program has taken place by the impulse and initiative of AMBIO.

The following are several organizations that have supported the program, either financially or in kind:

- National Forestry Commission (CONAFOR)
- National Commission for Natural Protected Areas (CONANP)
- Mexican Fund for the Conservation of Nature (FMCN)
- Ecometrica Ltd.
- The Nature Conservancy Mexico (TNC)
- The Global Environmental Facility (GEF)

- The United Nations Development Program (UNDP)
- US Agency for International Development (USAID)
- US Forest Service, to mention only a few

Another line of co-financing currently explored is Venture Capital for loan schemes. Such credits would allow farmers to develop social enterprises for the sale of timber and non-timber forest products, in order to diversify their income and contribute to the sustainable development of their communities.

I7 Marketing

Carbon credits, or ecosystem services certificates, are a scheme that allows companies, individuals and/or institutions willing to compensate their greenhouse gases emissions to purchase Voluntary Emission Reductions (VERs) through the Scolel'te program operated by AMBIO.

In parallel to the Scolel'te Program, AMBIO implements a series of projects and initiatives aimed at promoting sustainable rural development through the rational management of natural resources. However, the Scolel'te Program is a flagship initiative within and outside AMBIO, especially for its contribution to the establishment of the voluntary carbon market and the involvement of rural communities in this kind of schemes.

The carbon markets office within AMBIO was established to attend to the portfolio of existing and prospective clients, to be a link with national and foreign sales agents or brokers (with whom collaboration agreements are maintained), as well as to develop promotional content for the Scolel'te Program.

I7.1. Sales administration and marketing structure

The Scolel'te program has a diverse portfolio of clients, both in Mexico and abroad, who present different purchasing interests. They can be organized in two kinds of customers:

- Direct clients
- Resellers and brokers

In order to ensure the role of resellers and brokers and to define their scope of action, the promotion of direct sales by AMBIO has been limited. In a graphic way, this policy helps to create a "circle of protection", thus guaranteeing that AMBIO will not be the competition of its own sales agents. This is illustrated in Picture 11.

The work with sales agents, brokers and resellers has been of great relevance for the sales of Scolel'te nationally and abroad. Among the criteria for the establishment of partnerships, they are:

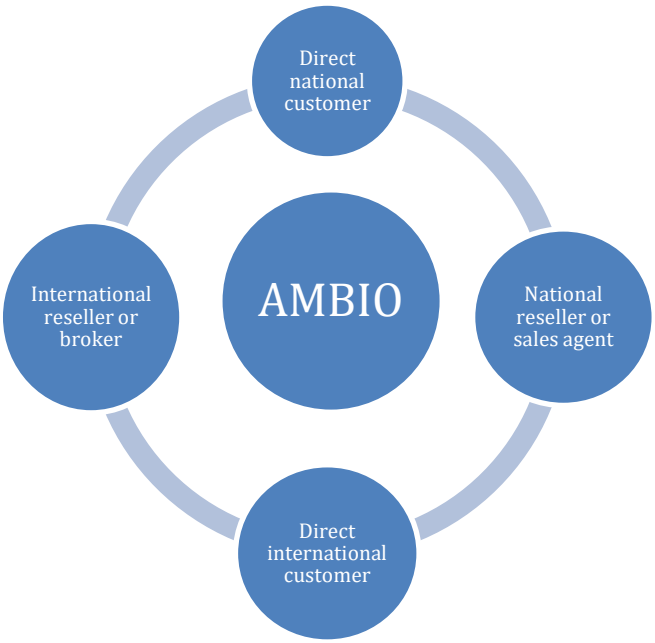
1) Previous experience in consulting or related activities in the field of Corporate Social Responsibility (CSR),
2) Previous experience in climate change issues, preferably in the implementation of greenhouse gas inventories for the business and services sector,
3) Previous experience or a general understanding of the voluntary carbon market is desirable

The prices chart represents a strategic document for the sales process. It is reviewed and updated every 6 months by the technical, administrative and carbon markets team of the Scolel'te program.

The processing of carbon sales is recorded internally, as well as publicly, with the detail of sales in the Annual Reports submitted to the Plan Vivo Foundation and their registration in the IHS Markit Platform.

A customer usually requests a quotation via email (both for national and international sales) where the cost of the amount to be offset is detailed, according to the prices chart. For national sales, the conversion to national currency is made (prices are handled in U.S. dollars) and for international sales, the price is directly stated in dollars. After the offer is confirmed, an invoice is issued for the purchase, together with a sales contract, called VERPA, as well as the corresponding receipts or invoices, both for national and international sales.

Picture 11. Internal structure for the sale of carbon credits



Completed sales, without exception, must be recorded in the Market Trends file, which is the internal record of sales, according to the current year-report (vintage). This file details the name of the sales agent or final customer, the amount of credits purchased, vintage year, unit price, final price, date of sale, destination account (AMBIO or ESCROW of Plan Vivo) and status of the transfer.

At the immediate time of the purchase, AMBIO issues a provisional certificate for the customer upon request. Final certificates are delivered by the Plan Vivo Foundation, once approved the Scolel'te Annual Report and after issuance in the IHS Markit Platform.

Picture 12. Plan Vivo Certificate

I8 Training and technical support

Scolel'te is replicable and scalable program, given that its technical process and execution are based on the Plan Vivo System. During the initial years of the program, the Edinburgh Carbon Management Centre (ECCM) provided the technical assistance for the design of the pilot program. Together with researchers and postgraduate students from ECOSUR and the AMBIO staff, the first technical specifications for carbon capture were developed for each agroforestry system to be used by the registered communities in Scolel'te.

Through partnerships with different research institutions, community organizations, NGO's and Mexican government institutions, it has been possible to provide technical support and training, as well as follow-up, management and collaboration for some key activities such as the establishment and maintenance of nurseries, seed collection, training and distribution of seedlings to partner farmers, among others.

In order to respond to the needs of technical training and monitoring, the program has a structure of field technicians, which are divided into community and regional, in addition to the administrative staff of AMBIO. This technical staff is in charge of promoting, training and creating working groups in the communities that participate in the program or in those that express their interest to join. In addition, they provide support in activities such as the establishing of nurseries, design of Plan Vivos, group dynamics and follow-up with farmers throughout the program cycle of activities.

Planning of field activities is carried out by regional technicians and farmers, with a record of these actions kept in field notebooks. Every three months, meetings are held at the AMBIO offices in order to evaluate the progress of the registered communities and plan further activities, as well as to deal with emerging issues.

The current scale and size of the programme, alongside with the spatial dispersion of the communities represent a challenge for the dissemination of information directly by the program coordinators, so these responsibilities are now being carried out by regional and community technicians.

Therefore, training, follow-up, monitoring and verification activities, as well as seed collection and plant production in nurseries, are carried out by both regional and community technicians. There is a core team of regional technicians who receive a salary for these activities, while the rest of the community technicians receive payments for the specific activities they carry out.

Regarding the permanence of the plantations, once that carbon capture commitments are concluded, it is intended that timber trees could be harvested in an orderly manner and that they could be used to cover the needs of the families or for commercial purposes. In order to assess real capacities, the program has developed a study on the species and volumes of timber that could be managed.

For the above, a total number of 38 plots were sampled, covering the agroforestry systems of tropical Taungya (24), improved tropical fallow (12) and improved coffee (2). The most common species found in the plots were red cedar (*cedrela odorata L.*), mahogany (*swietenia macrophylla*), maculis (*tabebuia rosea*) and guanacaste orejon (*Enterolobium cyclocarpum*).

On the other hand, the most representative species by timber volumes are cedar (*cedrela odorata L.*) and mahogany (*swietenia macrophylla*), both relevant in market terms. Nonetheless, as these species are threatened by illegal logging, the local communities must reach agreements on permanence and management, in order to maximize the economic, environmental and social benefits that can be obtained.

The following steps for the development of this activity include:

- Analysis of market opportunities for timber products and the best alternatives in terms of cost-benefit
- Legal registration for the working groups of farmers interested in the trade of wood, to the National Forestry Commission (CONAFOR), the regulatory body in the subject.
- Evaluation of alternatives for micro-credits and seed capital for community micro-enterprises.
- Establishment of technical and financial networks with relevant market actors.

Section J: Benefit sharing

J1 PES Agreements with smallholders and communities

The legal document that commits both, AMBIO and the local farmers to work together is the Contract with Farmers (Contract for Payments for Ecosystem Services). Thereby AMBIO ensures compliance with the principles of Free, Prior and Informed Consent, and subsequently farmers are aware of their rights and obligations to participate in the Program (see Annex 3).

This agreement aims to set a framework, where the farmer provides environmental services and AMBIO represents it, but clearly stating that AMBIO does not own these environmental services, neither the land. In the same way, the following are the obligations and commitments of both parties.

Those farmers interested in joining the program must meet the following minimum criteria:

- Accredit land ownership though the appropriate documentation
- Demonstrate that the property is free from any dispute or conflict
- Submit a legal evidence of Mexican nationality
- Possess enough land to participate in the program, without putting their food security at risk
- Have the commitment to maintain and conserve the plot(s) for the period set out in the agreements
- Be available to carry out the activities of the program, as well as to participate in the training sessions and exchanges of experiences

Such agreement is based on the selected agroforestry system, which besides is supported by the PES data outlined in the technical specifications previously approved by the Plan Vivo Foundation, as well as according to the compliance of activities scheduled by the farmer. Given its legal nature, this contract obliges the signing parties to comply with it, also detailing those mechanisms for conflict resolution.

It also states that the benefits from the provision of environmental service will be granted to whoever demonstrates the land ownership, based on the results of the monitoring, which is also specified in the contract annexes.

J2 Payments and equitable sharing of benefits

According to the principles of the Plan Vivo Standard and the Scolel'te program, the direct benefits of carbon sales are accredited to those farmers who participate in the program and have demonstrated compliance based on their work schedule.

Indirectly, enrolled farmers obtain co-benefits, such as training, participation in projects related to Scolel'te, improvement of productive activities and strengthening of their knowledge on local resources. They also obtain firewood, fruits, non-timber products, crops, among other items directly from their plots. The program additionally seeks that the distribution of benefits is done in an equitable way in the registered communities, therefore the participation of the whole family is aimed since the early visits and the design of the Plan Vivo.

In case that the farmer does not reach its annual commitments at 90%, its payment is withheld, until the respective goals are fulfilled. In the event that his/her performance has been affected by factors beyond the farmer's control, such as pests, AMBIO supports the farmer with the follow-up and addressing of the problem, then for the next monitoring period his/her commitments can be achieved.

In order to ensure that most of the economic benefits reach the households registered in Scolel'te, it is intended that 60% of the resources from carbon sales are directed to the farmers, while AMBIO deducts 40% for the execution and operative costs. To achieve the above, it is necessary to have a minimum annual sale (which is a function of demand and prices) and that AMBIO makes co-investments in the program through other sources of funding for the implementation of parallel projects to Scolel'te.

The amount of carbon to be accredited and paid after each monitoring depends on the results obtained and other criteria such as the area, system, and forest species established in the Plan Vivo. A set of indicators are taken into account for the monitoring, among them; the number of trees in the plot, the area of intervention, general distance between trees, sanity and average height. If the results are optimal, carbon accreditation is done as explained below:

During the first 5 years of the plantation, at least 60% of the carbon captured must be accredited according to the objectives set in the technical specifications of each system. The amount of carbon accredited in each stage is proportional to the percentage of achieved activities and goals. If in any of the years monitored, the farmer does not fulfil with the activities initially planned, the duration of the overall process will be increased.

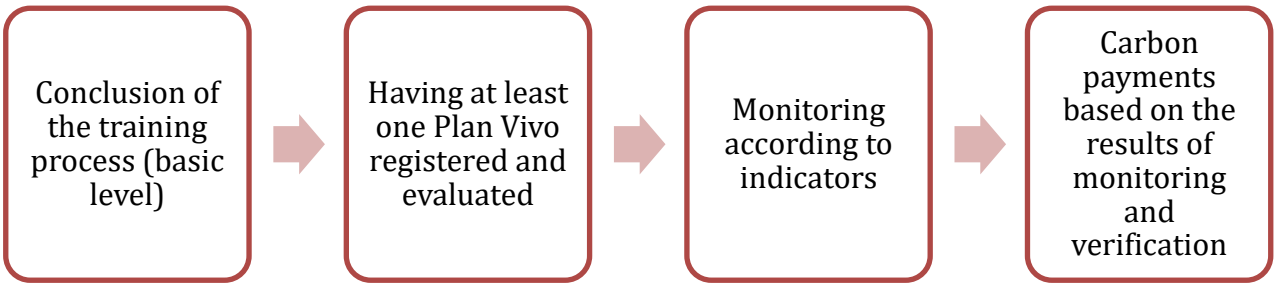
In the monitoring corresponding to the year 10, the farmer must reach all the agreed goals for the plot in order to conclude, otherwise the farmer maintains active his/her commitment to Scolel'te.

At each stage of carbon accreditation, the monitoring data is recorded in the project database and in the carbon notebook of each farmer, which contains all information regarding carbon accreditation, commitments and transactions made.

J2.1 Carbon payments scheme for the Scolel'te program

To access carbon payments, any farmer must comply with the following process:

Picture 13. Carbon payments scheme



For plots registered until 2014, the payment scheme corresponds to Table 15, where the first 3 payments represent 60 percent of the total carbon, and in the last two the remaining 40 percent.

Table 15. Detail of accreditable carbon for agroforestry systems in Scolel'te (1997-2014)

Year of monitoring	Accreditable carbon (percentage)*	Saleable carbon (percentage)**	Risk buffer (percentage)***
1	20	18	2
2	20	18	2
3	20	18	2
5	20	18	2
8	20	18	2
TOTAL	**100%**	**90%**	**10%**

For plots registered from 2015 to 2017, the payment scheme corresponds to Table 16 (see next page), where the first 5 payments represent 60 percent of the total carbon, and the last two the remaining 40 percent. Under this scheme there are constant follow-up and payments for 5 years in a row. Consequently, AMBIO provides more timely attention to possible events that could put the permanence of the systems at risk.

Table 16. Detail of accreditable carbon for agroforestry systems in Scolel'te (2015-2017)

Year of monitoring	Accreditable carbon (percentage)*	Saleable carbon (percentage)**	Risk buffer (percentage)***
1	12	10.8	1.2
2	12	10.8	1.2
3	12	10.8	1.2
4	12	10.8	1.2
5	12	10.8	1.2
7	20	18	2
10	20	18	2
TOTAL	**100%**	**90%**	**10%**

After the update of the technical specifications and the carbon estimations for agroforestry systems, a new modification to the carbon payment scheme came into force. The newest scheme also consists of 7 payments distributed in 10 years, but the percentages of accreditation per year changed as shown in the table below.

Table 17. Detail of accreditable carbon for agroforestry systems in Scolel'te (from 2018 onwards)

Year of monitoring	Accreditable carbon (percentage)*	Saleable carbon (percentage)**	Risk buffer (percentage)***
1	15	13.5	1.5
2	15	13.5	1.5
3	15	13.5	1.5
4	15	13.5	1.5
5	10	9	1
7	20	18	2
10	10	9	1
TOTAL	**100%**	**90%**	**10%**

Note: the agreements signed between AMBIO and the farmers state this periodicity and the percentages of accreditable carbon. Net amounts depend on the agroforestry systems selected and the areas registered to the program,

* Accredited carbon by the program, according to the results of field monitoring
** Saleable carbon recognized to the farmer, after monitoring
*** Accredited carbon to the farmer after monitoring, but unable to be traded

Section K: Monitoring

K1 Ecosystem services benefits

Monitoring allows to evaluate directly and indirectly the provision of ecosystem services in the areas incorporated to the project. It is coordinated by AMBIO and carried out with the support of regional and community technicians, who have been previously trained in this activity and updated every time adjustments or changes are made in the methodological process.

These activities are implemented with the previous endorsement of the farmers who participate in the program, otherwise it cannot be done. Information from monitoring is collected, systematized and analysed by the AMBIO field technicians. In the following table are presented the main indicators monitored in the forestry and agroforestry systems promoted by Scolel'te.

Table 18. Ecosystem services monitoring indicators

Year	Monitoring goal	Monitoring indicator	Objectives
1	At least 90% of the planned quantity of trees are successfully established	- Number (counting) of living trees established	To establish the system according to the technical specification and the Plan Vivo
2	Evaluation of the survival rate of established trees. Sets a goal of 100% considering replanting	- Number (counting) of living trees established	To establish the system according to the technical specification and the Plan Vivo
3	Evaluation of the survival rate of established trees. Sets a goal of 100% considering replanting	- Number (counting) of living trees established	To establish the system according to the technical specification and the Plan Vivo
4	Expected survival rate of, at least, 85% of the initially planned number of trees	- Number (counting) of living trees established	To establish the system according to the technical specification and the Plan Vivo
5	Expected survival rate of, at least, 85% of the initially planned number of trees	- Number (counting) of living trees established - Average height of the plot	To evaluate the permanence and carbon sequestration scenario of the established system
7	Expected survival rate of, at least, 75% of the initially planned number of trees, considering thinnings	- Number (counting) of living trees established - Average height of the plot - Average diameter of the established trees (random sampling of 10% of the plot)	To evaluate the permanence and carbon sequestration scenario of the established system, as well as the timber quality.
10	Expected survival rate of, at least, 65% of the initially planned number of trees, considering thinnings	- Number (counting) of living trees established - Average height of the plot - Average diameter of the established trees (random sampling of 10% of the plot)	To evaluate the permanence and carbon sequestration scenario of the established system, as well as timber quality.

For those areas registered for avoided emissions activities, goals and indicators are diverse, since they are focused on the mitigation of the main direct and indirect threats that affect the area, which are classified as following:

Table 19. Activities for areas registered under the avoided emissions scheme

Type of Risk	Project Activity	Outcomes	Main activities
Increase in livestock farming as an economic activity, expansion of agricultural production and extraction of firewood, organic material and wood	Improved land management practices	- Reforestation of deforested and degraded lands - Improved land management and agricultural practices - Improved land use planning	- Reforestation with local species - Awareness and training to local communities on land use planning and management approaches - Training and implementation of techniques such as crop diversification, production of organic fertilizers, conservation agriculture, silvopastoral systems and live fences - Promotion of capacity-building exchanges on good practices for land management, for its replication in the project area
Wildfires and poaching	Forest protection and monitoring	- Improved surveillance and enforcement of local rules - Improved local/regional capacity for forests and biodiversity monitoring - Systematization of information collected after monitoring activities	- Training on forest surveillance and monitoring
Lack of economic resources within the communities for the development of alternative activities	Development of alternative income sources from the sustainable management of forests	- Increased livelihood diversity - Sustainable forest management for the use and extraction of timber and non-timber resources (natural palms, seeds, other) - Improved markets for sustainable timber and non-timber products	- Alternative livelihoods assessment - Obtention of permits and development of forest areas for sustainable management - Strengthening of local rules for the management of natural resources - Production of organic fertilizers as a viable economic alternative
Invasions to forests in protected areas and weak territorial planning	Improved governance	- Promotion of policies for good land use management (advocacy) - Stronger local governance (community associations) - Law enforcement to prevent or reduce the sale of land	- Review and update of internal regulations - Development of equitable benefit-sharing mechanisms that help promote internal responsibilities - Promotion of policies for good land use management (advocacy) - Strengthening of community associations - Update of the land management plan in the Cañón del Sumidero National Park for improved control - Law enforcement to prevent or reduce the sale of land and invasions

The actions and indicators for the evaluation and monitoring of these threats are determined for each region, in order to ensure a positive impact. As an example, only the first threat in the above table is taken, and this is the process for the following threats. To provide follow up on the activities, some indicators are developed (see Table 20 in the following page).

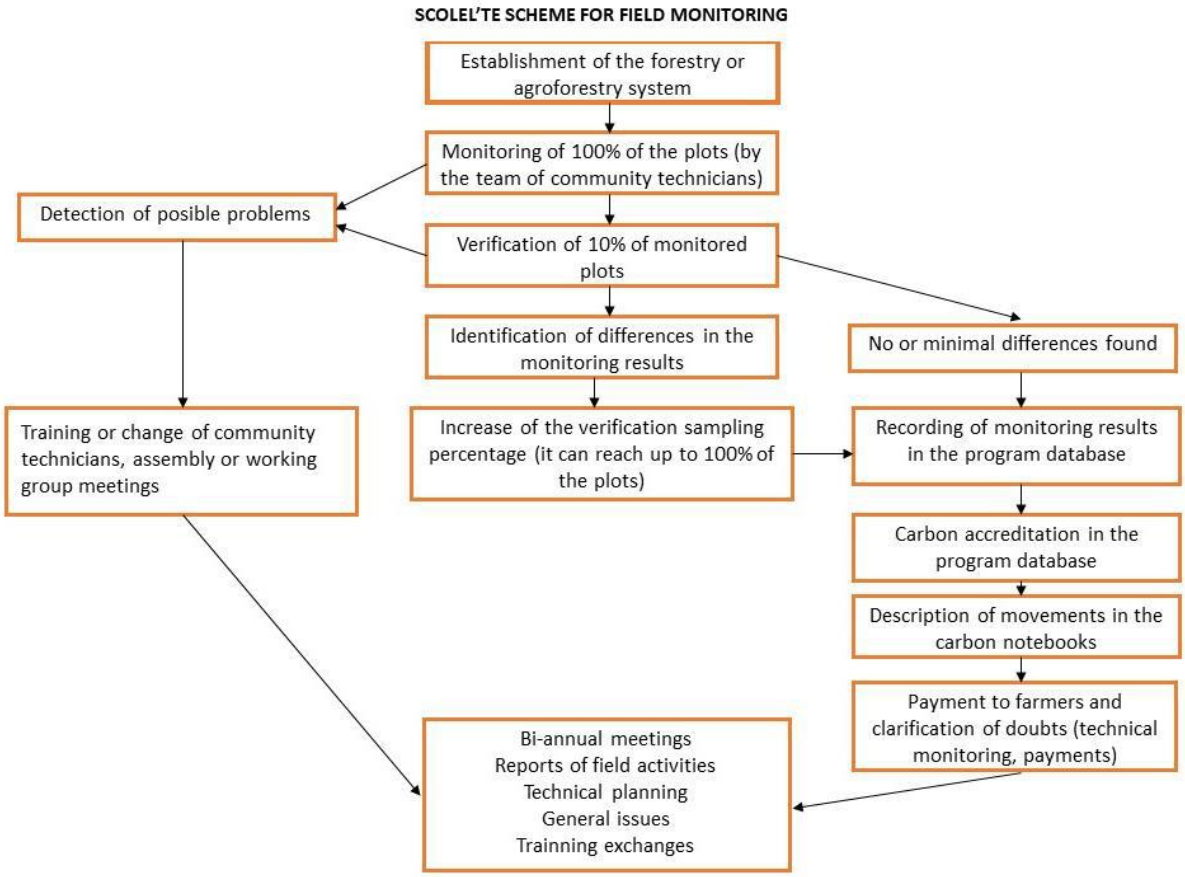
As observed, all the members of the communities are involved in the entire process. The above is formally stated in those documents designed with the active participation of the communities

Table 20. Indicators for areas registered in the avoided emissions scheme

Indicator	Measurement	Implementer	Frequency	Comments
Agreements reached at assembly level	Number of agreements concluded and implemented	Directive Board and Surveillance Commission of the ejido	As demanded by the activities	The measurement frequency of this indicator will be as required by the activities or when they are not implemented as agreed.
Permanent community surveillance	Number of routes covered	Community Brigade	Once a month	This activity will be supervised by the Ejido Directive Board and its Commissioner
Fire breaker gaps	Number of kilometres covered	Brigade Leader, supported by the Community Brigade	Annually	Done as a preventive measure, given that there is no budget assigned for this activity
Surveillance, carbon stocks and biodiversity	Number of routes traced, gps, data collection	Community technicians	Once a month dry seasons	The activity will be supervised by the ejido commissioner with the support of its board
Management of flammable organic material	Fuel storage to break vertical or horizontal continuity in risk areas	Community technicians and ejido	Once a year	The ejido agrees to handle the flammable organic material that is in the risk zones, as long as they are provided with some economic support

The monitoring process of the program is a fundamental part of the cycle of activities that the farmer develops in his/her plot, allowing to evaluate the results of the established agroforestry systems, also giving certainty and reliability to third parties. After accomplished, the corresponding carbon is accredited and payments are released to registered farmers. In addition, with the information obtained, common technical problems are identified in order to address them in a timely manner.

Picture 14. Field monitoring process



In order to analyse the results of the monitoring and to know the results in terms of quantifiable carbon, several indicators are applied to obtain such estimations. These indicators are presented below. A detailed description can be found in the technical specifications of the program.

- Permanence/number of living trees
- Survival rate
- Average height
- Sanity rate
- Biodiversity impacts (at pilot level)
- Socioeconomic impacts in participant households (at pilot level)

K2 Socioeconomic impacts

The Scolel'te Program generates a series of socio-economic and environmental benefits from the intervention in the working areas. Carbon payments contribute to the household income of the registered participants, since they are used in items such as food, health, and clothing, education expenses of their children or for the purchase of inputs and tools for their plots.

Scolel'te, from its intervention design, develops an intense work for the strengthening of local capacities, through workshops to raise awareness on climate change and the sustainable management of the land, allowing farmers to increase their productivity, as well as by providing courses for the development of productive activities, aimed at inserting rural communities into local markets and generating also a local empowerment cycle.

The program seeks to measure its impacts through co-benefit indicators, in order to assess the contribution to the fulfilment of the Sustainable Development Goals (SDGs) of the United Nations Organization (UN). The following tables describe those indicators annually reported to the Plan Vivo Foundation. Such indicators measure socio-economic impacts for both, agroforestry systems and for the avoided emissions scheme.

Table 21. Socio-economic impacts indicators

Contribution to the SGDs	Program indicator	Baseline (from 2017)[13]
SDG 1. No poverty[14]	Number of participant households	88
	Carbon payments to project participants (USD)	646,661.79
SDG 2. Zero hunger[15]	Area reforested with diversified species	27
SDG 4. Quality education[16]	Total number of trainings	33
	Number of trained women	177
	Number of trained men	194
	Number of trained indigenous	-
	Number of trained children	--
SDG 5. Gender equality[17]	Number of working groups with women, indigenous, young and elderly people	7
	Number of active women in training sessions and in the implementation of productive projects	5
SDG 8. Decent work and economic growth[18]	Creation of direct employments	10
	Creation of indirect employments	158
	Number of agreements generated by a working group	-
SDG 17. Partnerships for the Goals[19]	Participation in national committees for environmental protection	6
	Number of partnerships with international institutions	6
	Number of productive practices implemented for mitigation and adaptation to climate change	-

For an inclusive implementation, which provides opportunities for the participating communities in condition of marginalization, it is required to assess the livelihood conditions of the participants, in order to better understand the multidimensional impacts of carbon sequestration, which can be measured through the co-benefits for the participants, such as:

- Increased family income
- Increased access to firewood and building materials
- Reduction of deforestation in natural protected areas
- Diversification of productive activities

[13] The baseline for the measurement of these indicators began in 2017 and has continued since then. These indicators have been measured with the total number of participants for the years 2017, 2018 and 2019

[14] SDG 1. No poverty: this is measured by observing the payments resulting from the project, which have a significant impact on the economy of the participants' households.

[15] SDG 2. Zero hunger: the project measures food security in terms of diversification of food crops, such as fruit trees, palms, maize, beans, some backyard vegetables and, in some cases, agroforestry species

[16] SDG 4. Quality education: the project measures this by the number of trainings, which seek to improve participants' local knowledge of the impacts of climate change and to strengthen the resilience, food security and medicinal use of plants, agroforestry systems, plot diversification, pest control, land management and gender equality.

[17] SDG 5. Gender equality: This is mainly measured through gender mainstreaming actions. All activities are designed to include vulnerable groups, such as women, youth and the elderly. Through the Plan Vivo design and subsequent workshops, all family members are invited to participate in the design and implementation of activities.

[18] SDG 8. Decent work and economic growth: the project measures this by providing seasonal and permanent jobs

[19] SDG 17. Partnerships for the Goals: Scolel'te has a long list of partners at international and national level to implement different activities that contribute to the conservation of ecosystems in the state of Chiapas.

In addition, the participants witness the strengthening of their technical capacities, which allows them to obtain additional products, such as, wood, firewood, fruit trees, medicinal plants and fodder.

According to the new technical specifications for agroforestry systems, a group of socio-economic indicators were reincorporated from older versions and some others were added (new indicators will be measured every two years). These are built with data from the program database and with information provided in the annual reports to the Plan Vivo Foundation that can be applied for agroforestry systems and avoided emission, as described below:

Table 22. Socioeconomic monitoring indicators

Project dimensions	Indicator	Monitoring instrument	Frequency
Capitals owned by the community (social, human, financial, cultural and political) and sustainable livelihoods	- Number of registered households - Number of indigenous households - Women, young and elderly population enrolled in the program	Semi-structured interviews	Every two years
Employment	- Number of jobs created by the program (permanent and seasonal) - Number of community technicians - Final destination of carbon payments - Total carbon payments made per farmer/year - Number of men, women, young and elderly people that receive carbon payments and number of payments completed	Field information obtained by community and regional technicians Program database	Every two years
Gender	- Number of enterprises owned by women - Number of workshops oriented to women, young and elderly people - Number of groups of women, young and elderly people	Activities (workshops, meetings, etc.), detailed in the Annual Report	Annual
Land tenure	- Number of registered families with property titles	Legal documentation to accredit land tenure	Annual
Social capital	- Number of farmer's groups with active participation in capacity-building sessions and exchanges (men, women) - Number of active working groups - Number of community leaders promoted	Activities (workshops, meetings, etc.), detailed in the Annual Report	Annual
Social organization	- Percentage of organized farmers with active participation in actions for community development	Registry of activities carried out by the community	Annual

K3 Environmental and biodiversity impacts

Through the sustainable management of natural resources, Scolel'te has been able to generate benefits for local farmers and improve the quality of the environment. Among its main achievements are

- Conservation of forests and rainforests and generation of income through carbon payments
- Regeneration of degraded areas
- Social and environmental revaluation of degraded areas and productive systems

- Reintroduction of native and/or naturalized tree species
- Recovery of local knowledge on local species
- Generation of seedlings in forest nurseries
- Use and sale of non-timber forest products harvested from plots registered in the program
- Maintenance and creation of biological corridors
- Contribution to the development of ecotourism in rural communities
- Promotion of scientific knowledge and generation of information about carbon sequestration
- Improvement of productive systems

Table 23. Biodiversity impact indicators

Contribution to the SDGs	Program indicator	Baseline (from 2017)[20]
SDG 15. Life on land	Number (diversity) of species promoted by reforestation actions[21]	102.5
	Number (diversity) of species protected with project activities	18
	Number of communities with souerces of water	-
	Number of endangered species registered by the IUCN Red List	5
	Number (diversity) of agroforestry systems in use	5
	Number of protected biological corridors and actions in NPAs	-

The Scolel'te technical staff visits the accredited farmers on an annual basis, to register the monitoring results and additional data of the plots. During these visits, new information is obtained about the tree species planted, the presence of species by natural regeneration, those that have some category of risk, as well as the general condition of the plantation and its survival rate.

The amount of wood provided by program activities through agroforestry systems is an indicator of risk reduction in the working areas. In addition, the program invests in studies to evaluate the state of aquifers and biodiversity in the program areas, generating additional information about the benefits on the ecosystem services and the local livelihoods.

In the last two years (2018-2019), Scolel'te has organized, trained and equipped a group of community technicians able to collect information about the biodiversity impacts of the program. The information is collected every two and six months, depending on the species to be monitored and reported.

As in the same case of socioeconomic indicators, according to the new technical specifications for agroforestry systems, a new group of biodiversity indicators were reincorporated from older versions and some others were added. These are built with data from the program database and with information provided in the annual reports to the Plan Vivo Foundation, and can be apllied to avoided emissions, as well, described below:

[20] The baseline for the measurement of these indicators began in 2017 and has continued since then. These indicators have been measured with the total number of participants for the years 2017, 2018 and 2019

[21] SDG 15. Life on land: the project measures this by observing the presence of biodiversity, soil fertility, habitats and the regulation of microclimates.

Table 24. Biodiversity monitoring indicators, as listed by the technical agroforestry specifications

Characteristics	Indicator	Monitoring instrument	Frequency	Implementer
Forest recovery of areas with former agricultural use	- Area (ha) of the plots reforested or managed by the Program - Average number of established plants per hectare - Number of agroforestry systems promoted - Number of community actions for the protection of water sources and number of water sources	Survey to participating households	Annual	Community and regional technicians
Increasement and protection of forest diversity	- Number of established tree species. - Number of endangered tree species registered by the IUCN Red List and the NOM-059. - Number of productive practices implemented for climate change adaptation	List of species observed annually from the monitoring information and presented in the annual report	Annual	Community and regional technicians
Conservation of habitats for flora and fauna species	- Number of natural protected areas where the program operates.	Activities detailed in the Annual Report	Annual	Community and regional technicians
Creation and strengthening of biological corridors	- Number of hectares reforested in biological corridors	Annual monitoring and report to the Plan Vivo Foundation	Annual	Community and regional technicians

K4 Technical support, monitoring, verification

K4.1 Monitoring, technical support and verification

Scolel'te has developed an internal monitoring system to verify the progress of the activities carried out by the farmers, based on the agreed number of tons of carbon to be sequestered (as stated in the technical specifications and the signed agreements). If the progress is not satisfactory, corrective actions are applied, such as replanting of trees, management of plantations, pest control, among others.

The implementation of the monitoring system is based on the Plan Vivo designed by the farmer. The plot that will be destined to the forestry or agroforestry system is firstly selected. Then, the farmer decides (according to the technical specifications) the system, the species to be planted and the spatial arrangement. Once completed, it is submitted to AMBIO for technical evaluation.

If this Plan Vivo is technically, socially and economically viable it is accepted, so the activities are carried out according to the plan. As a consequence, community technicians monitor the plot considering the farmer's design.

Monitoring is executed by the community technicians and is applied to all the plots registered in the program. Community technicians also perform verification of the monitoring, which consists of a sample of 10% of the monitored plots. Both are done in the years 1, 2, 3, 4, 5, 7, and 10, counting after the year that the plantation was firstly established.

The files of each monitoring conducted in the field are integrated into the technical record of each farmer, and the information obtained is analysed and incorporated into the program's database. So far, this is the main instrument by which compliance and quality of the carbon capture is guaranteed.

Monitoring tasks are defined for each forestry and agroforestry system in its technical specifications, where each of the critical stages of the system are evaluated through specific actions, ensuring that the estimated carbon capture is achieved according to the time outlined in the technical specifications.

K4.2. Monitoring verification

Monitoring verification (at 10 percent of the monitored plots) is carried out by AMBIO's regional technicians (people form the communities who have been trained by AMBIO and who are in charge of supporting and accompanying the farmers of a region), once that 100 percent of the monitoring has been completed.

The data obtained from this verification are considered correct and consistent if the variation between the monitoring and the verification is equal or less than 10 percent. In case of a variation greater than 10 percent, AMBIO starts an analysis of the tasks performed by the community technicians. If the evidence shows that the community technician did not perform the monitoring well, a second monitoring and verification are made by the AMBIO technical staff.

Each year, at the end of the monitoring season, AMBIO technical staff generates a report describing several details, such as the number of monitored plots, pending plots to be monitored and the justification, as well as the results of the monitoring verification done by the community technicians.

Carbon accreditation for each farmer is based on the results of the monitoring. The above aims at first, reviewing and evaluating the quality of the work performed and then, accrediting the corresponding carbon. It also helps to identify problems and analyse possible solutions to them. Even though monitoring is carried out by community and regional technicians, its approval depends exclusively on the AMBIO technical staff.

As part of the compliance to the Plan Vivo standard, external verifications (by third parties) have been carried out to the program in the years 2006, 2008, 2009 and 2013. Scolel'te was verified by the Rainforest Alliance's SmartWood Program in 2006 and was also verified by SGS in 2002. In the last external verifications were reviewed specifically the agroforestry systems, its validation procedures and the development of field monitoring. The upcoming verification is planned for 2019 and it will be a complete verification of the program.

Annexes

Annex 1. List of key people involved in the program with contact details

Name	Position	Contact
Elsa Esquivel Bazan	AMBIO Administrative Director	info@ambio.org.mx
Sotero Quechulpa Montalvo	AMBIO Legal Representative	info@ambio.org.mx
Romeo Jiménez	AMBIO Administrative Coordinator	info@ambio.org.mx
Helena Barona	Scolel'te Carbon Offsets Sales Manager	info@ambio.org.mx
Rubén Trujillo	Scolel'te Coordinator for Community and Regional Technicians	info@ambio.org.mx
Nicolás Hernández	Scolel´te Technical Officer	info@ambio.org.mx

Annex 2. Information about funding sources

Type of institution	Collaboration objectives
Federal and State Institutions National Commission for Natural Protected Areas (CONANP) National Forestry Commission (CONAFOR) Ministry of Environment and Natural History of the State of Chiapas (SEMAHN)	Partnership to develop joint activities in confluence zones, as well as to strengthen activities and goals of individual intervention programs
Local Governments	Support in specific activities to be implemented in the local communities (nurseries, plants transportation, among others)
International institutions (Governmental and NGOs) United Nations Development Program (UNDP) U.S. Forest Service Conservation International (CI) The Nature Conservancy (TNC) Ecometrica	Funding for the expansion of the program to new regions of Chiapas and for the strengthening of activities in current areas
National NGOs Mexican Fund for the Conservation of Nature (FMCN) Natural Protected Areas Fund (FANP) Reforestamos Mexico	Funding for the consolidation of the program and for parallel co-benefit programs

Annex 3. Payment for Ecosystem Services (PES) agreement description

CONTRACT BETWEEN THE AMBIO COOPERATIVE S.C. DE R.L., REPRESENTED BY SOTERO QUECHULPA MONTALVO, HEREINAFTER "AMBIO", AND BY ____XXXX_____, HEREINAFTER "THE FARMER", ACCORDING TO THE FOLLOWING DECLARATIONS AND CLAUSES

DECLARATIONS

I. Declares "**AMBIO**" that:

1. The AMBIO Cooperative Society, S.C. DE R. L. is constituted in accordance with the laws of Mexico and registered in the Public Registry of Property under No. 80 of book ONE of the Fifth Section of this judicial district of San Cristóbal de las Casas on August 18, 1998.

2. Its legal representative has the legal authority to enter into this contract, as evidenced by Public Deed No. 16,830, volume number 283, dated June 6, 2015.

3. It is duly registered in the Federal Taxpayers' Registry of the Ministry of Finance and Public Credit, under code ARL-980730-RR2.

4. Its fiscal address is Cerrada Emiliano Zapata # 4, Colonia El Relicario C.P. 29286, San Cristóbal de las Casas, Chiapas, Mexico

5. Its social objective is to promote sustainable, integral and harmonious rural development in terms of gender, culture and socio-economic levels. Through the rational management of natural and environmental resources, it aims to strengthen the local capacities of social organizations, rural communities and organized groups.

6. It has the technical, financial and legal capacity to fulfil its obligations.

II. Declares "**THE FARMER**", that:

1. His/her name is _____, as shown by his identity card number _____.

2. He/she is the legal owner of the plot/property named _____, which is located in the ejido _____ in the municipality of _____, in the state of Chiapas_____ and has an area of ___ hectares designated for the "Scolel'te Program" and which has the following measurements and boundaries: (at least North, South, East and West).

3. He/she may sign this contract, as the legitimate holder of the mentioned land, as stated in the legal document (*written assembly agreement with date / plot certificate / certificate of rights for common lands / municipal certificate / notary act*)_____and a copy of which is presented in the Annex 1 of this contract.

4. His/her address to hear and receive notices is that located at _____

III. **BOTH PARTIES** declare that:

1. They will collaborate in the project called "Scolel'te Program", which is described in the Annex 2 of this contract and which serves as terms of reference.

CLAUSES

FIRST: The purpose of this contract is the management of forest resources and carbon capture for the fulfilment of the project "Scolel'te Program" and to generate certificates under the Plan Vivo standard.
SECOND: To carry out the project it is agreed that:

a) "AMBIO" is the technical and administrative coordinator of the project, including the review and monitoring of the project.
b) "AMBIO" is responsible for the marketing of the Plan Vivo Certificates to companies, organizations or individuals who want to contribute to mitigate climate change and support sustainable development.

c) "AMBIO" will manage the resources obtained from the commercialization of Plan Vivo Certificates and is obliged to deliver the corresponding payments to "THE FARMER", according to Annex 2
d) "AMBIO" will make the payments once it has verified the fulfilment of the responsibilities of "THE FARMER".
e) "THE FARMER" agrees to carry out the activities of the "Scolel'te Program", according to Annex 2 and with the technical assistance provided by "AMBIO".
f) "THE FARMER" commits not to enter into another agreement for the sale of carbon sequestration in the same project area
g) "THE FARMER" authorizes "AMBIO" to manage and market the Plan Vivo Certificates for ecosystem services (which are quantified in tons of carbon dioxide), to generate any kind of benefit derived from the Plan Vivo certificates.
h) "THE FARMER" has the right to receive from "AMBIO" the payment for the Plan Vivo Certificates as a result of the project "Scolel'te Program", for which "AMBIO" must comply with the obligation to deliver the corresponding payment according to Annex 2.
i) The total of the payments delivered to "THE FARMER" is indicated in Annex 2 and will be done in US dollars with the exchange rate obtained at the time of making the transfer to Mexican pesos.
j) Any other activity not described above is out of the scope of this contract and the responsibilities derived from it.

THIRD: The "Scolel'te Program" in no way implies the transfer of possession or ownership of land or forest resources to anyone else. Land and resources tenure rights remain intact.

FOURTH: In the event that "THE FARMER" fails to comply with his responsibilities for more than twelve months and in an unjustified manner, this contract will be cancelled without the need for a judge or any authority to intervene and payments will be withheld.

FIFTH: When there is a case of force majeure that results in the loss of trees in the project area of the "Scolel'te Program", Annex 2 will be reviewed and adjusted to the new conditions of the project area.

SIXTH: In the event that the ownership or possession of the area under the "Scolel'te Program" project is transferred to a third party, its obligations will be transferred to the new owner or possessor and a copy of this contract must accompany the title deed or proof of possession and it must be registered in the corresponding public registry.

SEVENTH: The technical specifications and monitoring system established by the "Scolel'te Program" will be used to measure carbon capture, as stated by the Plan Vivo standard.

EIGHTH: "AMBIO" will verify and report to the Plan Vivo Foundation the number of certificates and tons of carbon dioxide captured in the project area so that the Plan Vivo Foundation maintains a transparent record of these certificates.

NINTH: During the term of this agreement, the project area identified in the declaration II.3 may undertake other carbon sequestration initiatives, as long as it is demonstrated that there is an agreement with sufficient data to avoid double counting in such area. None of the parties to this contract will receive more than one payment for the same carbon sequestration made.

TENTH: "THE FARMER" agrees to provide access to the project area to "AMBIO" and/or persons authorized or assigned by "AMBIO", to make verification visits. Likewise, he/she consents the collection of images of his person, family and geospatial information of the project area, which will be used only for the purposes and objectives of the program.

ELEVENTH: This contract is not intended nor should it be interpreted as a working relationship between "AMBIO" and "THE FARMER" or vice versa.

TWELFTH: This contract may be terminated for breach of any of its clauses, provided that
a) Whoever wishes to cancel the contract has fulfilled his corresponding obligations.
b) The request must be made in writing and 30 days in advance; additional measures will also be taken to terminate the actions that have been previously initiated.
c) Any remaining payments to which the farmer may be entitled shall be settled in accordance with the progress of the activities referred to in Annex 2.
d) The activities shall be considered completed once "AMBIO" issues written acceptance.
e) In the event that the contract is terminated due to the non-compliance of "THE FARMER", the pending carbon to be accredited, may be relocated to some other plot of a farmer that demonstrates effective compliance.

THIRTEENTH: This contract is valid from the day following its signature and will be valid until _____.
Any modification to this contract and/or its annexes, must be formalized in writing and will come into effect from the date of its signature, provided that the results of the same are not affected.

FOURTEENTH: This contract is based on good faith and situations not covered by it shall be resolved by mutual agreement and in writing.
In case of any dispute regarding the interpretation and performance of this contract, both parties shall submit

to the competent laws and courts.
This contract, read by both "Parties", and aware of its content and legal consequences, is signed in two copies, in the city of San Cristóbal de las Casas, Chiapas, the ____(date)_____.

AMBIO	*THE FARMER*
_____	_____
SOTERO QUECHULPA MONTALVO AMBIO Legal Representative	Name: XXXXX

ANNEX 1

Written assembly agreement with date/ plot certificate /certificate of rights over common use land/ municipal certificate/ notary deed or any other document stating the legitimate possession or ownership of the area intended for the "**Scolel'te Programme**" project. (Submitted copy).

ANNEX 2. TECHNICAL AND ADMINISTRATIVE INFORMATION ON THE "SCOLEL TE PROGRAM"

The purpose of this document is to determine and make transparent the technical-administrative processes to which the farmers who voluntarily participate in the Scolel'te Program are subject to, based on the agroforestry/forestry system they select, as well as the area (ha) that they register in it.

1. "Scolel'te Program"

The Scolel'te Program, aims to promote ecosystem services based on sustainable forest management and run as a program for the trade of Plan Vivo Certificates for ecosystem services (which are reported as tons of carbon dioxide), which operates between farmers (forest/agroforestry land owners) and carbon buyers (CO2) in Mexico and abroad, having "**AMBIO**" as an intermediary agent.
Therefore;

2. It is AMBIO's responsibility:

a) To advise the "**FARMER**" interested in participating in the "Scolel'te Program" for the elaboration of its Plan Vivo, in which he/she will express the choice of the agroforestry/forestry system adequate to the conditions of his/her plot and interests, and which serves as a basis to estimate the rate of carbon sequestration; at the same time the Plan Vivo is the main management tool for the program and it determines the approval or not to participate in the "Scolel'te Program".
b) To cover the costs related to training, technical advice, and exchanges of experiences.
c) To represent the "**FARMER**" in the process of commercialization of the carbon credits and to carry out the corresponding actions so that the "**FARMER**" receives the corresponding income from the sale of carbon credits, in accordance with the stated in the Plan Vivo.
d) To give technical follow-up to the plots for their establishment and management, based on the guidelines of the technical specifications of each agroforestry system managed by the "Scolel'te Program", during the period covered by the contract.
On the other hand;

3. It is the responsibility of the "FARMER":

a) Elaborate his Plan Vivo in a voluntary way, in which he/she must clearly identify the plot selected to enter the Program, as well as determine the forest/agroforestry system and the area chosen to participate in the Program.
b) Attend the trainings and exchange of experiences promoted by "**AMBIO**".

c) Collaborate with the field technicians authorized by "**AMBIO**" for the monitoring and improvement of the agroforestry system
(d) To carry out all the activities for the establishment and maintenance of the agroforestry system described in the table B of this annex, in order to achieve the carbon capture targets
e) Report to the technicians authorized by "**AMBIO**" any event that occurs within the registered plot, which may threaten the permanence of the system.
f) Cover the expenses for the establishment and management of the agroforestry system in the area designated to the "Scolel'te Program".
g) To allow visits by potential carbon buyers to his/her plot if requested
h) To grant AMBIO and the Plan Vivo Foundation authorization to use photos and images, solely for publicity purposes related to the "Scolel'te Program".
i) To comply with any other aspect indicated in the contract and this annex.

4. Plan Vivo and map of the area selected for the program

Plan Vivo, as designed by the farmer

.

5. Project execution time

The project execution time and the permanence of the plot is determined by the technical specification of the agroforestry/forestry system selected by the farmer in his PV; as described below in Table A:

Table A. Detail of the selected agroforestry/forestry system, its characteristics and permanence (example)

Plot ID	Forestry/ agroforestry system	Area (ha)	tCO2 total	Buffer 10% tCO2	Saleable tC	Price per tC ($/ tCO2)	Potential payment to be received	Years of system permanence
xxx	Tropical live Fence AF-CERVI-TRO1	x	xxx	xx	xx	x	x	x years
					xx	x		x years
xxxx	Improved Coffee	x	xxx	xx	xx	x	x	x years

*Note: The payment is done directly to the farmer in Mexican pesos, with the exchange rate of the day the transaction from US dollars.

In those cases in which the "**FARMER**" cuts the trees for sale of wood or for any other economic profit, it is necessary that after the first rotation of wood, the "**FARMER**" re-establishes an agroforestry parcel with the same characteristics as the original one; for these purposes it is required that when selling wood, the "**FARMER**" grants AMBIO 5% of the income obtained, which will be destined to the follow-up of the agroforestry management of the new parcel.
In the event that the "**FARMER**" is not interested in establishing a new plot or re-establishing it, he/she must cede this right to another member of his family, community or farmer enrolled in the "Scolel'te Program".

6. Distribution and payments from the established agroforestry system

(a) Of the total amount obtained from carbon credit sales, 30 per cent of this income is used for administrative costs of the "Scolel'te Programme"
b) The remaining 70% of the revenues is directed to payments for environmental services to participating farmers, which is distributed according to the payment scheme described in Table B.

Table B. Distribution of monitoring in years. Carbon subject to accreditation, saleable carbon and contingency fund, based on the established agroforestry system and area

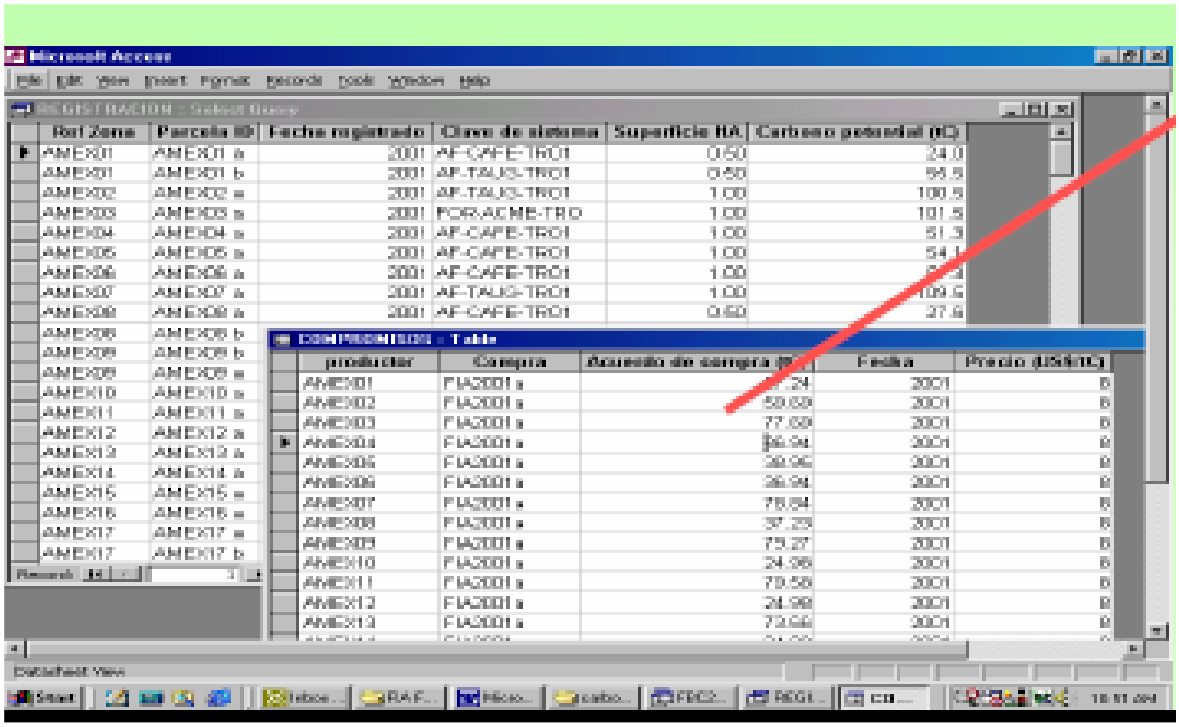
Example: Live fence (1 ha). Plot # ____

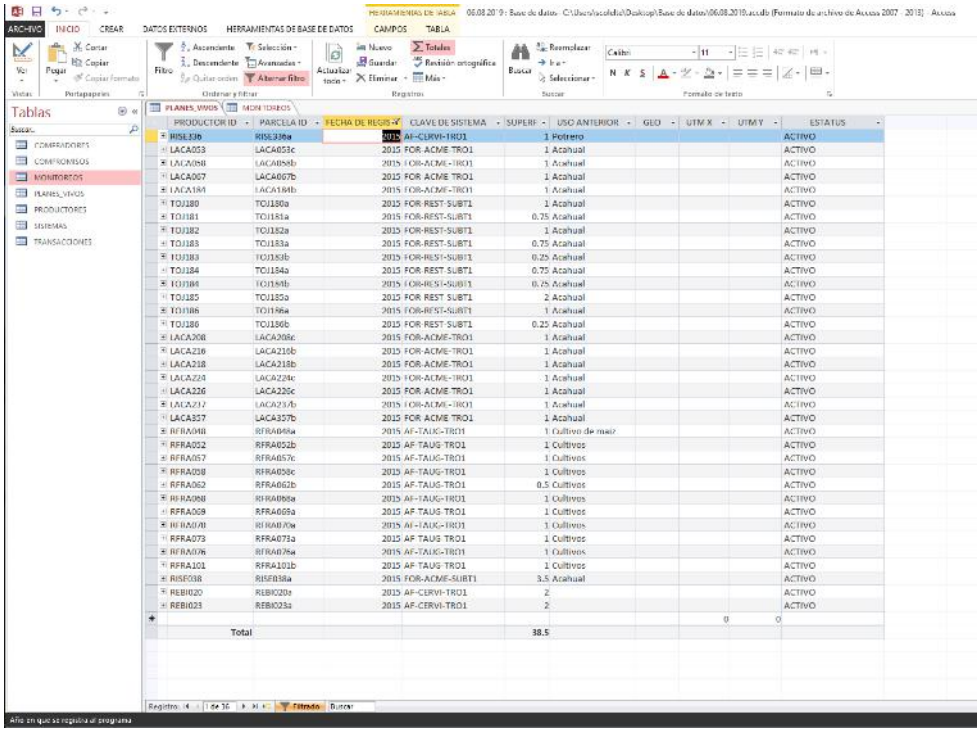
Year	Main activities	Payment	Carbon subject	Saleable	Contingency

		distribution (%)	to accreditation (tons)	carbon (tons)	fund (tons)
1	Planting and maintenance Survival rate	x%	x	x	x
2	Replanting and maintenance Survival rate	x%	x	x	x
3	Replanting and maintenance Survival rate	x%	x	x	x
4	Maintenance Survival rate	x%	x	x	x
5	Pruning and maintenance Survival rate	x%	x	x	x
7	Pruning and maintenance	x%	x	x	x
10	Maintenance and management	x%	x	x	x
Total		100%	x	x	x

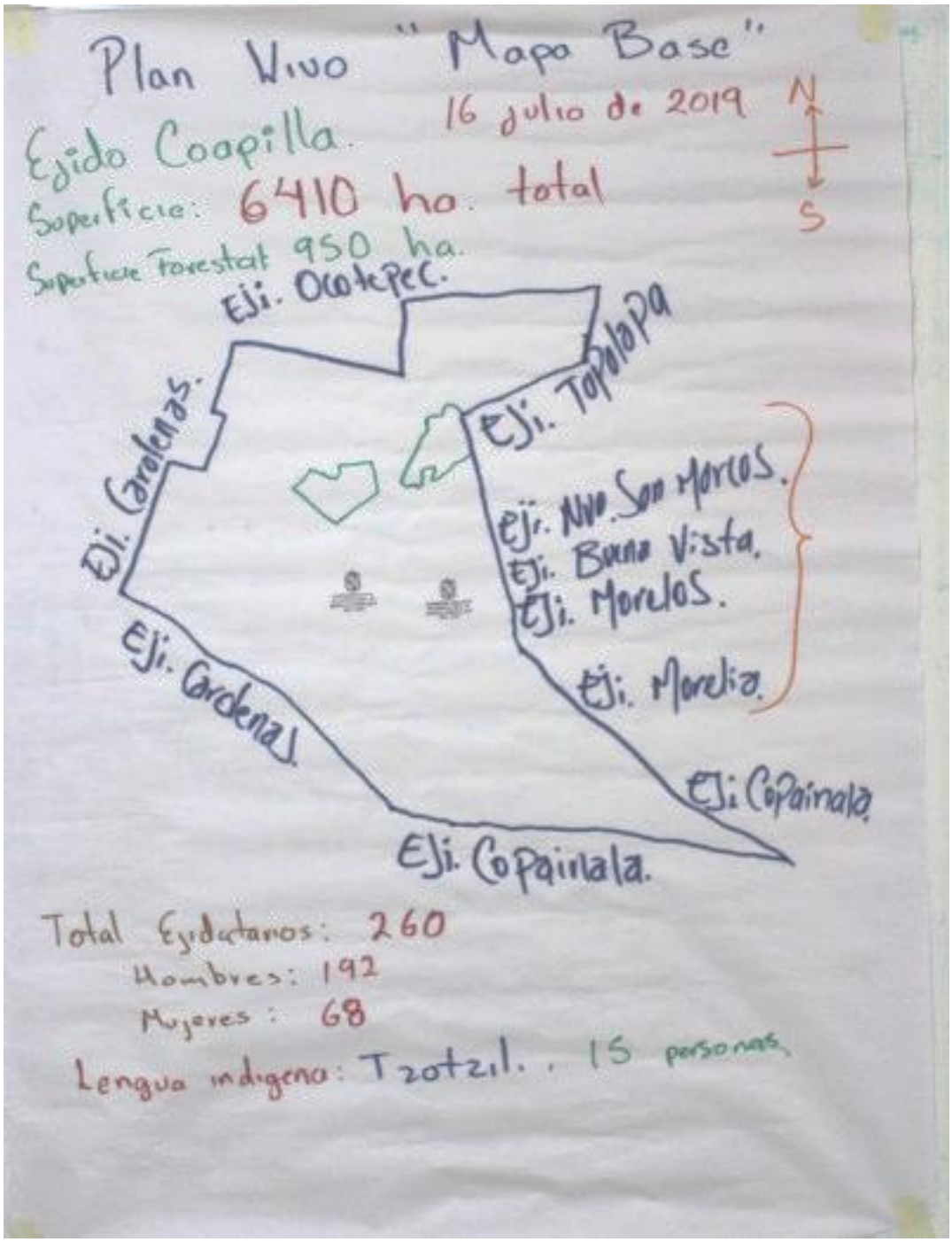
c) Payments are made after monitoring and internal verification, after a minimum of 30 days from the establishment of the plantation; community technicians are responsible for checking 100% of the plots in their community, then regional technicians carry out the verification of 10% of the monitored plots.
(d) The results of general monitoring information will be reported to the farmer's registry, so that the amount of carbon derived from the monitoring can be subject to accreditation. This serves as a basis for releasing the payment corresponding to each year, as described in **table B.**
e) In order for the farmer to access his/her total payment -depending on the monitoring year-, he/she must demonstrate at least a progress of 85% of the committed activities for that year. If the progress is below the target, the percentage corresponding to the completed activities will be paid.

Annex 4. Database template




ARCHIVO
INICIO
CREAR
DATOS EXTERNOS
HERRAMIENTAS DE BASE DE DATOS
CAMPOS
TABLA
Tablas
COMPRADORES
COMPROMISOS
MONITOREOS
PLANES_VIVOS
PRODUCTORES
SISTEMAS
TRANSACCIONES
PLANES_VIVOS
MONITOREOS
PRODUCTOR ID
PARCELA ID
FECHA DE REGIS
CLAVE DE SISTEMA
SUPERF
USO ANTERIOR
GEO
UTM X
UTM Y
ESTATUS
RISE336 RISE336a 2015 AF-CERVI-TRO1 1 Potrero ACTIVO
LACA053 LACA053c 2015 FOR-ACME-TRO1 1 Acahual ACTIVO
LACA058 LACA058b 2015 FOR-ACME-TRO1 1 Acahual ACTIVO
LACA067 LACA067b 2015 FOR-ACME-TRO1 1 Acahual ACTIVO
LACA164 LACA164b 2015 FOR-ACME-TRO1 1 Acahual ACTIVO
TOJ180 TOJ180a 2015 FOR-REST-SUBT1 1 Acahual ACTIVO
TOJ181 TOJ181a 2015 FOR-REST-SUBT1 0.75 Acahual ACTIVO
TOJ182 TOJ182a 2015 FOR-REST-SUBT1 1 Acahual ACTIVO
TOJ183 TOJ183a 2015 FOR-REST-SUBT1 0.75 Acahual ACTIVO
TOJ183 TOJ183b 2015 FOR-REST-SUBT1 0.25 Acahual ACTIVO
TOJ184 TOJ184a 2015 FOR-REST-SUBT1 0.75 Acahual ACTIVO
TOJ184 TOJ184b 2015 FOR-REST-SUBT1 0.25 Acahual ACTIVO
TOJ185 TOJ185a 2015 FOR-REST-SUBT1 2 Acahual ACTIVO
TOJ186 TOJ186a 2015 FOR-REST-SUBT1 1 Acahual ACTIVO
TOJ186 TOJ186b 2015 FOR-REST-SUBT1 0.25 Acahual ACTIVO
LACA208 LACA208c 2015 FOR-ACME-TRO1 1 Acahual ACTIVO
LACA216 LACA216b 2015 FOR-ACME-TRO1 1 Acahual ACTIVO
LACA218 LACA218b 2015 FOR-ACME-TRO1 1 Acahual ACTIVO
LACA224 LACA224c 2015 FOR-ACME-TRO1 1 Acahual ACTIVO
LACA226 LACA226c 2015 FOR-ACME-TRO1 1 Acahual ACTIVO
LACA357 LACA357b 2015 FOR-ACME-TRO1 1 Acahual ACTIVO
RFRA048 RFRA048a 2015 AF-TAUG-TRO1 1 Cultivos de maíz ACTIVO
RFRA052 RFRA052b 2015 AF-TAUG-TRO1 1 Cultivos ACTIVO
RFRA057 RFRA057c 2015 AF-TAUG-TRO1 1 Cultivos ACTIVO
RFRA058 RFRA058c 2015 AF-TAUG-TRO1 1 Cultivos ACTIVO
RFRA062 RFRA062b 2015 AF-TAUG-TRO1 0.5 Cultivos ACTIVO
RFRA068 RFRA068a 2015 AF-TAUG-TRO1 1 Cultivos ACTIVO
RFRA069 RFRA069a 2015 AF-TAUG-TRO1 1 Cultivos ACTIVO
RFRA070 RFRA070a 2015 AF-TAUG-TRO1 1 Cultivos ACTIVO
RFRA073 RFRA073a 2015 AF-TAUG-TRO1 1 Cultivos ACTIVO
RFRA076 RFRA076a 2015 AF-TAUG-TRO1 1 Cultivos ACTIVO
RFRA101 RFRA101b 2015 AF-TAUG-TRO1 1 Cultivos ACTIVO
RISE038 RISE038a 2015 FOR-ACME-SUBT1 3.5 Acahual ACTIVO
REBI020 REBI020a 2015 AF-CERVI-TRO1 2 ACTIVO
REBI023 REBI023a 2015 AF-CERVI-TRO1 2 ACTIVO
Total 38.5
Año en que se registra el programa

Annex 5. Examples of a Plan Vivo / forest management plan

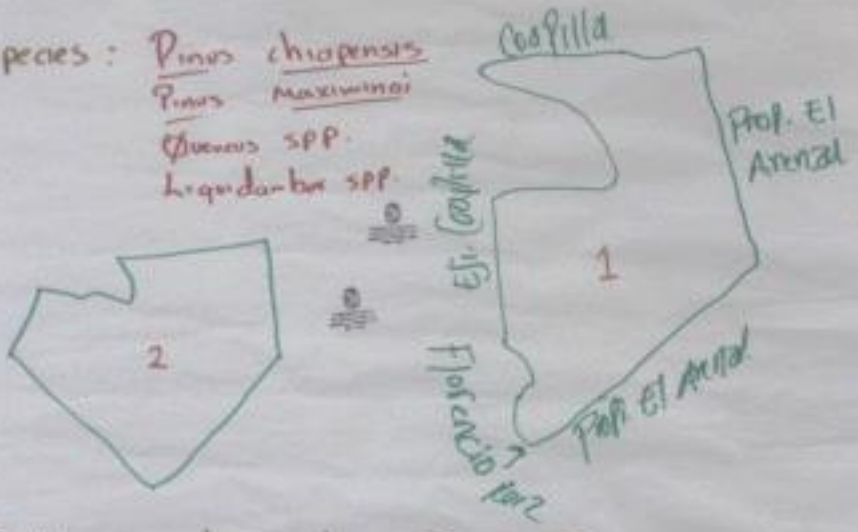


Plan Vivo "Área de Trabajo"

Sistema: Restauración Forestal

Superficie: 16 julio 2019.

Especies: Pinus chiapensis
Pinus maximinoi
Quercus spp.
Liquidambar spp.



Distanciamiento siembra: 3m x 3m

Superficie Reforestada: 45 ha. aprox
Superficie Regeneración: 25 ha ±

Obtención de Planta.

Viveros comunitarios / Planta nativa / local.

Método: MDS.

Tratamiento: Árboles padre.

Annex 6. Permits and legal documentation

MEDIO AMBIENTE
SECRETARÍA DE MEDIO AMBIENTE Y RECURSOS NATURALES

CONAFOR
COMISIÓN NACIONAL FORESTAL

Coordinación General de Planeación e Información
No. de oficio CGPI-0174/2020
Zapopan, Jalisco, a 7 de abril de 2020

Maestra Eva Schoof
Gerente de Programa
Fundación Plan Vivo
Presente

Por este medio, hacemos de su conocimiento que la Cooperativa AMBIO SC de RL ha colaborado de manera relevante con la Comisión Nacional Forestal (CONAFOR), en la implementación de actividades que promueven la conservación de los bosques en el estado de Chiapas en México.

Conforme en lo establecido en la Ley General de Desarrollo Forestal Sustentable, la CONAFOR es la entidad de la administración pública federal responsable de implementar las políticas y programas públicos en materia forestal, con el objetivo de desarrollar, favorecer e impulsar las actividades productivas, de protección, conservación, restauración, aprovechamiento sustentable, producción y comercialización forestal, de bosques; asimismo, es la entidad encargada de diseñar estrategias, políticas y medidas para transitar a una tasa cero por ciento de pérdida de carbono en ecosistemas forestales al año 2030, para su incorporación en los instrumentos de planeación de la política forestal para el desarrollo sustentable, tomando en consideración el desarrollo sustentable y el manejo forestal comunitario.

La Cooperativa AMBIO ha colaborado de manera conjunta con la CONAFOR en la implementación actividades tales como; restauración, reforestación, prevención de incendios y manejo de bosques; así como en la ejecución de proyectos de cooperación internacional como es el caso del Programa Forests 2020 en el estado de Chiapas, donde CONAFOR y AMBIO fueron socios nacionales en su exitosa implementación.

La experiencia de colaboración la CONAFOR se extiende por más de 15 años, cuando dio inicio la implementación del programa de Pago por Servicios Ambientales en México, de cuyo Comité Nacional formó parte la Cooperativa AMBIO.

A través del Programa Scolel´te ha sido pionero en México en el uso de mecanismos de compensación de emisiones a través de proyectos forestales de conservación y restauración para la generación de bonos de carbono.

Actualmente, el Gobierno de México ha puesto en marcha un programa de prueba del sistema de comercio de emisiones en el que se ha previsto la elegibilidad del uso de bonos de carbono derivados de proyectos forestales para la compensación de emisiones, entre los cuales podrán incluirse los provenientes de proyectos del Programa Scolel´te.

La Cooperativa AMBIO ha sido un importante aliado de la CONAFOR en la implementación de actividades orientadas a promover el desarrollo rural sustentable, enfocado a la conservación de capital forestal de México.

Sin otro particular, le envío un saludo.

Atentamente

Ing. Jorge David Fernández Medina
Coordinador General de Planeación e Información

C.c.e.p. Ing. León Jorge Castaños Martínez. Director General. CONAFOR.

JDFM/JAAR*

Periférico Poniente 5360, Col. San Juan de Ocotán, CP. 45019, Zapopan, Jalisco.
Tel: (33) 3777 7000 www.gob.mx/conafor

2020
LEONA VICARIO

Coordinación General de Planeación e Información
No. de oficio CGPI-0174/2020
Zapopan, Jalisco, a 7 de abril de 2020

M.Sc. Eva Schoof
Programme Manager
Plan Vivo Foundation

I would like to inform you that Cooperativa AMBIO, S.C. de R.L. has had a relevant collaborative role with the National Forestry Commission (CONAFOR), in implementing activities aimed to promote the conservation of forests in the state of Chiapas, Mexico.

Per the provisions of the General Law on Sustainable Forest Development, CONAFOR is the entity of the federal public administration responsible for implementing public policies and programmes in forestry to develop, promote and facilitate forest productive activities, protection, conservation, restoration, sustainable use, production, and commercialization. Furthermore, CONAFOR is the entity in charge of designing strategies, policies, and measures to achieve a zero percent rate of carbon loss in forest ecosystems by 2030, for its inclusion into the planning instruments of the forest policy for sustainable development, taking in consideration sustainable development and community forest management.

Cooperativa AMBIO has collaborated with CONAFOR in implementing activities such as restoration, reforestation, wildfire prevention, and forest management; as well as in executing international cooperation projects such as the Forests 2020 Programme in the state of Chiapas, where CONAFOR and Cooperativa AMBIO were national partners in their successful implementation.

Cooperativa AMBIO collaboration experience with CONAFOR spans for more than 15 years when the implementation of Mexico's Payment for Environmental Services programme began, in which Cooperativa AMBIO participated as a member of the National Committee.

Through the Scolel´te Programme, Cooperativa AMBIO has been pioneering the use of offset mechanisms in Mexico through forest conservation and restoration projects for generating carbon credits.

Currently, the Government of Mexico has launched a test program of the emissions trading system in which the use of carbon credits derived from forestry projects for offsetting emissions has been foreseen may be eligible, including offsets from projects under the Scolel´te Program.

Cooperativa AMBIO has been an important ally of CONAFOR in the implementation of activities aimed at promoting sustainable rural development, focused on the conservation of forest ecosystems in Mexico.

Without any further, I send you a greeting.

Sincerely,

Ing. Jorge David Fernández Medina
General Coordinator of Planning and Information

C.c.e.p. Ing. León Jorge Castaños Martínez.-Director General.-CONAFOR.

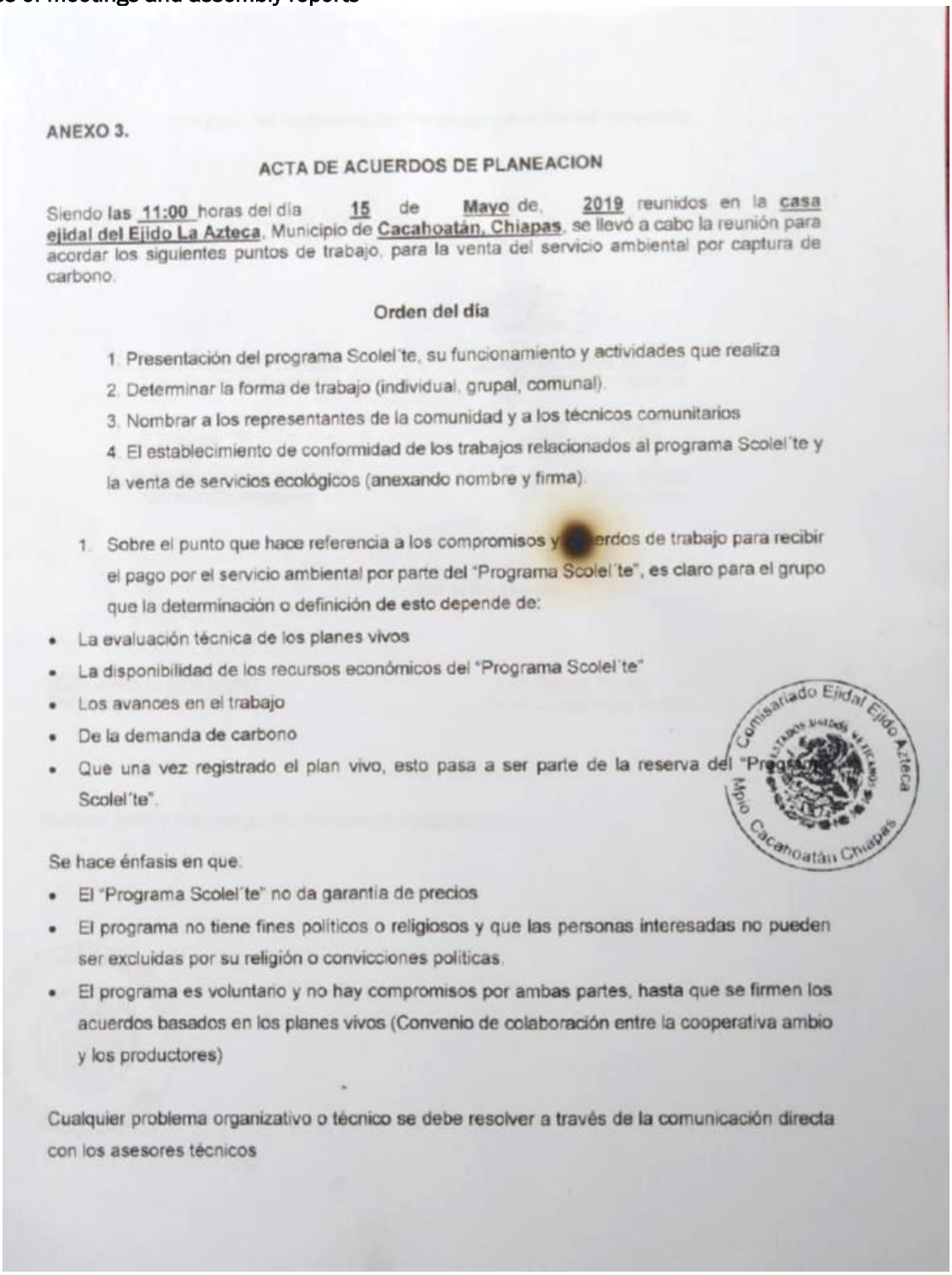
JDFM/JAAR

Picture 8. Acknowledgement to AMBIO issued by the National Commission for Natural Protected Areas (CONANP) and the Mexican Fund for the Conservation of Nature (FMCN).

Annex 7. Evidence of community participation

- Pictures of the active involvement of local communities in planification processes (requested by PV 4.10)

Pictures of meetings and assembly reports



ANEXO 3.

ACTA DE ACUERDOS DE PLANEACION

Siendo las 11:00 horas del día 15 de Mayo de, 2019 reunidos en la casa ejidal del Ejido La Azteca, Municipio de Cacahoatán, Chiapas, se llevó a cabo la reunión para acordar los siguientes puntos de trabajo, para la venta del servicio ambiental por captura de carbono.

Orden del día

1. Presentación del programa Scolel´te, su funcionamiento y actividades que realiza
2. Determinar la forma de trabajo (individual, grupal, comunal).
3. Nombrar a los representantes de la comunidad y a los técnicos comunitarios
4. El establecimiento de conformidad de los trabajos relacionados al programa Scolel´te y la venta de servicios ecológicos (anexando nombre y firma).

1. Sobre el punto que hace referencia a los compromisos y acuerdos de trabajo para recibir el pago por el servicio ambiental por parte del "Programa Scolel´te", es claro para el grupo que la determinación o definición de esto depende de:

- La evaluación técnica de los planes vivos
- La disponibilidad de los recursos económicos del "Programa Scolel´te"
- Los avances en el trabajo
- De la demanda de carbono
- Que una vez registrado el plan vivo, esto pasa a ser parte de la reserva del "Programa Scolel´te".

Comisariado Ejidal Ejido Azteca Mpio. Cacahoatán Chiapas

Se hace énfasis en que:

- El "Programa Scolel´te" no da garantía de precios
- El programa no tiene fines políticos o religiosos y que las personas interesadas no pueden ser excluidas por su religión o convicciones políticas.
- El programa es voluntario y no hay compromisos por ambas partes, hasta que se firmen los acuerdos basados en los planes vivos (Convenio de colaboración entre la cooperativa ambio y los productores)

Cualquier problema organizativo o técnico se debe resolver a través de la comunicación directa con los asesores técnicos

SOURCES

INEGI, retrieved from: https://www.inegi.org.mx/app/areasgeograficas/?ag=07

Plan de Desarrollo Chiapas 2019, retrieved from: http://www.chiapas.gob.mx/media/plan-desarrollo-2019/Plan-Estatal-de-Desarrollo-Chiapas-2019-2024.pdf

INAFED, retrieved from: http://www.inafed.gob.mx/work/enciclopedia/EMM20oaxaca/mediofisico.html

DIGEPO, retrieved from: http://www.digepo.oaxaca.gob.mx/recursos/revistas/manual.pdf

CONEVAL, retrieved from: https://www.coneval.org.mx/Medicion/PublishingImages/Pobreza_2008-2016/medicion-pobreza-entidades-federativas-2016.JPG

Hacienda Chiapas, retrieved from: http://www.haciendachiapas.gob.mx/planeacion/Informacion/PED/PED-2019.pdf

Finanzas Oaxaca, retrieved from: https://www.finanzasoaxaca.gob.mx/pdf/planes/Plan_Estatal_de_Desarrollo_2016-2022.pdf

DIGEPO, retrieved from: http://www.digepo.oaxaca.gob.mx/recursos/infografias/Primario.pdf

SAGARPA, retrieved from: https://www.gob.mx/siap/articulos/cafe-datos-preliminares-a-2017-indican-una-produccion-nacional-de-839-mil-toneladas

SAGARPA, retrieved from: https://www.gob.mx/aserca/articulos/miel-de-abeja?tab=

Heraldo, 2019, retrieved from: https://www.elheraldodechiapas.com.mx/local/registran-96-municipios-de-chiapas-algun-tipo-de-sequia-3170094.html

Nvinnoticias, 2019, retrieved from: https://www.nvinoticias.com/nota/113306/amenaza-larga-sequia-oaxaca

FWF, retrieved from: https://fires.globalforestwatch.org/report/index.html#aoitype=GLOBAL&reporttype=globalcountryreport&country=Mexico&aois=Chiapas&dates=fYear-2019!fMonth-1!fDay-1!tYear-2019!tMonth-7!tDay-22

CONAFOR, retrieved from: https://www.coneval.org.mx/Informes/Evaluacion/Diagnostico/Diagnostico_2014/Diagnostico_2014_SEMARNAT_U036.pdf

Medioambiente Oaxaca, retrieved from: http://www.medioambiente.oaxaca.gob.mx/wp-content/uploads/2016/02/Inventario-de-Emisiones-Oaxaca.-CMM.-Ago-22-2011.pdf

SOTO: retrieved from: http://ambio.org.mx/noticias/biblioteca/

Heraldo, 2019, retrieved from: https://www.elheraldodechiapas.com.mx/local/registran-96-municipios-de-chiapas-algun-tipo-de-sequia-3170094.html

CONANP, retrieved from: https://www.gob.mx/conanp/prensa/la-reserva-de-la-biosfera-montes-azules-cumple-39-anos?idiom=es

CONEVAL, 2019 (first quarter), retrieved from: http://sistemas.coneval.org.mx/InfoPobreza/Pages/wfrMapaPobreza?pAnio=2016&pTipoPobreza=1&pTipoIndicador=1

CONEVAL, 2019 (first quarter), retrieved from: http://sistemas.coneval.org.mx/InfoPobreza/Pages/wfrTendenciaLaboral?pAnio=0&pTipoIndicador=4&pTip

oCobertura=5&pTrimestre=0

CONEVAL, 2019 (first quarter), retrieved from:
http://sistemas.coneval.org.mx/InfoPobreza/Pages/wfrMapaRezago?pAnio=2015

CONEVAL, 2019 (first quarter), retrieved from:
http://sistemas.coneval.org.mx/InfoPobreza/Pages/wfrMapaPobreza?pAnio=2016&pTipoPobreza=1&pTipoIndicador=1

CONEVAL, 2019 (first quarter), retrieved from:
http://sistemas.coneval.org.mx/InfoPobreza/Pages/wfrTendenciaLaboral?pAnio=0&pTipoIndicador=4&pTipoCobertura=5&pTrimestre=0

CONEVAL, 2019 (first quarter), retrieved from:
http://sistemas.coneval.org.mx/InfoPobreza/Pages/wfrMapaRezago?pAnio=2015

CONEVAL, 2019, retrieved from:
https://www.coneval.org.mx/coordinacion/entidades/Oaxaca/Paginas/itlp.aspx

Banco Mundial, retrieved from: https://www.bancomundial.org/es/news/press-release/2018/10/17/nearly-half-the-world-lives-on-less-than-550-a-day

LEY AGRARIA, retrieved from: http://www.diputados.gob.mx/LeyesBiblio/pdf/13_250618.pdf

LEY FEDERAL DEL TRABAJO, retrieved from: http://www.diputados.gob.mx/LeyesBiblio/pdf/125_020719.pdf

DATATUR Chiapas, 2017, retrieved from:
https://www.datatur.sectur.gob.mx/ITxEF_Docs/CHIS_ANUARIO_PDF.pdf

Cámara de Diputados, retrieved from:
http://www.diputados.gob.mx/sedia/biblio/usieg/mapas2016/Oax_mapas.pdf

PNUD, retrieved from:
https://www.undp.org/content/dam/mexico/docs/Publicaciones/PublicacionesReduccionPobreza/InformesDesarrolloHumano/UNDP-MX-PovRed-IDHmunicipalMexico-032014.pdf

Atlas de Género Inegi, retrieved from: http://gaia.inegi.org.mx/atlas_genero/

CEIG Chiapas, retrieved from:
http://www.ceieg.chiapas.gob.mx/productos/files/IPOBINDCHIS/PHLI_Asistencia.htm

Estimaciones nacionales, retrieved from: https://www.gob.mx/cms/uploads/attachment/file/239923/04-estimaciones-nacionales-por-entidad-federativa.pdf

Grupo Étnico, retrieved from: http://sic.gob.mx/lista.php?table=grupo_etnico&disciplina=&estado_id=0

Inegi, retrieved from:
http://www.cuentame.inegi.org.mx/monografias/informacion/oax/poblacion/diversidad.aspx

Constitución Política de los Estados Unidos Mexicanos, retrieved from:
http://www.ordenjuridico.gob.mx/Constitucion/articulos/27.pdf

Gobierno de la República. 2015. Compromisos de mitigación y Adaptación ante
El Cambio climático para el periodo 2020-2030. México, Pág. 11.

Cámara de Diputados. 2019. CAMBIO CLIMÁTICO: PRINCIPALES ACCIONES DE ADAPTACIÓN Y MITIGACIÓN EN MÉXICO Marco Jurídico Nacional e Internacional, Iniciativas presentadas, Opiniones Especializadas SAPI-ISS-10-19, Subdirección de Análisis de Política Interior, México:

http://www.diputados.gob.mx/sedia/sia/spi/SAPI-ISS-10-19.pdf

Cámara de Diputados. 2014. Reglamento de la ley general del equilibrio ecológico y la protección al ambiente en materia de áreas naturales protegidas. Nuevo Reglamento publicado en el Diario Oficial de la Federación el 30 de noviembre de 2000. TEXTO VIGENTE. Última reforma publicada DOF 21-05-2014, México.

CEMDA. 2019. Evaluación de la Política Climática en México, PECC 2014-2018, México. Pag. 19.