Intervention model in REDD+ Early Action areas

CONAFOR

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National Forestry Commission

MEXICO

Intervention model in REDD+ Early Action areas

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Peru, Presidents presented the Declaration of the Pacific Alliance on Climate Change at COP20/CMP10
December 10, 2014

"The impact of climate change on the environment, economies and, mostly, the planet's health and human well-being, leads all countries to face it urgently."

Enrique Peña Nieto
President of the United Mexican States

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Introduction

Mexico is one of the countries with the greater variety of species and it is the fourth country out of the 17 megadiverse countries worldwide. Due to its multiple topographic and climate conditions, it hosts almost all types of known ecosystems in the world. It has 138 million hectares (ha) of forest vegetation; out of this area, 64.8 millions are forests and rainforests[1].

Forest ecosystems offer a wide range of goods and services, not only to its own inhabitants, but to the society as a whole; therefore, giving it a sustainable use is key for the security and development of the country. Currently, there are 11 million inhabitants[2] living in such areas, and for whom these resources are a natural asset that should contribute to meet its basic needs and improve its quality of life, including the vast diversity of genetic resources from cultured species that ensure their food security.

Land properties in Mexico, mainly where forest ecosystems are found, are governed by the social property rules (105.9 million hectares) and are considered to be *ejidos* and communities (31,518 all over the country)[3] that, since the XXth century have developed a quite complex process for natural resource appropriation and management due to several adverse situations and, at times, to inappropriate policies.

Deforestation and, natural resource degradation caused by human activity in general results in the consistent loss of capacity of ecosystems to be able to provide environmental goods and services. This situation becomes more serious due to institutional issues that limit the mainstreaming of public policies and government collaboration.

While seeking alternatives to face these problems, the United Nations Framework Convention on Climate Change (UNFCCC) –adopted in 1992 was created to stabilize GHG concentration, it created REDD+ (Reducing Emissions from Deforestation and Forest Degradation) mechanism as an alternative to the global efforts conducted to mitigate climate change in the forest sector. REDD+ set the objective of contributing to minimize the greenhouse emission related to deforestation and forest degradation, by offering financial incentives to stop or revert forest loss.

To Mexico, the integrated territory management model oriented to REDD+ Sustainable Rural Development approach recognizes that deforestation and forest degradation stems from both internal and external factors to the forestry sector; therefore, only by mainstreaming public actions and policies, with a territorial approach, it will be possible to restructure and minimize pressure put on these resources.

This document presents an intervention model to stop deforestation and forest degradation, by contributing with key elements for territorial planning at several scales, based on the Sustainable Rural Development approach.

[1] National Forestry Program 2014-2018 (Pronafor).
[2] National Forestry Program 2014-2018 (Pronafor).
[3] INEGI. 2008.

1. Deforestation and degradation dynamic

1.1 National framework

Deforestation, soil erosion, air pollution, fresh water body reduction, loss of biological diversity, ozone layer destruction and climate change affect all countries, both developed and developing, to some extent. The potential impact of these phenomena may reach a level of unpredictability and irreversibleness (Martínez, 2014).

Nationwide, the consistent degradation of forest resources, which is one of the core issues and a matter of homeland security, it is related to the policies and practices that have represented high pressure on forest resources, as a result of overharvesting thereof.

A specific example of this are tropical rainforests that have been subject to high rates of deforestation over the past decades. This is a significant situation, considering that 800 million inhabitants rely, whether directly or indirectly, on these ecosystems and that a vast majority of the population is living in poverty (Chomitz *et ál*., 2007).

According to the Food and Agriculture Organization of the United Nations (Fao) (2010), total losses of forest vegetation worldwide from 2000-2005 were 7.3 million hectares per annum, which is lower than expected for 1990-2000, where losses were of 8.9 million hectares per annum. This deforestation rate is lower than that of the previous period, mainly due to the adoption of reforestation programs, mainly in China and the recovery of natural vegetation focused mainly in abandoned lands for agriculture and livestock.

In the 90's, Mexico was ranked as one of the countries with the highest rainforest deforestation rates worldwide, in which ranking Brazil, Indonesia and Colombia were the top three (Sánchez y Rebollar, 1999). However, it has been a bearish trend over the past two decades. Historic deforestation rates have come to an annual area of 155,152 ha (0.24%)[4] between 2005 and 2010 (table 1). In 2000-2010, Ghg emissions in the wooden areas in the country were 45,072 gigagrams of equivalent carbon dioxide[5] ($GgCO_2e$) (Conafor, 2014a).

Table 1. Net annual deforestation rate for 1990-2010 (Fao, 2010)[6].

Fra Category	1990-2000		2000-2005		2005-2010	
	ha/yr	%	ha/yr	%	ha/yr	%
Forest	354,035.30	0.53	234,705.34	0.36	155,152.03	0.24
Other wooden lands	54,098.70	0.26	40,937.22	0.20	32,162.90	0.16

Source: National Forestry Commission (Conafor), 2010. The Table states the net deforestation rate for 1990-2010, according to the methodology set by Fao (2010), based on the Study on Change Dynamic for forest coverage nationwide, with input from the Land Use and Vegetation Charter 1:250,000, by Inegi, which compared Series III (2002) and Series IV (2007) for wooden areas (forest and rainforest areas).

[4] The gain or loss rate is the remaining percentage of wooden area for each reference period year.
[5] As not all greenhouse gases damage the atmosphere to the same extent, the term CO_2e is used. This unit of measurement allows to convert Ghg, other than carbon dioxide, at a CO_2 equivalent quantity, according to its contribution to climate change.
[6] The deforestation rate is determined as per the methodology and by using the forest category set by the Fao, which may be found under the "Global Forest Resources Assessments (Fra)" issued every five years. Please go to www.fao.org/forestry/fra2010 to check the methodology.

Considering this outlook, deforestation became more relevant in several social sectors in Mexico, including the academia, government agencies and civil society organizations. To this regard, a huge step forward was made when the document *Mexico's View on REDD+: towards a national strategy* was developed, where it is highlighted that despite there has been a reduction in deforestation and degradation, rates are still qualitatively significant; therefore, identifying and understanding its originating causes is required to design and implement forestry preservation policies, according to the regional and/or local needs and realities and, as a key factor for the design processes applicable to territorial interventions in the REDD+ action framework.

National deforestation rates include the addition of all states with variations in the forest coverage loss pace. Table 2 shows the figures for wooded forest areas in each state, including both forests and rainforests.

Table 2. Net forest coverage change by state[7].

State	Net change per year (hectares)	State	Net change per year (hectares)
Chiapas	-32,331.99	Aguascalientes	-442.95
Jalisco	-31,644.63	Coahuila	-432.71
Yucatán	-20,473.15	Colima	-342.70
Sinaloa	-18,363.82	Baja California	-314.96
Campeche	-16,340.27	Tlaxcala	44.71
Oaxaca	-15,530.91	Chihuahua	275.88
Michoacán	-11,085.71	Tamaulipas	385.76
Quintana Roo	-6,364.10	Nuevo León	439.52
Zacatecas	-6,197.86	Distrito Federal	510.24
Sonora	-6,055.87	San Luis Potosí	990.92
Veracruz	-5,841.82	Tabasco	1,916.35
Guerrero	-5,429.04	Hidalgo	2,319.97
Durango	-4,549.07	Estado de México	2,812.73
Guanajuato	-2,903.17	Morelos	2,881.30
Querétaro	-1,381.17	Puebla	6,879.69
Baja California Sur	-583.30	Nayarit	12,124.75
OVERALL TOTAL		**-155,027.36**	

Source: CONAFOR (2010), con insumos de la Carta de Uso del Suelo y de Vegetación 1:250,000, by INEGI, Series III (2002) and Series IV (2007).

[7] Estimation made according to a work scale 1:250,000, which is appropriate to conduct a nationwide analysis and which increases uncertainty levels locally.

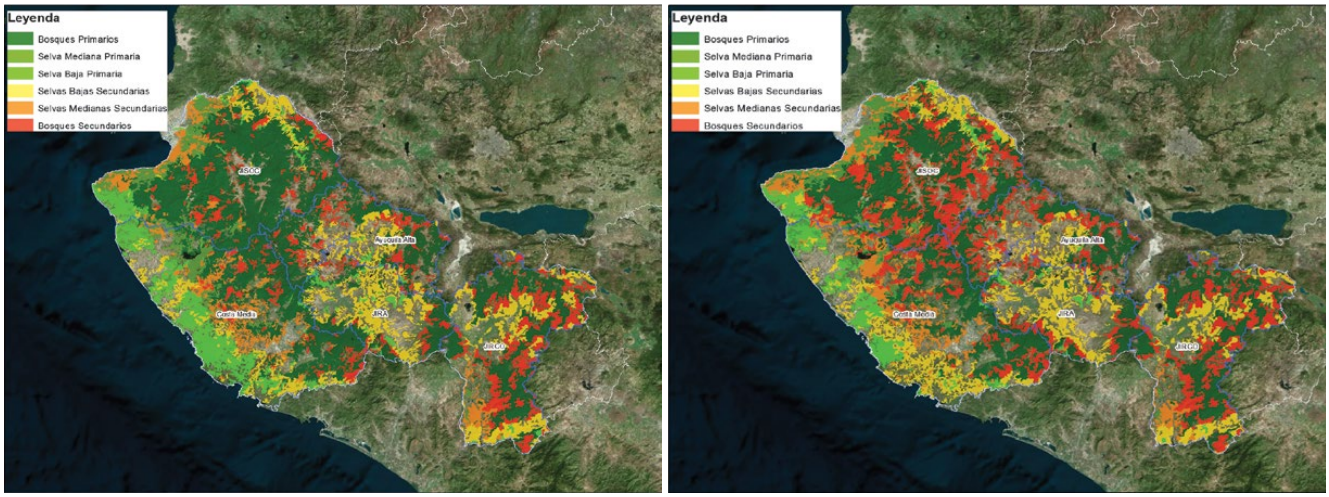
1.2 State-by-state framework

As per Table 2, the states of Chiapas, Jalisco, Yucatan, Campeche and Quintana Roo have large wooden areas subject to significant deforestation processes.

The data under Table 2 states that Jalisco, with a net deforestation rate of over 30,000 ha per annum is one of the states with the highest forest mass loss, contributing with 20% of the overall country deforestation between 2002 and 2007, even when they only account for 3.4% of the forest areas in the country (Skutsch *et ál*., 2013).

According to the State GHG Emission Inventory in Chiapas (2010)[8] the main emission sector is the Land Use, Land-Use Change and Forestry (LULUCF), with 57% or 16,182.08 $GgCO_2e$ and that come mainly from deforestation and forest degradation to transform forest lands into agriculture lands and pasture for farm use. According to the same report, net deforestation in the reported period was over 30,000 ha/annum.

As for the Yucatan Peninsula (Yucatan, Campeche and Quintana Roo), in 2003-2007, net deforestation was over 43,000 ha per annum (CONAFOR, 2010).



[8] Action Program against Climate Change in the State of Chiapas. 2010.

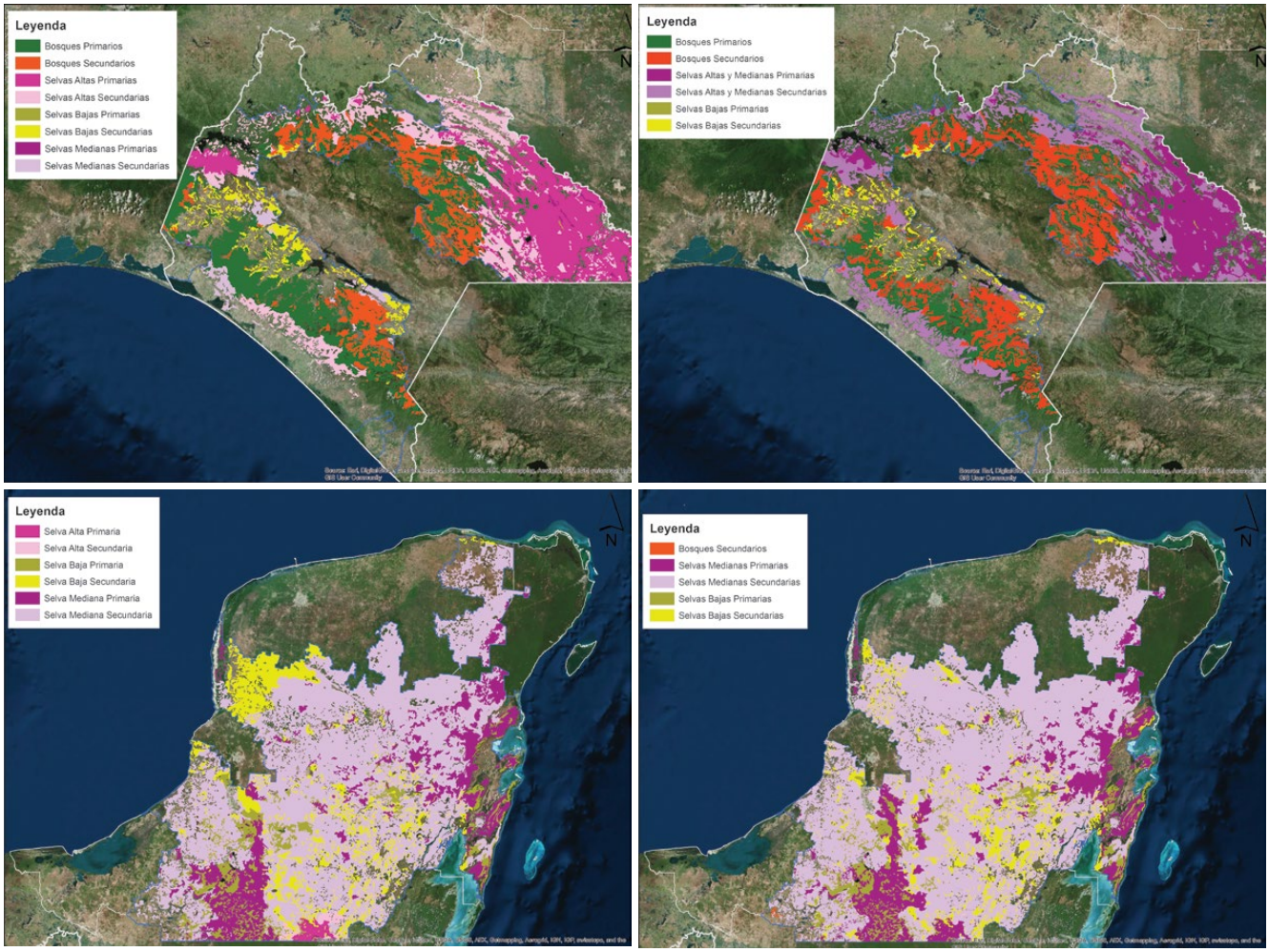


Figure 1. Vegetation located in the states of Jalisco, Chiapas, Campeche, Quintana Roo and Yucatan. The figures on the left-hand side portray the type of vegetation according to Series II by INEGI, while those on the right-hand side are according to Series IV. Source: INEGI, Carta de Usos del Suelo y de Vegetación 1:250,000.

1.3 Critical areas or municipalities

Jalisco

In Jalisco, *mezquital* and medium and low rainforest account for the largest part of land use changes. The areas with the highest apparent losses are found at the northern end of Ayutla, at the northwest end of the Mountain Range of Quila and along Mascota-Ameca and Mascota-Ayutla/Tula highways as well as in Tepatitlán, Bolaños and Tequila Municipalities (Skutsch *et ál*., 2013). Lower rainforest losses are found in Presa Calderón (Zapotlanejo, Acatic and Tepatitlán), to the eastern side of Guadalajara; in the Manzanillo - Puerto Vallarta highway, in de la Huerta and Tomatlán municipalities, and in Jilotlán de los Dolores and Tecalitlán (Skutsch *et ál*., 2013) (figure 2).

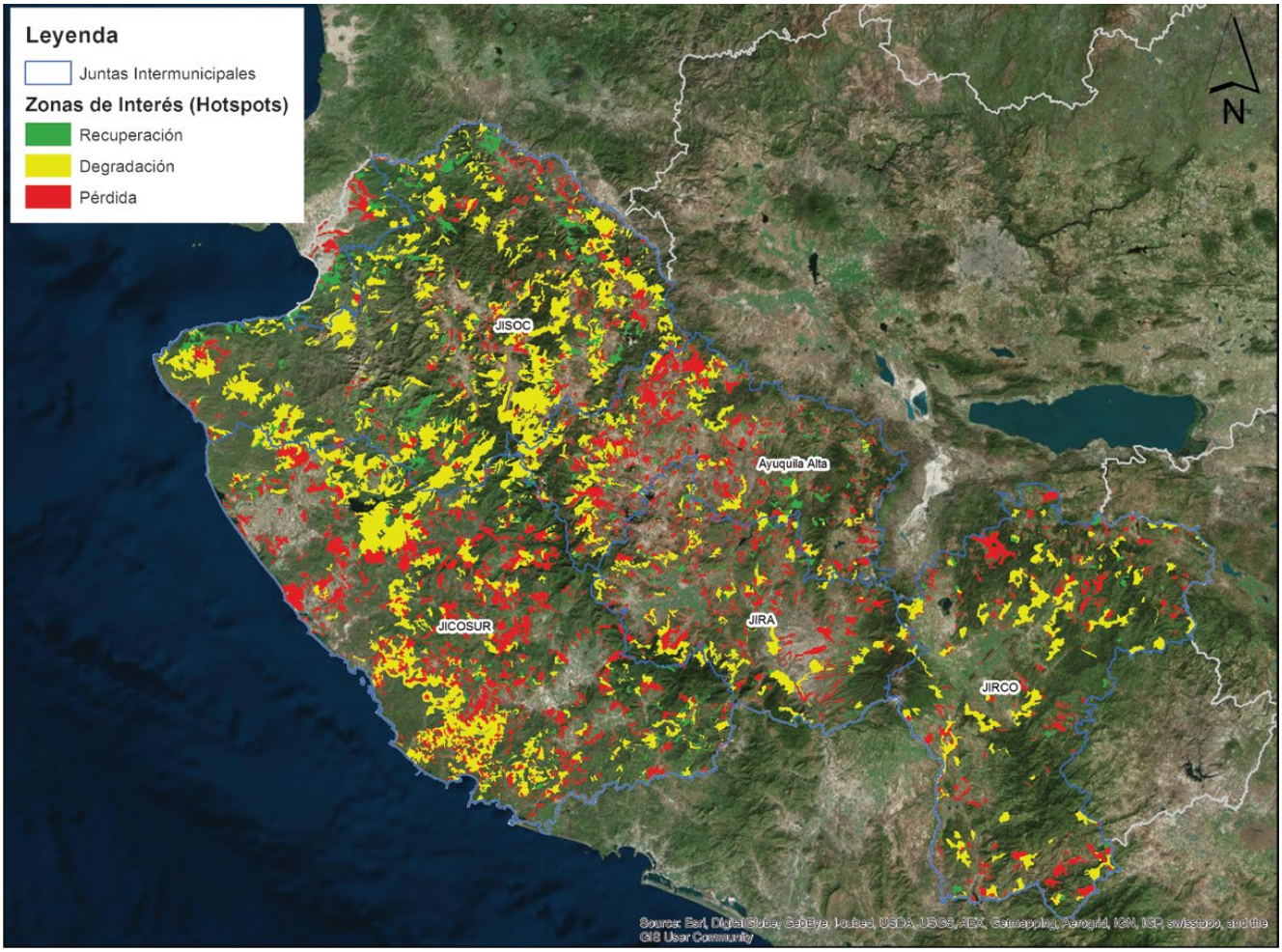


Figure 2. Critical issues of the REDD+ Early Action Program in Jalisco[9].

[9] Source: INEGI, 1993-2007. Carta de Uso del Suelo y de Vegetación, Series II to IV, scale 1:250,000. Developed by: CONAFOR General Coordination for Production and Productivity.

Chiapas

The report issued in the first stage of the study *"Diagnosis of the main causes of deforestation in Chiapas"* (M-REDD+ and Kibeltik, 2013) listed the critical areas of the state, accounting for 17 municipalities from three areas: Rainforest (Benemérito de las Américas, Marqués de Comillas, Ocosingo, Chilón, Palenque and La Libertad Municipalities), highlands (Chanal, San Lucas, Zinacantán, Sovaló and Bochil Municipalities) and Mountain Range-Coast (El Porvenir, Frontera Comalapa, Siltepec, La Concordia, Ángel Albino Corzo and Mapastepec Municipalities). The use of land related to deforestation, agriculture, forest degradation and regeneration changed significantly in these regions (change of coverage from non-forest to forest area), from 2007-2010.

This study specifies that the reality in the state of Chiapas is more complex than expected, in terms of changes, as there were no "pure" hot spots, meaning, critical areas related to a clear and single type of change by characterizing, on the other hand, critical areas that were "repaired" in several municipalities, as shown in Figure 3, according to the analysis made by the National Forestry Commission (CONAFOR) in a period from 1993 to 2007.

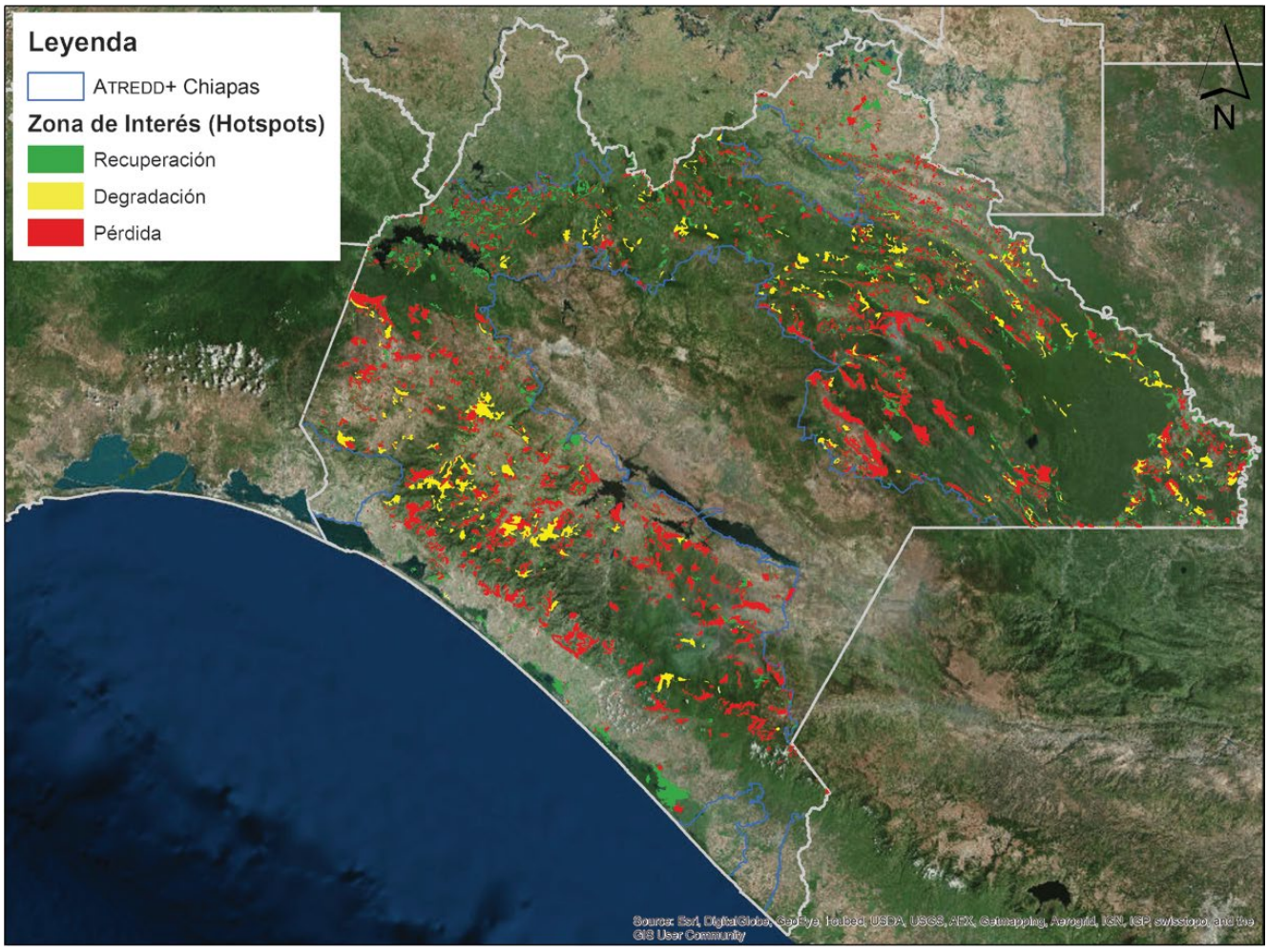


Figure 3. Critical issues of the REDD+ Early Action Program in Chiapas[10].

[10] Source: INEGI, 1993-2007. Carta de Uso del Suelo y de Vegetación, Serie II a la IV, escala 1:250,000. Developed by: CONAFOR General Coordination for Production and Productivity.

Yucatan Peninsula

The areas with the highest deforestation rates in the state of Yucatan are Peto region and the areas surrounding Merida-Cancun, Tizimin-Valladolid and Chemax-Coba highways. On the other hand, in the state of Campeche, the areas with the highest deforestation rates are Nunkini, Dizbaché and Santa Cruz. In Quintana Roo, deforestation is more evident near the Valladolid to Felipe Carrillo Puerto highway and on the southern side thereof, from Álvaro Obregón to Rojo Gómez; furthermore, there are higher deforestation rates near Cancun for urban development (Skutsch *et ál*., 2013a).

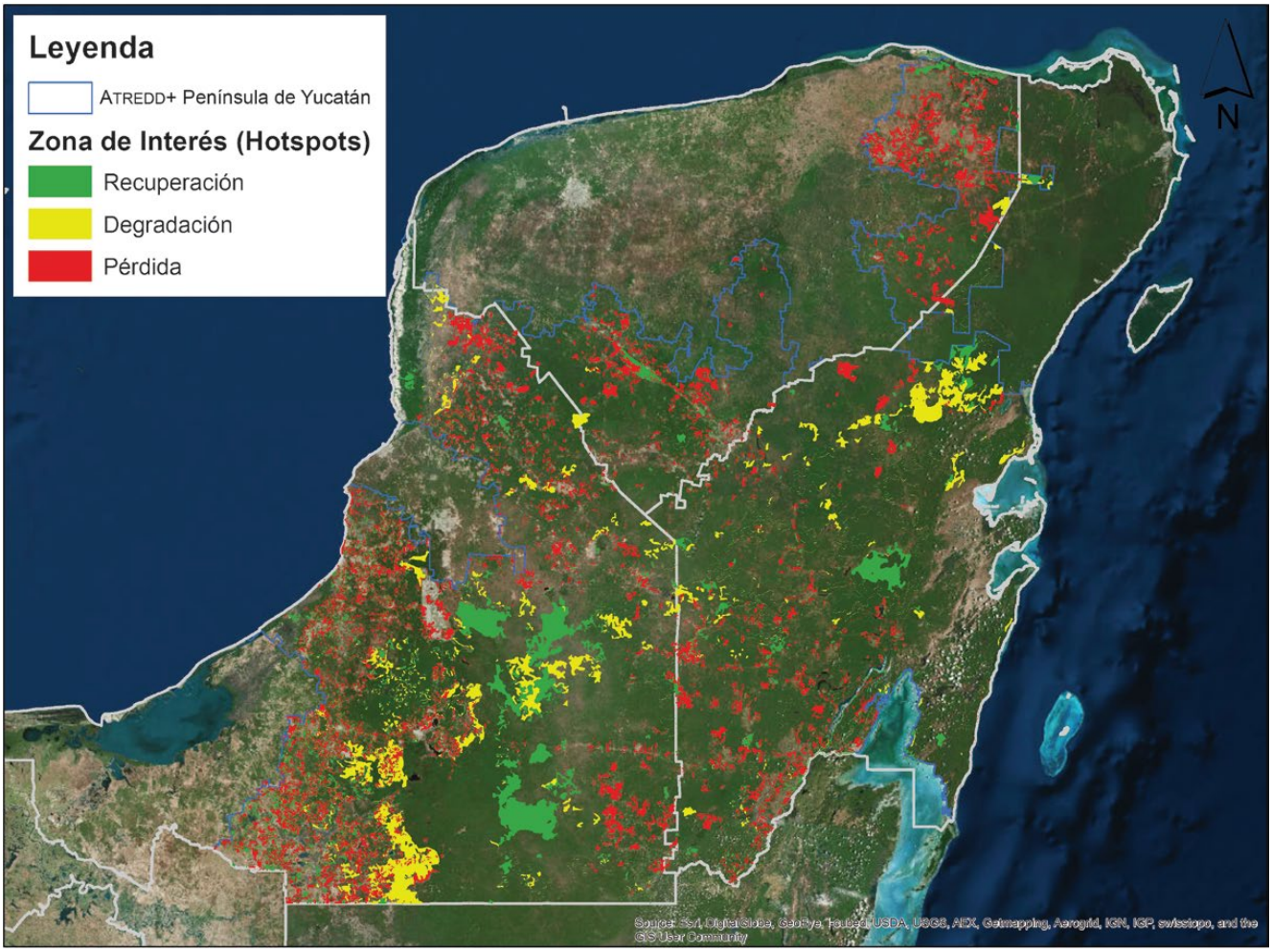


Figure 4. Critical issues of the REDD+ Early Action Program in the Yucatan Peninsula[11].

[11] Source: INEGI, 1993-2007. Carta de Uso del Suelo y de Vegetación, Serie II a la IV, escala 1:250,000. Developed by: CONAFOR General Coordination for Production and Productivity.

2. Deforestation and degradation causes and agents

2.1 Nationwide causes

The Mexican forest ecosystems have several levels of deforestation and degradation caused by human activities, natural disasters and the issues that directly or indirectly involve the enforcement of public policies in rural areas.

In Mexico, causes of deforestation vary from one region to another; generally speaking, these include land-use change by establishing pastures for livestock purposes and for agriculture, to a lesser extent; the limited use of forest areas, the lack of forest-related industries, low forest income, illegal extraction, user right uncertainty (related to forest resources), poverty and lack of opportunities in the production industry, natural disasters and the way of implementing public policies (Conafor, 2013). There are underlying causes as well, such as lack of governance, weak social capital and nonconformity to the legal framework.

Deforestation may stem from a process occurring in a single step (e.g. land use change) or from gradual degradation which entails the eventual and consistent loss of vegetation cover. This way, generally, changes to land use depend on the pressure put by regional, domestic or international markets by demanding wooden products, mining, conversion of forests and rainforests to agricultural areas as well as touristic, urban, industrial and infrastructure development (e.g. dams, roads and highways). In this context, there are measures lacking control on land use changes and an ineffective or absent coordination between the laws and the several sectors (Conafor, 2013).

As for forest degradation, processes are more complex, as they may be the result of temporary variation (e.g. rotational agriculture) or gradual changes in coverage (Skutsch *et ál*., 2013). Currently, a nationwide evaluation has not been conducted for degradation. However, according to some preliminary numbers, it may have an impact on areas of 250,000 and 300,000 ha per annum in the same period (Fao, 2010; Conafor, 2013).

On the other hand, degradation is a process that arises from pressure from local users which use of resources exceeds forest and rainforest loading and regeneration capacities, for instance, due to selective logging, overgrazing, expansion and intensification of rotating agriculture practices and log, wood, pole and other wooden product extraction. Forest degradation may be related to a poor management of a common resource or individual plotting processes, especially in rainforests (Enaredd+ draft document, 2014). Pest development and forest diseases shall also be noted as well as forest fire as, depending on their causes, such as severity and frequency, these may contribute to deforestation or forest degradation, depending on whether the affected area may or may not recover its prior vegetable coverage in a medium and long term.

2.2 Statewide causes of deforestation in states with the highest rates

Causes of deforestation and degradation stem from financial growth and non-sustainable production processes. Areas with high marginalization, land management activities are usually focused on meeting the local self-consumption needs, while peri-urban growth in agricultural areas and pastures creates new pressure on the agriculture-forest border.

On the other hand, national production is at disadvantage in the forest product market due to high transaction costs and low productivity. Most of the national wooden production comes from managed natural forests, while imported products come from commercial plantations. Furthermore, subsidies and financing for livestock, fruit farm or energy for agriculture are more attractive than forest activities (Conafor, 2013).

It must be recognized that the institutional structure has limited capacities to oversee and comply with the legal framework to manage natural resources and control land use changes. Likewise, this problem is found in difficulties to control illegal and criminal activities (e.g. illegal logging) and its coexistence with impunity, collusion and corruption in some sectors.

There are factors in the local scope that define the development potential of the several forest, agriculture or livestock production activities in the country. When these characteristics define a given skill for agricultural activities, a region may suffer from higher deforestation or degradation. Some of these factors are: the type of ecosystem and its production capacity, local stakeholder capacities to use natural resources and formalize sustainable management plans, coordination of the several interested groups, efficient use of resources (e.g. using saving stoves vs conventional stoves), proximity to agricultural areas using fire and highways, access to subsidies and other sources of financing and the degree of compliance with both formal and informal local rules to manage natural resources (Skutsch *et ál*., 2013).

In summary, causes may be grouped as lacked coordination, illegal activities, unsustainable agricultural and forest practices and the land used change (Balderas-Torres *et ál*., 2013). However, there are structural and underlying causes that must be considered when designing actions to neutralize the driving forces of deforestation and forest degradation.

Deforestation and forest degradation causes are briefly described below in the main states with the highest deforestation rates.

2.3 Direct causes

The causes of deforestation in Jalisco include non-sustainable and illegal logging for commercial purposes and logging to obtain resources for residential use, to convert areas into pastures for livestock purposes and to integrate the agricultural production to high-added-value agroindustrial chains (e.g. egg, pork, tequila) (Skutsch *et ál*., 2013). Other causes of deforestation related to territory governance are land invasion, inconsistent community use, lack of cadastral clarity, delays in the administration and boundary overlapping, *inter alia* (Jardel, 1998).

Although it is possible to observe degradation processes on the countryside, there are no reliable statistics for this state (Skutsch *et ál*., 2013). Fire is a significant factor that contributes to deforestation and degradation, mainly in low and medium rainforests. Other factors that cause degradation are overgrazing and timber and non-timber forest products extraction as well as changes to rotational agricultural practice by reducing cropping cycles; this is related, in part, to the agriculture subsidy program characteristics (Skutsch *et ál*., 2013).

The land-use change as pasture (for livestock and meat production), industrial agriculture (e.g. agave for tequila) and urban development, as well as the use of fire in agricultural practices, have been identified as some of the main causes of deforestation in Jalisco[12].

According to the Forest Investment Program (FIP, 2013), the direct or immediate causes of deforestation and degradation in Jalisco are as follows: conversion of industrial agriculture, self-consumption and livestock, degradation due to overgrazing and conversion of mangroves and floodable forests to enable unplanned urban development and touristic infrastructure.

In Chiapas, deforestation is caused by the displacement of the agricultural border related to agriculture and livestock as part of state and municipal public programs, and urban growth, including irregular settlings. Other financial activities related to deforestation are mining, tourism and bioenergy production. Elements such as forest fire, marginalization, land security issues, customs and traditions and extreme natural disasters (hurricanes) also contribute to deforestation emissions.

The specific causes for forest degradation in the state are as follows: coffee plantations expanding to preserved areas, overgrazing, disruption (pests, forest diseases and low-intensity fire) as well as the irregular extraction of wooden products. Lastly, adaptive innovation and development capacities between rural production organizations, *ejidos* and communities have diminished and that the social tissue is broken in some regions.

Other causes of deforestation and forest degradation that have been identified are unmanaged forest product extraction, pests and diseases, overgrazing, landownership issue, noncompliance with public policies, commodity price drops and conversion to other commercial crops (e.g. palm oil)[13].

Deforestation causes are varied both nationwide and in the Yucatan Peninsula, including forest and rainforest conversion to pasture, migration, government programs and landowning conditions. The main drive is the conversion from forests and rainforests to pasture for livestock, although urban and tourism needs have also contributed to this. There is higher deforestation in those areas lacking of community forest management or local institutions devoted to forest management.

This region has proven that whenever male inhabitants migrate from rural areas to urban hubs to get a job, rural landscape is transformed (Radel *et ál*., 2010; Busch and Vance, 2011). There is a change in production practices by moving from crops to pastures and livestock (Radel *et ál*., 2010). These changes allow reducing the labor needs while maintaining profit. Pasture and livestock activities are encouraged in part by agricultural subsidies (Procampo and Alliance for the Countryside); in fact, Procampo Program has been related to the forest coverage decrease in the area (Schmook and Vance, 2009). Whenever agricultural subsidy programs require the continuity of the production area over time, management practices include the agriculture and pasture transitions as part of rotatory agriculture. However, forest coverage cannot be recovered temporarily under this scheme (Klepeis and Vance, 2003).

[12] Information provided by the Ministry of Environment and Land Development of the State of Jalisco (SEMADET) at the *Workshop to Introduce the Approach to Build Benchmark Scenarios and the Emission Reduction Initiative in the States that have adopted Early Actions*, held on November 07, 2013 at CONAFOR Office located in Viveros de Coyoacán, Mexico City.

[13] Information provided by the Ministry of Environment and Natural History of the State of Chiapas (SEMAHN) at the *Workshop to Introduce the Approach to Build Benchmark Scenarios and the Emission Reduction Initiative in the States that have adopted Early Actions*, held on November 07, 2013 at CONAFOR Office located in Viveros de Coyoacán, Mexico City.

Fallow lands are less common in younger families with less lands (Abizaid and Coomes, 2004); if the land fertility cannot be recovered, then production land demand may increase and, thus, deforestation. The larger the number of landowners in the *ejido*, the greater the deforestation rates (Ellis and Porter-Bolland, 2008); in turn, larger *ejidos* have greater forest coverage areas (Bray *et ál*., 2004; Ellis and Porter-Bolland, 2008).

Local stakeholders identified the causes of deforestation and forest degradation in the Yucatan Peninsula below[14]: agricultural expansion, mainly pastures for livestock production; more subsidies for forest preservation; issues when adopting the best production practices; commercial livestock and commercial agriculture; forest resource extraction (e.g. charcoal production).

Some direct or immediate deforestation and forest degradation causes in the Yucatan Peninsula that were listed in FIP are as follows: conversion of rainforests for industrial farming and self-consumption, as well as livestock; overgrazing; illegal logging and extraction of firewood and charcoal for residential use and that of local industries, selective extraction of highly-valuable species, non-sustainable producing practices and the conversion of mangrove and floodable forests to enable unplanned urban development and touristic infrastructure.

2.4 Underlying causes

FIP (2013) lists three main categories of underlying causes of deforestation and forest degradation:

1. Financial causes related to higher costs of opportunity of agricultural activities and the high cost of transactions to achieve sustainable forest harvesting.

2. Causes from institutions and sectorial policies, including the undesired effect of subsidy programs in the agricultural sector and the development of infrastructure, and urban and touristic development plans without foreseeing deforestation and degradation.

3. Social factors related to the lack of organizational and leadership capacities amongst communities and *ejidos* to sustainably harvest forest resources. This way, landowners and communities have little incentives to preserve forests and rainforests under the pressure put by the demand of specific product markets (e.g. wood, ore, food, meat, dairy, biofuels, illegal crops, etc.) to meet the local needs and address the demographic growth. These pressures varies according to the scale, and range from the domestic to the international level.

[14] Information provided by the Ministry of Urban Development and Environment of the State of Yucatan (SEDUMA) at the *Workshop to Introduce the Approach to Build Benchmark Scenarios and the Emission Reduction Initiative in the States that have adopted Early Actions,* held on November 07, 2013 at CONAFOR Office located in Viveros de Coyoacán, Mexico City.

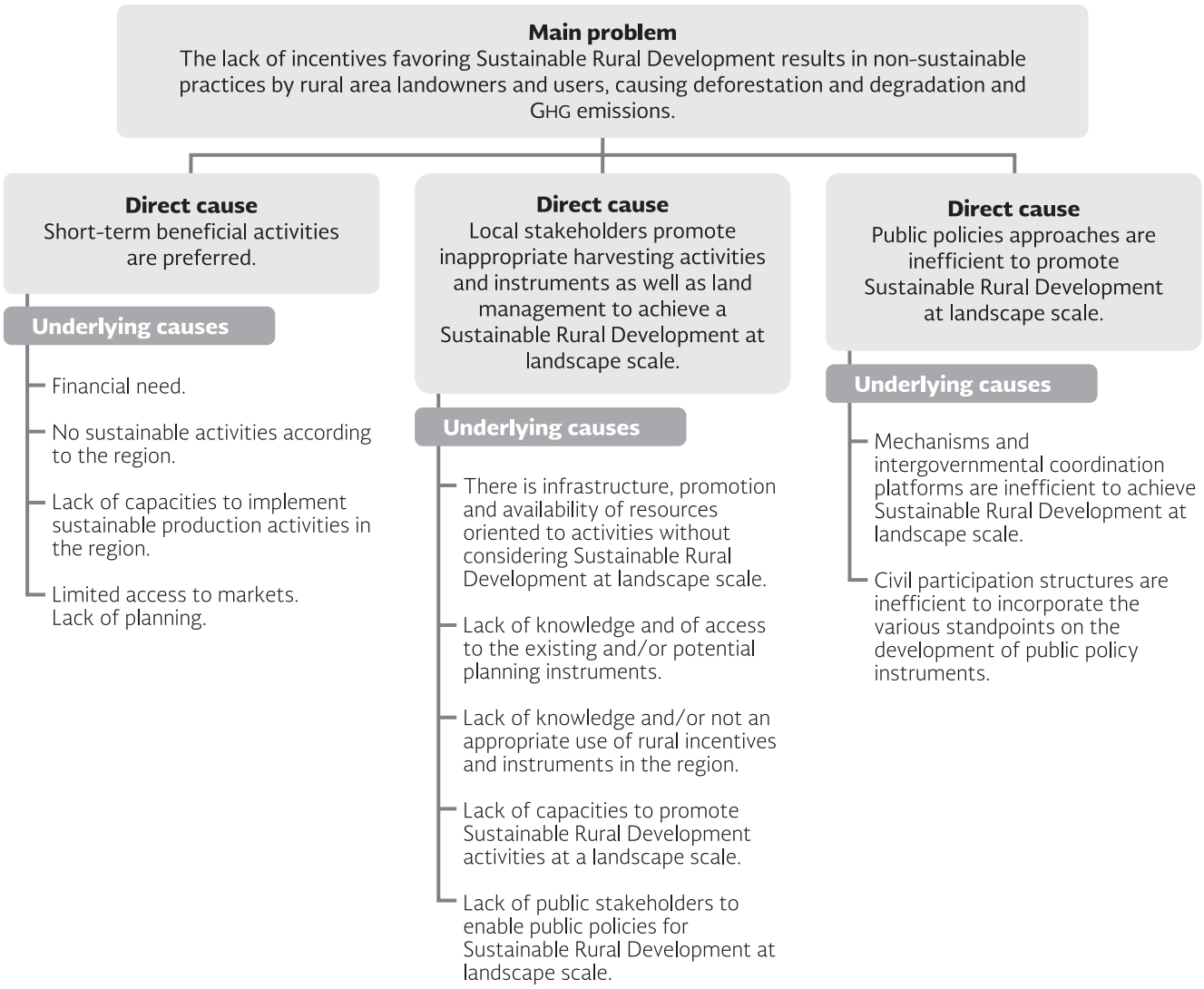
3. Public affair to be addressed

The context above as well as the causes and agents of deforestation highlight the public problem being faced by the country:

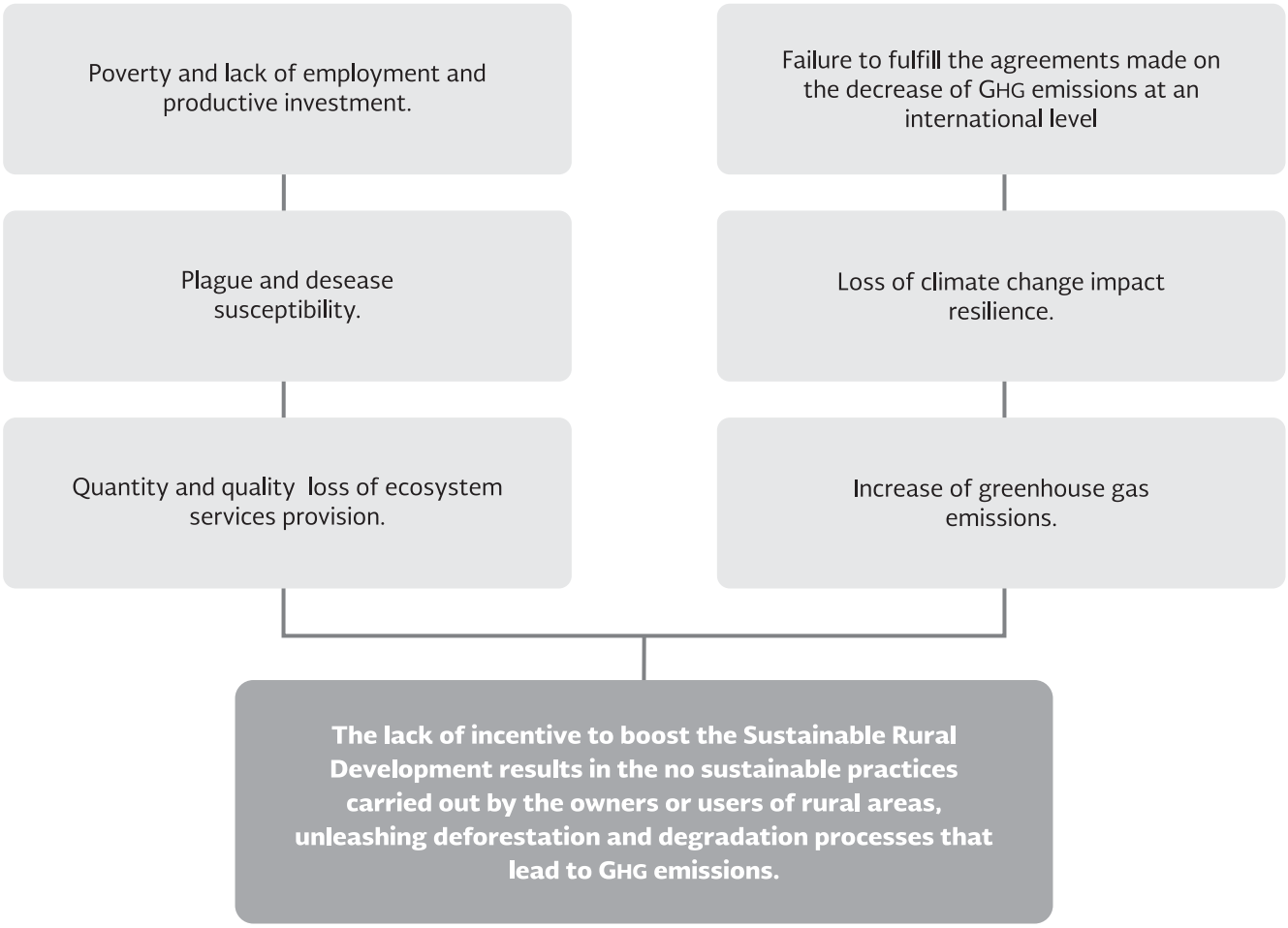
> Rural landowners and users cause deforestation and degradation, including GHG emissions, as they conduct unsustainable activities due to a lack of incentives for Sustainable Rural Development.

3.1 Problem tree

Recognizing that sustaining the goods and services obtained from forest regions must remain a national priority, the loss and degradation of forest coverage due to human activities is the issue to address. According to the examination of the direct and underlying causes of deforestation, the problem tree below was defined:

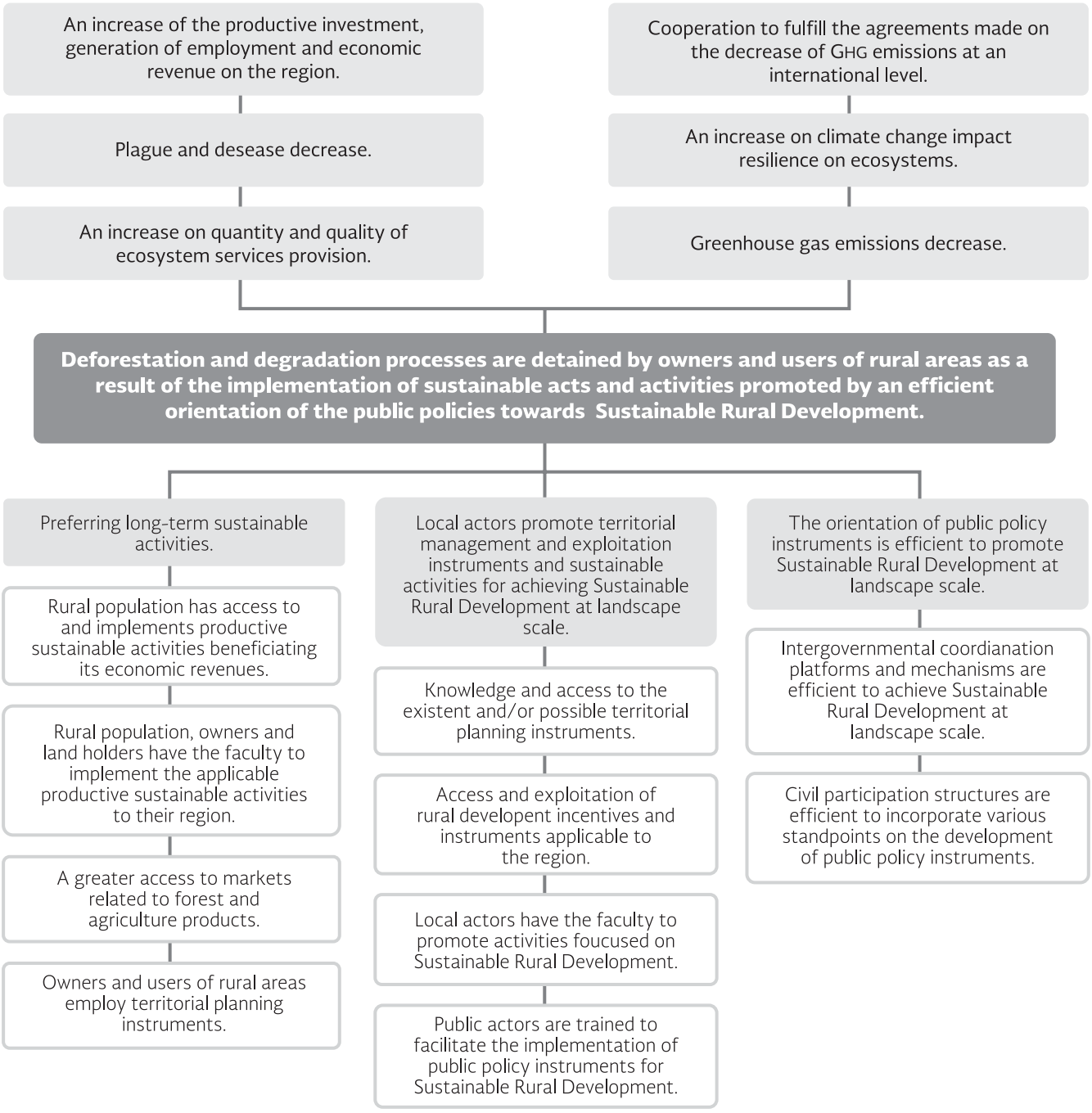


Tree portraying the impact and consequences of the main issue.



3.2 Objective tree

By establishing a problem tree, the alternatives to be considered to address the defined public problem may be determined and, thus, the objective tree below may be defined as well:



Therefore, the objective of this intervention model is the following:

To face deforestation and degradation to minimize GHG emissions by putting sustainable practices in place for Sustainable Rural Development as to encourage the improvement of rural landowner and user life.

By identifying the issues of the core problem, the strategies to address them were defined as summarized in the table below:

Table 3. Cooperation with CONAFOR stakeholders to address the issue.

Causes	Strategies
Activities that achieve short-term benefits are preferable.	1. Developing actions especially intended to meet the region's needs on forest and climate change.
Local stakeholders promote inappropriate harvesting activities, instrumentation, and land use to achieve landscape-scale Sustainable Rural Development.	2. Fostering a territorial governance model to promote the participation of several stakeholders at different scales in a given territory, under the collaboration action principle as to allow so as to obtain results to reduce emissions.
Public policy instrument approaches are inefficient to promote the Sustainable Rural Development at a landscape scale.	3. Promoting institutional agreements reached to strengthen sector coordination and encourage the Sustainable Rural Development. 4. Articulating policies and programs by other sectors to encourage joint efforts and resource coordination with other agencies.

3.3 Engaged stakeholder analysis

By identifying stakeholders, the relevant institution departments dealing with the identified problems may be listed, and the alternatives to address them, both CONAFOR bodies and otherwise.

The table below includes the several departments and agencies that currently collaborate or that may collaborate to address this issue.

Table 4. Cooperation with agencies and stakeholders other than CONAFOR to address the issue.

Stakeholder	Link	Available resources	Opportunities
Inter-Secretariat Commission on Climate Change (CICC).	Driving the Executive Branch efforts to mitigate and adapt climate change in a coordinated manner.	High-level coordination powers.	Ensuring the coordination of climate change efforts amongst the Executive Branch agencies.
Inter-Secretariat Commission on Sustainable Rural Development (CIDRS).	Guiding the Executive Branch to promote Sustainable Rural Development by developing and integrating public policies to address climate change and to promote sustainability in rural areas, in turn.	High-level coordination powers.	Ensuring the coordination of Sustainable Rural Development efforts amongst the Executive Branch agencies.
Funding agencies.	It refers to international institutions and bodies who allocate funds for actions in the territory and REDD+ preparation.	Financial and human resources.	Funding of territory actions, capacity strengthening and other preparation actions.
SAGARPA.	Use of financial incentives to drive agricultural production.	Programs, human, technical and financial resources.	Link between the agricultural and forest sectors with a landscape approach.
SEDESOL.	Use of financial incentives to foster integrated inclusive human development to reach the appropriate well-being levels. Leader of the National Crusade against Hunger.	Programs, human, technical and financial resources.	Liaison with other sectors to promote action coordination in the country.
CDI.	Use of financial incentives to foster the social and financial development of indigenous peoples and communities.	Programs, human, technical and financial resources.	Supporting space and platform development for consultation and participation processes for the indigenous population.
SE.	Use of financial incentives to foster productivity and Mexican financial competitiveness by promoting the industry, trade, and services and by fostering social and private companies.	Programs, human, technical and financial resources.	Liaison with other sectors to promote action coordination in the country.
Ministry of Energy (SENER).	Granting of financial resources to promote renewable energies and sustainable energy harvesting.	Programs, human, technical and financial resources.	Liaison with other sectors to promote action coordination in the country.
Ministry of Communications and Transportation (SCT).	Enforcement of policies and programs to develop transport and communication, according to the country's needs.	Programs, human, technical and financial resources.	Liaison with other sectors to promote action coordination in the country.

Stakeholder	Link	Available resources	Opportunities
Ministry of Tourism (Sectur).	Use of incentives to promote national touristic development through planning activities, fostering the offer development and supporting touristic service operation.	Programs, human, technical and financial resources.	Liaison with other sectors to promote action coordination in the country.
Sep.	Use of incentives to promote citizen's access to quality education, regardless of the level and type of education required at any given place.	Programs, human, technical and financial resources.	Liaison with other sectors to promote action coordination in the country.
Conabio.	The Mesoamerican Biological Corridor works to create sustainable productive alternatives, as to preserve biodiversity.	Specific programs, human, technical and financial resources.	The Mesoamerican Biological Corridor may perform as the Public Agent for Territorial Development.
Secretariat of Environment and Natural Resources (Semarnat).	Through its many agencies and decentralized bodies, it aims to promoting the preservation, sustainable harvest and appropriate management of natural resources. Just like Profepa, responsible for reviewing compliance with the environmental regulations.	Programs, human, technical and financial resources.	It governs and establishes the legal framework for the public policies on Redd+ Early Action areas and Climate Change.
State governments.	Allocating resources and running state committees. Aligning actions with state development needs and promoting the collaboration across the several sectors.	Programs, human, technical and financial resources.	Orchestrating the actions conducted by the several levels of government. Leadership for execution.
Municipal governments.	Obtaining resources from other sources and implementing development projects to address regional issues.	Programs, human, technical and financial resources.	They engage in creating intermunicipal associations to orchestrate objectives and actions for the region. These associations may perform as Public Agents for Territorial Development.
Regional Forestry Expert Associations (Ars) Producer Organizations.	They are engaged in diversifying and improving financial activities developed inthe country, such as forest harvesting techniques in the country, engagement in possible carbon markets as well as agricultural, animal or other type of activities.	Technical resources.	Combination of collaboration and organized actions.

Stakeholder	Link	Available resources	Opportunities
Rural Development Agencies.	In charge of promoting activities in the agricultural sector.	Technical and human resources. Approach to forest land owners.	Use of the established means of communication for the federal government and producers in the rural sector.
Municipal Committees on Sustainable Rural Development.	In charge of activity execution and arrangement related to municipal sustainable development.	Technical resources.	Orchestration support to municipalities.
Technical advisers.	Territorial spread and fostering of incentives and activities for *ejidos*, technical support and assistance to *ejidos* and communities.	Technical resources and approach to forest land owners.	Support to launch calls for support and continuous engagement to follow up on CONAFOR projects (some of them being of technical nature).
Community advocates.	Community leaders and stakeholders who promote development projects and perform as intermediaries of community interests and the technical personnel.	Human and technical resources.	Implementation of programs and local capacity building.
Ejidos and communities.	They are responsible for managing the forest.	Human resources.	Target population of CONAFOR assistance programs.
Civil society organizations.	Organizations manage strategic programs for territorial development, according to the model objective.	Technical and human resources.	There are organizations running specific REDD+ related matters in some states.
Universities.	They are responsible for developing the required research on relevant matters. They also manage funds for research development.	Technical and human resources.	Research projects funded by CONAFOR are being developed as well as other projects to further develop ENAREDD+.

3.4 Population to address

The problem description, based on a diagnosis analysis, shows that the decisions made on the use of forest coverage lands and rural sector lands in general, are strongly linked to the existing social, regulatory, financial and governance conditions. Therefore, the intervention strategy must include actions oriented to tackle the direct and underlying causes that result in the non-sustainable use of forest landscape.

Causes of deforestation and forest degradation show that, in order to effectively reduce forest and rainforest loss and deterioration, actions in several areas must be put in place simultaneously so that, on the one hand, the integrated management of the land is secured and, on the other hand, to prevent the displacement of non-sustainable activities towards unattended areas. This way, the steps to take to achieve the intervention model objective have to ensure that the direct and underlying causes of deforestation and degradation at different levels are addressed; therefore, the appropriate coordination of the federal, state and municipal governments must be ensured. This, as to create the appropriate incentives for forest land owners, holders and users to conduct their activities, while allowing its development and ensuring the appropriate use of natural resources.

The target population of the interventions designed for the territory are, preferably, land owners, users or holders of, preferably, forest lands, *ejidos* and communities with forest resources and/or duly established associations or ongoing integration groups to take community forest development as well as pieces of land located in production reactivation and wooden production areas, including those deteriorated areas (with land degradation, forest coverage loss or areas affected by fire, diseases, forest pests and natural disasters) that are found in key microbasins due to its environmental and/or forest relevance and those pieces of land that are in good condition, including those areas that are being legally handled and harvested.

4. Intervention strategy based on the sustainable rural development approach through an integrated land management

The current situation in the forest areas in the country, although there have been interventions by several state and federal government agencies, there is no appropriate management of forest and rainforests. It is recognized that deforestation causes fall outside the forest sector, they make the need of an integrated approach more evident.

Keeping the current trend where the several ministries of government act in silos as well as other stakeholders who have an impact on the forest sector and rural areas, is not the best way to stop deforestation and degradation. An integrated approach is required to achieve Sustainable Rural Development with a landscape approach[15], where decision-making processes, at all levels, include criteria and elements from all activities conducted in the territory.

The suggested intervention strategy to tackle direct and underlying causes of deforestation and degradation aim to improve public policy mainstreaming, especially in the agricultural and environmental sectors as well as intergovernmental collaboration mechanisms as to re-foster rural development by promoting sustainable models for land management (figure 5).

To achieve this, the intervention strategy considers fours key elements:

1. **Actions especially intended to meet the region's needs on** forest and climate change.
2. **Territorial governance model to promote the participation of several stakeholders at different scales in a given territory,** under the collaboration action principle as to allow collaborative actions as to obtain results to reduce emissions.
3. **Institutional agreements** reached to strengthen sector coordination and encourage the Sustainable Rural Development.
4. **Articulation of policies and programs by other sectors** to encourage joint efforts and resource coordination with other agencies.

[15] The landscape approach is the foundation to develop integrated forest management schemes. This approach is based on joint units that combine the several components of a given ecosystem, which develop activities as to achieve integrated and sustainable management of natural resources and the environment, with the engagement of the local population and based on their needs (Velázquez *et ál*., 2001).

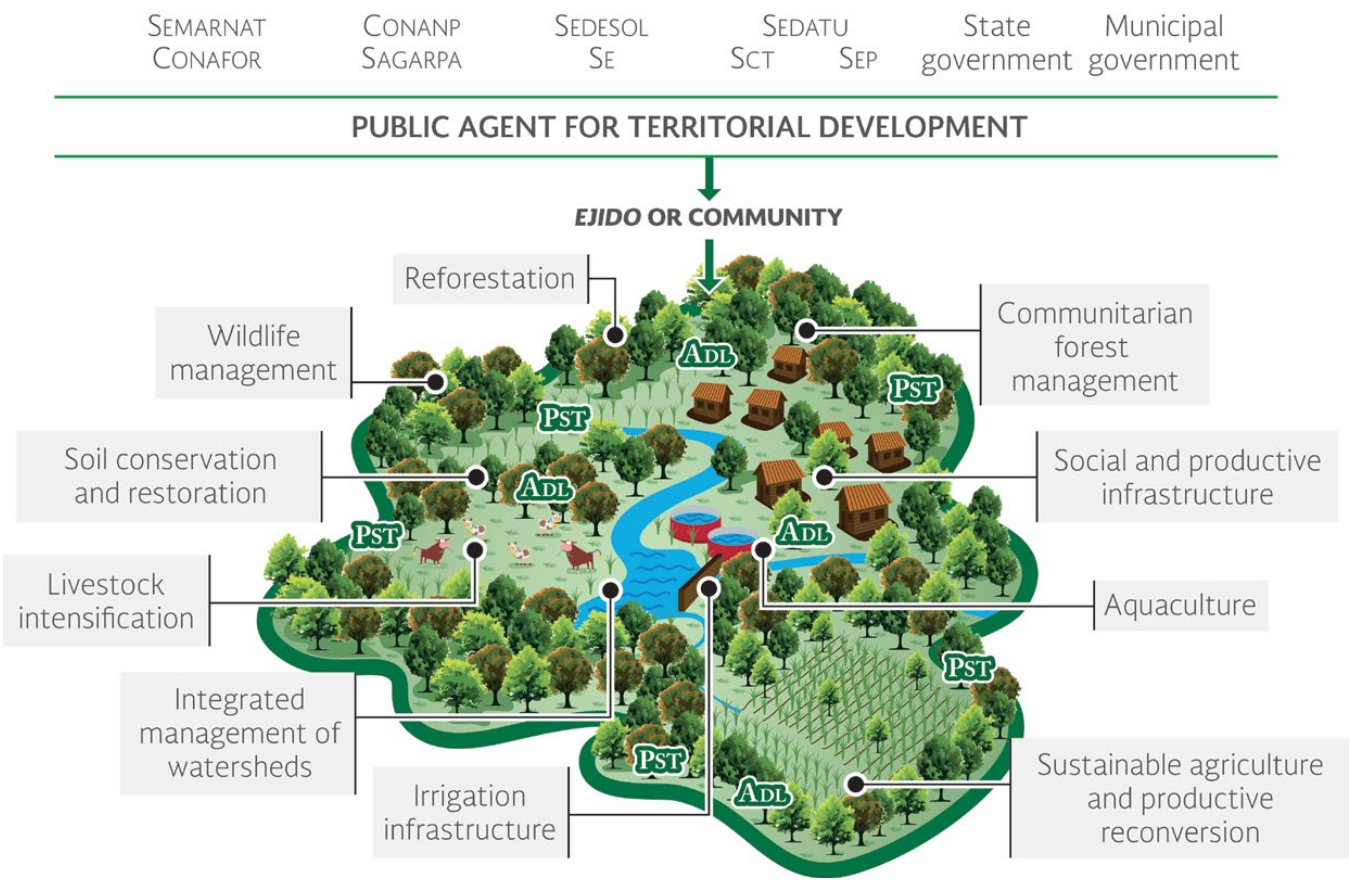


Figure 5. Sustainable models for land management, intervention strategy for ATREDD+ areas.

All intervention strategy elements are described below.

4.1 Actions designed considering the specific characteristics and needs in the region

The production and sociocultural complexity of the current rural overlook requires a rural development approach based on integrated strategies. Therefore, activity prioritization may be different for each area. However, these activities must be aligned to the existing efforts. The territorial approach will promote sectorial strategy alignment, by encompassing all scales for the territorial spread approach.

To establish activities specific to a territory, it must be considered that there is no standard operation procedure to do so. The importance of the intervention strategy lies on adapting the operative elements to all existing conditions at the site. However, there are general recommendations based on the several processes related to deforestation, forest management, financial development, social and environmental scenarios. This way, the activities to be put in place must be aligned with direct deforestation and degradation minimization or otherwise.

Based on such recommendations, and to name an example of the intervention strategy element, Special Programs were designed, as part of Conafor efforts to allocate funds to specific sites with high deforestation and degradation rates as to prevent the deforestation momentum and to strengthen sustainable production activities. A strategy must be developed to address specific issues, and must meet the following criteria:

1. Its activities are aligned with the local needs.
2. They must appoint a Public Agent for Territorial Development (Apdt) to enable integration of territories, incentives and programs by other institutions.
3. They must foster local governance mechanisms.
4. They must be revised significantly on a yearly basis, according to the lessons learned on the annual operation.
5. They must represent a pilot experience to put integrated instruments in place in the community.

It must be noted that these programs include the activities to be implemented only, which are conducted with subsidies granted by the National Forestry Commission, as to result in better and more significant results on several ecosystems, stakeholders and inhabitants of the woodland areas in the country. However, special programs were designed with a landscape approach (figure 6) and are put in place by individuals (agents) to coordinate the incentives and activities by other institutions as to promote joint efforts in the territory for an environmental, social and financial improvement.

Considering that, from the very beginning, Special Programs aimed to fill the gaps of other programs run by several institutions in the country, their long-term success lies on the progress made in the three key elements of the intervention strategy. Accordingly, if the territorial governance model is strengthened, cross-sectoral institutional agreements, the articulation of public policies in the territory and Special Programs are expected to become increasingly dispensable, as funded activities will become part of the policies adopted by the several government agencies.

Special Programs have their own annual assessment on results and activities as to adapt them to the specific needs identified by local stakeholders.

Actions taken in a given territory must be found under a participatory planning and decision-making process, in addition to the development of three more key elements of the intervention strategy. This will allow conducting the actions of the several agencies (subsidy, promotion and other programs), based on planning instruments nationwide[16] and aligned with any other existing instruments at a community or land community level[17]. These actions include, but are not limited to: sustainable forest harvesting actions, sustainable agricultural activities and sustainable production activities, *inter alia.*

[16] These instruments include all types of laws on land, i.e., Municipal Action Plans on Climate Change, *inter alia.*
[17] For instance, PREDIAL plans, community laws, management plans, etc.

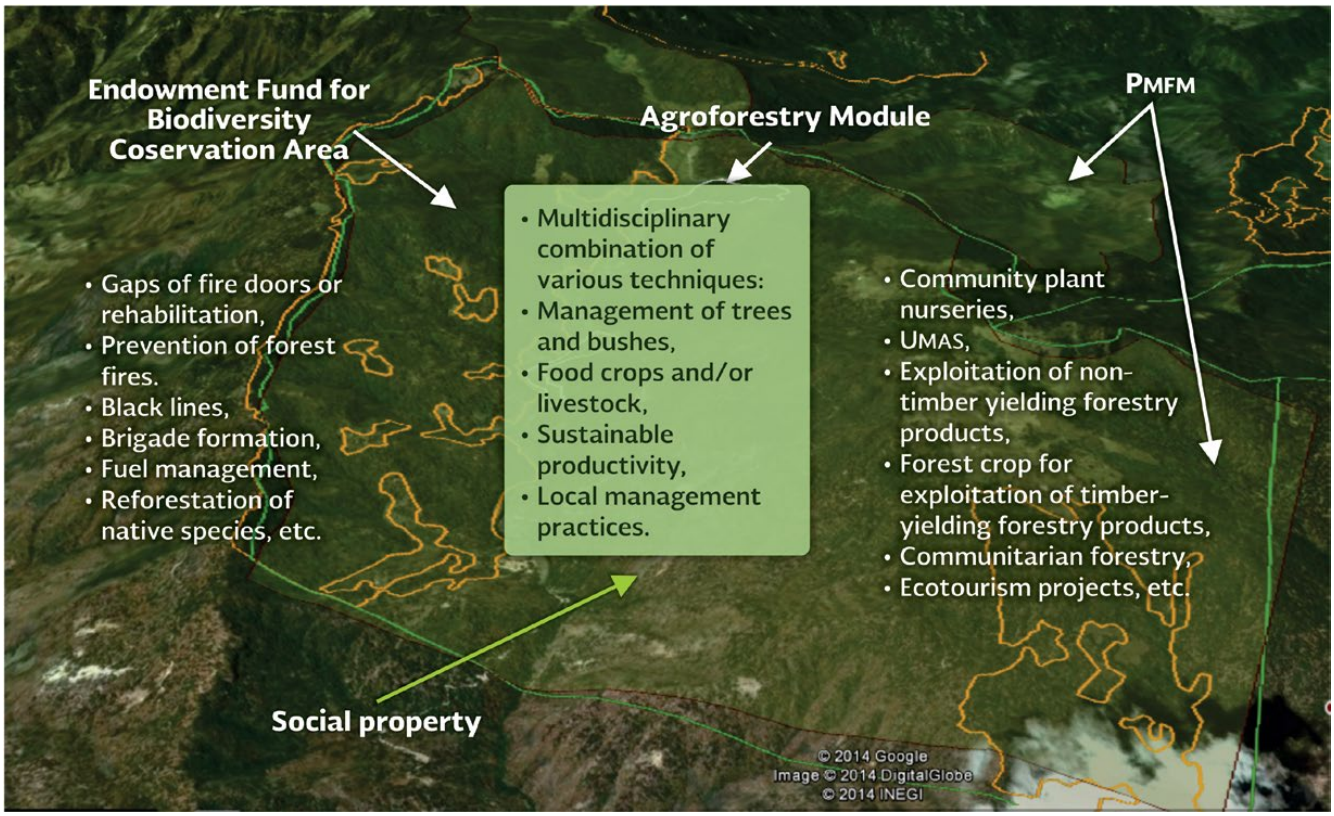


Figure 6. Special Program approach on a satellite image of relief.

4.2 Land government model to promote the engagement of several actors at different scales

Another important element for the success of the territory intervention strategy is the improvement or integration of the governance structure to the territorial unit. This means that institutional agreements need to be developed or strengthened to enable government collaboration at different levels; to develop and/or strengthen participation platforms for several stakeholders (land owners and holders, technicians, financial agents and managers, *inter alia*) to identify the risks, methods, instruments, prioritization of activities and processes, and required assessments and resources to fulfill all state objectives.

To achieve an effective governance model to eliminate deforestation and degradation causes, public policies across different sectors participating in the rural sector, at the municipal, State and federal levels must be aligned as to establish a common objective. As to achieve this level of organization, the appropriate institutional agreements must be developed and strengthened for the effective and efficient interaction of the several stakeholders.

On the other hand, it is necessary to strengthen community governance and collaboration schemes between *ejidos*, communities and small landowners for common resource management and to develop businesses at competitive scales.

Furthermore, capacities available have a large room for improvement, alignment and organization thereof to achieve the technical assistance objectives and to effectively follow up on projects.

Accordingly, agent diversification has been encouraged in the territory; this may contribute to capacity building at several scales in the territory and to strengthening trust, transparency and leadership of agents and/or technical advisers. Consequently, the intervention model seeks to train and strengthen Public Agents for Territorial Development (APDTS) to promote a broader integration in the landscape.

APDTS are the local public bodies in charge of the integrated rural development, including intermunicipal associations that will support Local Development Agents, and communities or *ejidos*. By collaborating with APDTS, a broader integration in the region would be possible, in addition to meeting individual community demands. APDTS' roles and responsibilities are as follows:

a) Addressing environmental issues for the region and overcoming forest municipality and community restrictions.

b) Enabling the continuity of REDD+ regional strategy execution and sustainable forest management during political transitions and change of government offices.

c) Managing additional funds to complement CONAFOR investments made jointly with State governments, other federal agencies, national and international donors and NGOS.

d) Promoting intergovernmental collaboration by engaging in the administrative boards at different government levels and improving public policy universality, both regionally and locally.

e) Reaching agreements with research institutes or the civil society to find solutions for the several regional issues affecting sustainable forest management.

f) Contributing to the establishment of local institutions to achieve greater, more transparent and democratic engaged rural development, both in municipalities and intermunicipalities.

Accordingly, APDTS' role depends on public interest, they work at a regional or landscape level, assist the regional development planning, promote actions for the sustainable management of natural resources, they have their own technical staff and must be financially stable. The criteria to be met by said agent are as follows:

- Having legal personality and property.
- Having a transparent and auditable funding mechanism in place, able to receive, manage and execute public resources.
- Being able of managing the public and private sectors and of developing integrated regional planning instruments for basins or biological corridors.
- Having an organizational and technical structure to allow policy, incentive and resource alignment to ensure public asset supply and replicability nationwide.
- Following an engaging strategic planning, based on a collective decision-making process.

The table below includes the several agents/stakeholders, in addition to APDTS, required to strengthen the different schemes, technical assistance provided for capacity building and to foster sounder land management models.

Table 5. Stakeholders and responsibilities required for the intervention model in REDD+ Early Action areas.

Body	Type of legal entity	Instrument in place	Responsibilities	Extent
Public Agent for Territorial Development (APDT).	Decentralized Public Agency (OPD).	Agreement executed by APDTS and CONAFOR to support the implementation of Special Programs (PE).	APDTS assist CONAFOR in promoting, running, assessing and planning Special Programs. APDTS are in charge of managing and aligning programs from other agencies, such as SAGARPA, CONANP, etc.	Regional.
Local Development Agent (ADL).	Nonprofit Civil Associations (AC).	They take part in Special Program guidelines. ADL consists of cross-sectoral teams working together in communities (consisting of 5 to 8) and help strengthening local capacities, promoting an operation and organization strategy. Micro regional. They specialize in assisting communities that have little access to institutional programs.	APDTS are assisted to run PE. They identify and strengthen the capacities of communities where they work in. They develop a portfolio of projects to be funded by CONAFOR, SAGARPA, *inter alia.*	Micro regional.
Civil Associations Regional Producer Associations (ARS).	Civil Associations (AC). Civil Societies (SC). Community Alliance (UC). Cooperative Societies. Community Alliance Social Solidarity Associations. Rural Production Associations.	They participate in PROFOS for regional projects.	They operate regional projects for the benefits of its partners when protecting, preserving, restoring and harnessing forest resources.	Regional and Micro regional.
Technical advisers.	Profitable individuals and legal entities.	Communities and *ejidos* appoint them to be responsible for providing technical assistance.	They provide technical assistance for the projects funded by institutions.	At *ejido* or comunity level.
Community advocates.	Individuals.	They are nominated by *ejidos* and communities. They are supported with funds from the Community Forest Development Program and guidelines.	They support *ejidos* and communities by following up on authorized projects, meetings and managing projects.	At *ejido* or comunity level.

4.3 Institutional agreements reached to strengthen sector coordination and encourage the Sustainable Rural Development

In the framework of Sustainable Rural Development, Mexico seeks to move forward to build a mainstreamed and cross-sectoral agenda to address forest ecosystem preservation, sustainable management and restoration.

In this context, the Law for Sustainable Rural Development (LDRS), which includes the coordination of public policy on the territory, strengthening the economic development with no negative environmental impact was passed in 2011.

Likewise, the National Forestry Program (PRONAFOR for 2013-2018 includes the initiative to "Foster the articulation and coordination of public policies and programs with a multi-sectorial territorial management, including the following action lines: fostering the alignment of objectives and incentives related to forest resource management (5.1.1) across the several sectors and government levels, strengthening the forest sector position in the Inter-Secretariat Commission on Sustainable Rural Development (CIDRS) (5.1.2) and reaching operational coordination agreements with and amongst agencies dealing with forest matters from all government Branches (5.1.3)". Furthermore, action line 5.5.3 "will promote the mainstreaming, coordination, consistency and integrated operation of programs and policies favorable for REDD+".

Likewise, as a key element, through the intervention model, coordination across several levels must be promoted and public management strengthened to supplement public policies, as required for the benefit of Sustainable Rural Development.

The model must be built on existing collaboration schemes. Just like the Inter-Secretariat Commission on Climate Change (CICC) and CIDRS, which were created as federal entities, according to Section 21 of the Planning Law and its relevant laws in this regard[18]. These Commissions are a space to promote the mainstreaming of public policies to address climate change and rural area sustainability across the country. CICC[19] powers[20] are as follows:

I. Promoting the coordination of climate change efforts amongst the public administration agencies.

III. Developing mainstreaming criteria and integratedness of public policies against climate change for federal, centralized and parastatal public administration agencies and bodies to adopt them.

In 2009, CICC created REDD+ work group (GT on REDD+) as to foster REDD+ in Mexico and to develop the national strategy in this regard. Likewise, in 2011, CIDRS agreed to reach a Work Group on Territorial Projects, as to follow up on and coordinate REDD+ Early Actions and the Strategic Project on Food Security (PESA) to assist in the cooperation, complementarity and overlapping of government programs in this regard.

[18] LGCC SECTION 45; LDRS SECTION 10.
[19] CICC is headed by the Ministers of the following Ministries: Environment and Natural Resources; Agriculture, Livestock, Rural Development, Fisheries and Food, Health, Communications and Transportation; Finance; Tourism; Social Development; Interior; Marine; Energy; Public Education; Finance and Public Credit and Foreign Affairs.
[20] Section 47 under LGCC.

According to the national process, intergovernmental collaboration has strengthened locally by creating local Inter-Secretariat Commissions on Climate Change (CICC) and REDD+ Work Groups (GT on REDD+). These spaces have the active participation of the Local Ministries for Rural Development; and Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA).

The establishment of CICC[21] and CIDRS nationwide sets the grounds for the joint work agreements executed by SEMARNAT, CONAFOR and SAGARPA, which account for the cross-sectoral efforts.

Another joint effort scheme is through collaboration agreements and covenants by CONAFOR and other federal institutions (SAGARPA, SEMARNAT, SEDESOL and/or other Federal Public Administration instances) as well as state governments. These agreements have been key to set the grounds for collaboration amongst several institutions for them to take the appropriate actions to foster Sustainable Rural Development, within their scope.

4.4 Articulation of policies and programs by other sectors

Considering the landscape approach, the implementation model is an opportunity to coordinate policies and programs by other institutions as to complement and strengthen CONAFOR efforts to face deforestation and forest and rainforest degradation.

Public policy mainstreaming, especially for the agricultural industry will allow to re-foster rural development by promoting sustainable models for land management.

Amongst the instruments fostered by SAGARPA, which are complementary to this model, we can find the Program for Agriculture Promotion - Production Component; the Program for Livestock Promotion - Production Progan Component; the Integrated Program for Rural Development - Preservation and Sustainable Use of Land and Water Component (COUSSA); and the Strategic Project for Food Security (PESA).

[21] Initially created by a presidential decree, this Commission was recently strengthened by being incorporated into the General Law on Climate Change.

5. REDD+ Early Actions

5.1 REDD+ background and REDD+ approach in Mexico

According to the United Nations Framework Convention on Climate Change (UNFCCC), REDD+ includes reduction of emissions caused by deforestation and forest degradation, sustainable forest management, preservation and increase of carbon stock in forests.

In Mexico, REDD+ is understood as an interinstitutional and cross-sectoral coordination policy to promote mitigation and adaptation actions while integratedly managing lands for low carbon Sustainable Rural Development and, therefore, intends to align the environmental and development agenda.

The integrated territory management model oriented to the Sustainable Rural Development approach by the Mexican government recognizes that deforestation and forest degradation stems from both internal and external factors to the forestry sector; therefore, only through intergovernmental integrated, mainstreamed and collaboration perspective with a territorial approach, it will be possible to restructure and minimize pressure put on these resources.

This model recognizes that specific actions as part of REDD+ framework will be specific to the region, considering the different deforestation and degradation causes across the several forest areas in the country. In general, forests at the agricultural border and those forests that have been divided for agricultural activities have major issues when it comes to land use change and degradation, which makes the development of public and governance policies on forest areas harder, due to the high cost of opportunity of giving them alternative uses and due to the broad and diverse interests for land management.

Accordingly, there is a need to reach agreements at different scales to meet the population needs and ensure the preservation of forest areas and the development of the specific skills of local stakeholders, considering the physical or environmental characteristics of the territory unit, the governance structure thereof or that of the pieces of land that make it up.

These elements are considered in the National Strategy on REDD+ (ENAREDD+), which is being developed, as to contribute to mitigate GHG and to reach a cero percent carbon loss rate in original forest ecosystems, by developing policies, measures and actions with an integrated land management approach, to incorporate them to the planning instruments on sustainable development. This strategy consists of seven elements:

1. **Public policies and legal framework.** Achieving the mainstreaming, coordination, consistency and integrated operation of programs and policies on REDD+, to generate co-benefits and adapt them specifically to the different forest landscapes in rural areas.
2. **Financing schemes.** Designing and establishing a flexible, multiple, diverse, gradual and efficient funding system to enable the implementation of policies, actions and activities on REDD+ as to ensure the continuity of environmental and socioeconomic goods and services provided by forests.
3. **Institutional agreements and skill-building.** Ensuring institutional mechanisms and spaces at a municipal, State and federal levels to effectively design, implement and coordinate ENAREDD+, within their scopes.

4. **Reference levels.** Setting a national benchmark, which allows setting state reference levels so that REDD+ activity performance can be assessed for mitigation.
5. **Measurement, Reporting and Verification system (MRV).** Developing a robust national forest monitoring system which contributes to follow up on mitigation policy effectiveness as to offer both transparency and accuracy, to the broadest extent, and to promote local and community participation.
6. **Social and environmental safeguards.** Creating a national safeguard information system (SIS) to follow up and report purposes, so as to ensure the enforcement of the safeguards established in the UNFCCC agreements reached in Cancun (decision 1/CP.16), considering decision 12/CP.17 adopted in Durban in 2011 as well as Sections 1 and 2 under the Mexican Constitution and Section 134 Bis under the General Law on Sustainable Forest Development (LGDFS).
7. **Communication, social participation and transparency.** Ensuring communication, social participation, transparency and accountability of communities, social organizations and the government as to achieve the goals and comply with safeguards.

5.2 REDD+ Early Actions (ATREDD+)

These ATREDD+ are a set of joint institutional efforts made locally oriented to face deforestation and degradation causes and to revert the trend on forest land use change, which contributes to improving life conditions of inhabitants. Moreover, these have been designed as to generate biological corridors and rescue degraded or fragmented areas, to preserve the biological diversity and keep or restore other services provided by ecosystems, such as water supply.

As previously stated, some deforestation and degradation causes in Mexico come from the lack of governance mechanisms that enable the appropriate alignment of public policies by sector and an effective intergovernmental collaboration. Accordingly, the Mexican government has promoted the creation of governance schemes in ATREDD+ to favor policy articulation with a territorial approach at different scales (REDD+ inter-secretariat work groups), REDD+ State Advisory Technical Committees, institutional agreements reached with other federal agencies and state governments, APDTS strengthening). Furthermore, to immediately stop the deforestation momentum and begin promoting sustainable production options, Special Programs were developed.

Based on several national experiences, such as those promoted by PROCYMAF or community planning, long-term local governance mechanisms allow more articulation and continuity of territory management and distribution policies which, in turn, contribute to address underlying issues, such as those related to health, food security, climate change mitigation and adaptation.

These local governance mechanisms need to be permanent to favor territory policy continuity, by mainly contributing to address common issues in a given territory. For its appropriate functioning, these governance systems require the engagement of local, state and federal governments as well as other key stakeholders, such as civil society representatives, the academia and producer organizations (Graf *et ál*., 2012).

ATREDD+ are found in five States of Mexico: Jalisco, Campeche, Chiapas, Quintana Roo and Yucatan (table 6). These areas have different use of land and activities across several sectors, which is to be taken into account, considering the integrated management of the territory as per the REDD+ process in the country.

Table 6. Five state area where early actions are adopted.

State	Total area (km²)	Forest coverage* (km²)	Key polygon to address (km²)
Jalisco	77,965.88	49,838.80	33,348.67
Chiapas	73,611.94	36,784.76	52,658.98
Campeche	57,277.33	41,804.89	43,309.99
Yucatán	39,533.02	27,512.92	14,574.29
Quintana Roo	44,556.28	37,120.96	33,146.42

*According to the Land Use and Vegetation Charter 1:250,000 by INEGI, series V (2013), with six IPCC type classification.

These ATREDD+ adopted at state or regional level include key polygons to address (figure 7).

Figure 7. REDD+ Early Action Areas

The criteria to focus REDD+ Early Actions and key early actions were for areas to have the following:

1. Large wooden areas subject to severe forest and forest carbon loss processes. This process was supported by the available input on land use and vegetation coverage by the National Institute of Statistics and Geography (INEGI).
2. With a high environmental value, particularly for biodiversity and hydrology. This, based on the priority analysis for biodiversity preservation and on a gap analysis conducted by the National Commission for the Knowledge and Use of Biodiversity (CONABIO).
3. With development needs, arising from existing poverty indicators nationwide.
4. With local stakeholders and relevant experiences to implement innovative models with short-term results.
5. With significant progress on REDD+.

Considering the first intervention strategy element, related to action development according to the region's specific needs and characteristics, currently, CONAFOR is running Special Programs in the three REDD+ Early Action regions. The Lacandon Jungle (PESL), Jalisco Coastal Basins (PECCJ) and the Yucatan Peninsula (PEPY).

Special Programs represent strategic instruments consisting of a series of actions which purpose is to address deforestation and degradation causes. This, according to Section 127 under the General Law on Sustainable Forest Development, which provides for that in the event of degradation, desertification or severe environmental unbalances in, preferably, wooden lands, CONAFOR will develop and execute programs jointly with landowners as to take the appropriate measures to recover and restore the conditions required for the evolution and continuity of existing natural processes, including maintenance to the water system, erosion prevention and restoration of degraded forest lands (LGDFS, 2012).

Data on deforestation and forest degradation from all three key regions was considered to develop the Special Programs; therefore, historic, geographic, bio geophysical and socioeconomic data was collected, and the threats and impact related to activities were identified (CONAFOR, 2010a).

Special Program activities are defined with a territory approach, depending on the local needs and several causes of deforestation and forest degradation; therefore, they may change. Program activities are as follows (CONAFOR, 2012):

1. Incentives for diagnosis, (technical and social) studies and integrated projects for forest and agro-forestry development.
2. Development and improvement of planning, organizing, instrumentation, population management, *ejido*s, communities and social organization capacities and skills.
3. Incentives to conduct integrated actions and projects for forest restoration and production reconversion.
4. Incentives to conduct integrated actions and projects to harvest timber and non-timber products as well as the diversification of production potential, according to the sustainable forest management principles.
5. Incentives to forest landowners who, voluntarily decide to participate in the Program Payment for Ecosystem Services.

This way, CONAFOR Special Programs will address the loss of those ecosystems that do not have a high financial value related to forest harvesting, but which also have an impact on forest increase and on production system improvement through the National Sustainable Forest Strategy Management to Increase Production and Productivity in 2013-2018 (ENAIPROS)[22].

Lands under a preservation/protection agreement are subject to Special Programs, which efforts aim to stop deforestation by paying for ecosystem services, while production, grazing or agro-forest projects are put in place in other regions. This, according to Section 129 under the LGDFS, which provides for "if protected forest areas are deemed deforested, regardless of the legal jurisdiction governing them, these must be restored through special programs" (LGDFS, 2012).

The target population of these programs are preferably land owners, users or holders of, preferably, forest lands, *ejidos* and communities with forest resources and/or duly established associations or ongoing integration groups to take community forest development as well as pieces of land located in production reactivation and wooden production areas, including those deteriorated areas (with land degradation, forest coverage loss or areas affected by fire, diseases, forest pests and natural disasters) that are found in key microbasins due to its environmental and/or forest relevance and those pieces of land in good condition, including those areas that are being legally handled and harvested.

The activities conducted through the Programs may be grouped in the categories below:

- Strengthening of social and human capital (community law, training, seminars, workshops).
- Restoration and production reconversion (integrated restoration, forest grazing systems and agro-forestry, *inter alia*).
- Preservation (payment for environmental services, best management practices).
- Sustainable forest harvesting.
- Studies (production alternatives, determination of environmental impact, etc.).

5.2.1 Integrated management of the land in coastal basins in Jalisco

REDD+ Early Action in Jalisco is strong as it may be replicable in a local governance model, based on the group of municipalities sharing the same basin that intend to address sustainable management at a local scale (González, 2012).

This model includes all Branches of government and strengthens local capacities for the integrated management of the territory, as to address all climate change mitigation and adaptation agendas in an orderly manner, by promoting activities to stop deforestation and degradation with biodiversity preservation co-benefits and to improve water supply and quality in the region.

[22] ENAIPROS aims to promoting the sustainable harvesting of forest resources by organizing and strengthening producers, the utilization of appropriate production techniques and revamping, financing and trading strategies that enable increasing production, preserving biodiversity and improving the life of landowners and users and that of the producing wooden region population in the country.

Currently, there are four inter-municipal agencies for the environment and territorial development (inter-municipal boards) running in the Costal Basin Region in Jalisco (figure 8):

- Inter-Municipal Board on the Environment for the Integrated management of the Lower Ayuquila River Basin (JIRA), created on August 06, 2007.
- Inter-Municipal Board of Coahuayana River (JIRCO), created on August 17, 2009.
- Inter-Municipal Board of Western Mountain Ranges-Coast (JISOC), created on March 29, 2012.
- Inter-Municipal Board of the South Coast (JICOSUR), created on May 23, 2013.

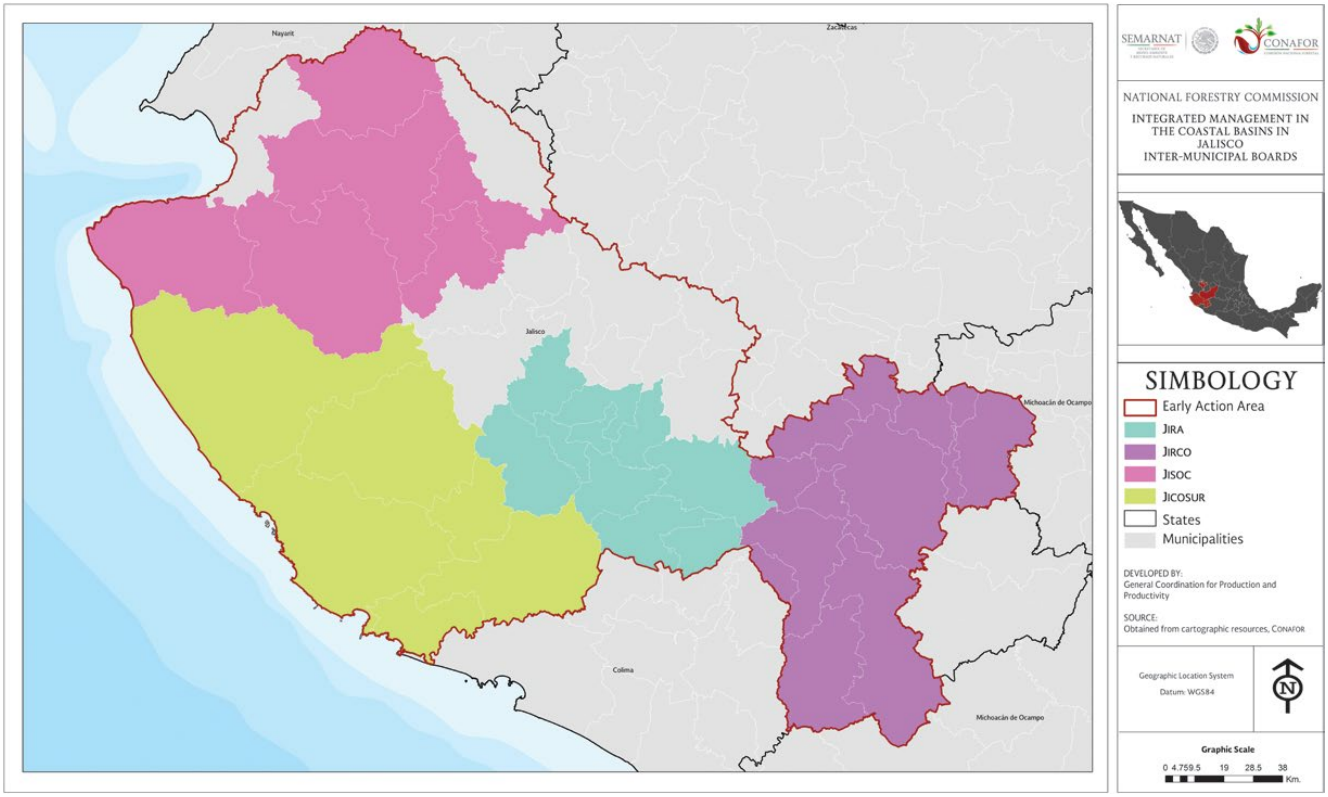


Figure 8. REDD+ Early Action for Coastal Basins in Jalisco.

Since 2011, ATREDD+ Jalisco funds the Special Program on Coastal Basins in the State of Jalisco, which encompasses five basins located at the west side of the state, which are part of the key Chamela-Cabo Corrientes region (Arriaga *et ál.*, 2000). Even if a large area of the forest remained intact, deforestation in the zone has increased significantly over the past two decades, with a loss of about 30% of the forest area during that period. The region is significant as it includes a wide range of ecosystems and is the habitat of several endemic species.

Interventions in this region are mainly intended to address the forest area reduction and rainforest and forest degradation as well as to revert the trend on forestland use change and, therefore, contribute to reduce GHG emissions and improve the life conditions of the region's population.

5.2.2 Preservation of natural resources found in the Yucatan Peninsula (Campeche, Quintana Roo, Yucatan) rainforest area

The Yucatan Peninsula is an important region in terms of natural diversity both domestically and internationally speaking as its forest area encompasses sites that are key worldwide to preserve birds, wetlands and natural protected areas; it is part of the Mesoamerican Biological Corridor managed by the National Commission for the Knowledge and Use of Biodiversity (Conabio). It is one of the regions in Mexico with the highest pressure on natural resources due to a series of natural and anthropogenic factors.

The initiative by this Atredd+ in the Yucatan Peninsula arises from the general coordination agreement executed by the States of Yucatan, Quintana Roo and Campeche (figure 9), as to establish the Regional Strategy for Climate Change Mitigation and Adaptation in the Yucatan Peninsula. This agreement consists of three objectives:

1. Developing regional strategies on climate change.
2. Conducting actions to reduce Ghg emissions by minimizing deforestation and forest degradation.
3. Creating a fund for climate actions.

The inter-state agreement has set the grounds to put climate change mitigation actions in place, with a collaboration perspective for all three states making up the Yucatan Peninsula. This collaboration is based on the following strategic lines:

- Measurement, Reporting and Verification system.
- Development and strengthening of local capacities.
- Financing by creating a peninsular fund to channel resources.

The intervention model is being implemented in the Peninsula by the Conabio Biological Corridor and Resource Coordination, through the Sustainable Rural Development Project for Biological Corridors. Conabio and Conafor have worked jointly with the governments of the Peninsula states to create municipality groups according to the model adopted in Jalisco as to ensure the appropriate articulation of the several sectorial public policies for territory and natural resource management.

Currently, there are two inter-municipal agencies for the environment:

- The Municipal Association for the Environment in the South of Quintana Roo (Amusur), consisting of four municipalities in the south of the state.
- The Inter-Municipal Board of Pucc Biocultural Reserve (Jibiopuuc).

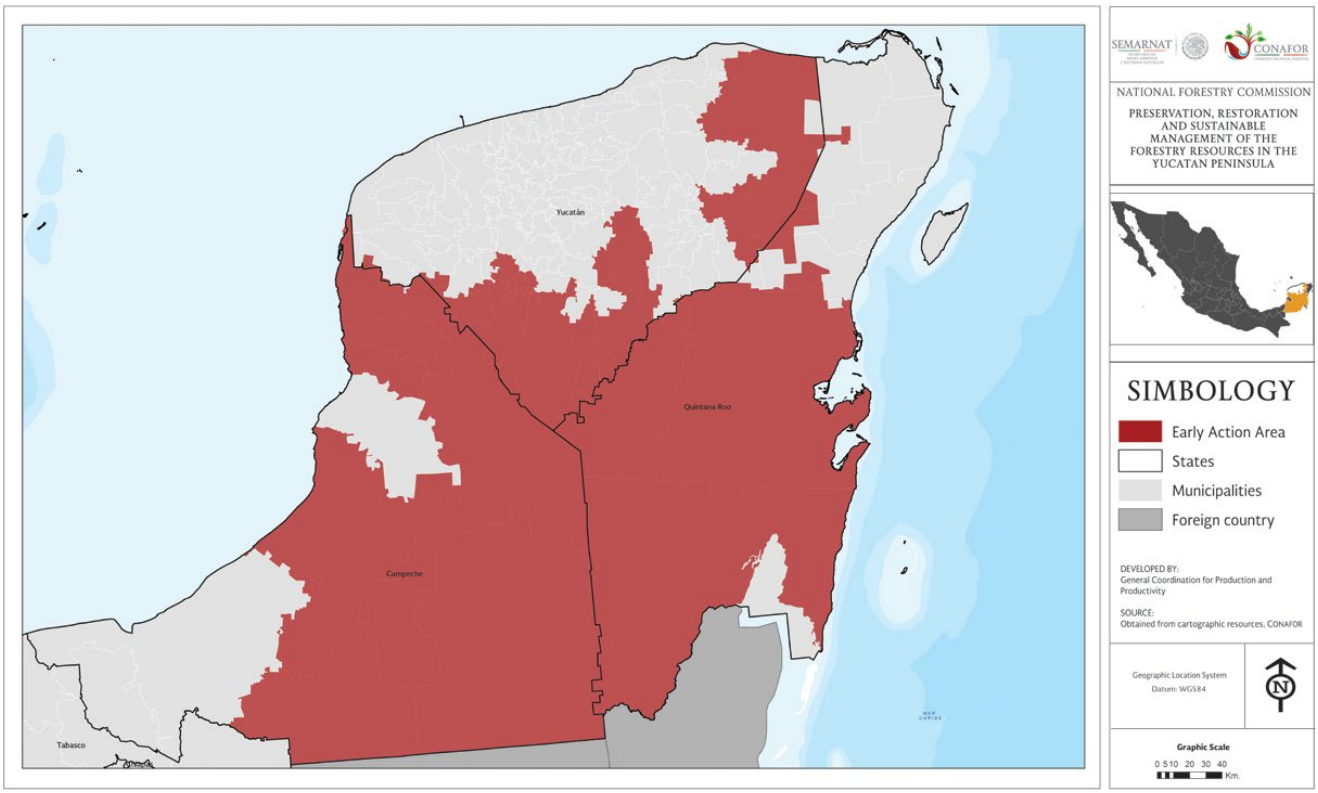


Figure 9. REDD+ Early Action in the Yucatan Peninsula.

The Special Program on the Yucatan Peninsula (PEPY), which operations began in 2012, is being conducted as part of this ATREDD+. By adding this PEPY to this ATREDD+, the territorial integration of the production reconversion activities will be conducted along with preservation and sustainable management activities, including the activities managed by CONANP and SAGARPA.

PEPY aims to revert the forestland use trend and reduce degradation in forest ecosystems. By sustainably managing forest resources and improving agriculture production systems in wooden areas, the intent is to improve life conditions for the region's population.

5.2.3 Preservation, restoration and sustainable harvesting in biological corridors and the Lacandon Jungle in the State of Chiapas

The Lacandon Jungle is found at the southeastern end of Chiapas; it is the last high evergreen rainforest in the country, which supplies the main basins in Mexico (Usumacinta-Grijalva), which include 30% of the country's fresh water.

There are several initiatives related to REDD+ activities in the state of Chiapas. One of which is the Sustainable Rural Development Project in Biological Corridors found in the State of Chiapas, including the participation of several partners.

This REDD+ Early Action (figure 10) has highlighted the direct work with producer organizations, communities and *ejidos*, by enforcing the several institutional agreements reached with the Inter-Institutional Technical Board for the follow-up of the Special Program on the Lacandon Jungle, the Advisory Board for the Montes Azules Biosphere and the Technical Consultancy Committee for REDD+ Chiapas. These agreements and platforms have been the main enablers of the inter-institutional coordination and the engagement of the several stakeholders.

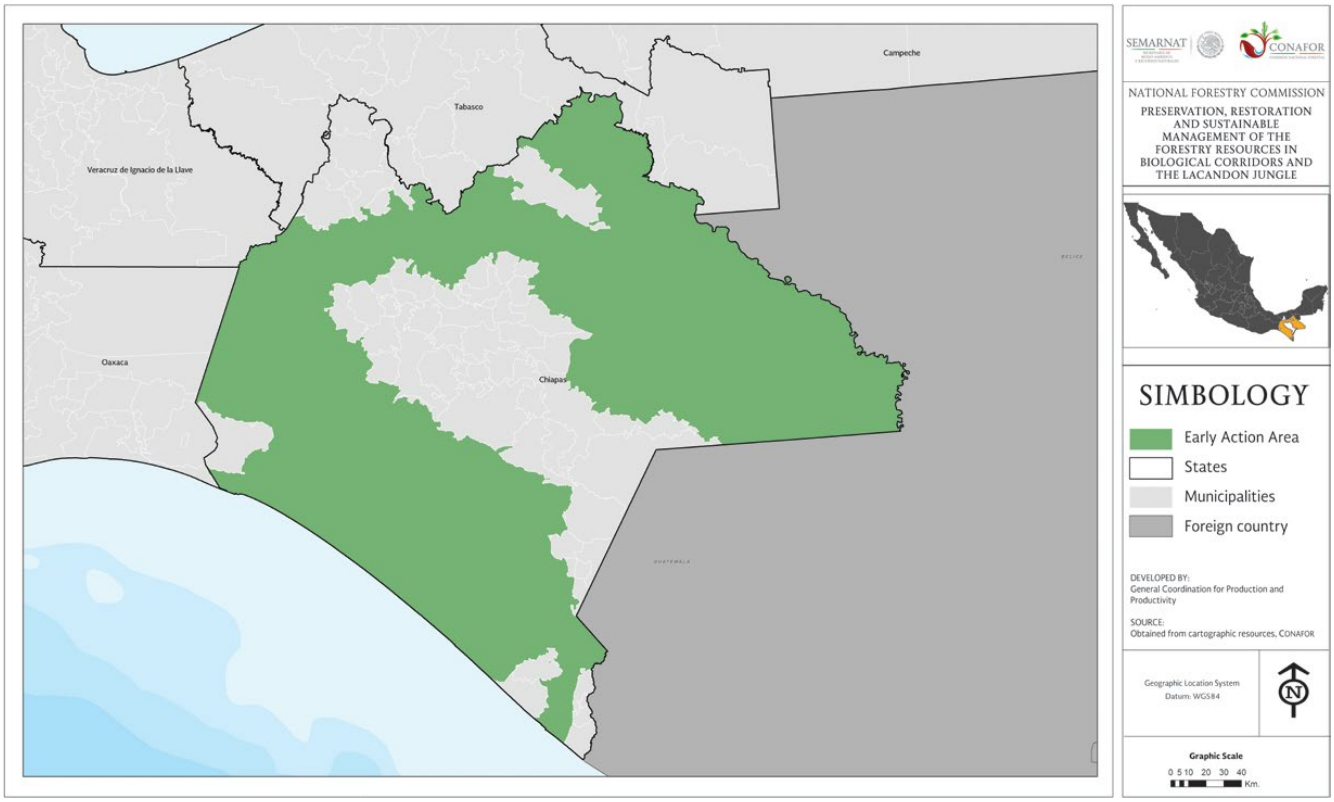


Figure 10. REDD+ Early Actions in Chiapas.

In the framework of a collaboration agreement reached by SAGARPA and SEMARNAT (2008), CONABIO, through the Biological Corridor and Resource Coordination (CCRB), jointly with Natura Mexicana, AC, started with the Sustainable Territorial Development Program for Lacandon Jungle as to reach territorial development to foster social and financial welfare conditions.

Since 2010, CONAFOR took part in this effort, started the Special Program for the Lacandon Jungle Preservation, Restoration and Sustainable Harvesting in the state of Chiapas (PESL), which aims to reverting the deforestation and forest degradation trend in the Lacandon Jungle, restore and improve wooden productivity, restore forest landscapes through production and agro-forestry reconversion, strengthening local capacities and governance of natural resources.

To do this, CONAFOR and CONABIO work together to articulate financial resources and programs for both institutions. In the framework of the Special Program above, CCRB performs as APDT as well and promotes mainstreaming of public programs and private investments.

5.3 Future perspectives

In addition to Special Programs, the Emission Reduction Initiative (IRE), representing a good opportunity to run pilots and assess the efficiency of policies, institutional agreements and the intervention model to mitigate climate change in the forest sector, will be adopted in ATREDD+ areas. This is a developing initiative that will include a series of activities to promote Sustainable Rural Development.

Through the Emission Reduction Initiative in Mexico, activities to be implemented for each ATREDD+ will be defined at a community level[23] and with a territorial approach, depending on the local reality and the several causes and drives of deforestation and forest degradation. These activities will be included in a five-year Investment Plan. Unlike Special Programs, the extent of this Plan is for a territory including several communities and *ejidos* with a common environmental border, whether it is a basin, sub-basin or even a biological corridor.

To date, although the Intervention Model has been in place in those states that are part of ATREDD+, lessons learned and experiences obtained in these areas are considered as valuable inputs to replicate the model in other states; therefore, national efforts in the context of REDD+ preparation will be oriented for that purpose.

[23] Community forest management may be more efficient to delimit protected areas as to control deforestation (Ellis y Porter- Bolland, 2008; Porter-Bolland *et ál*., press). Whenever communities have effective internal rules for forest management, it is possible to minimize and control the impact of several factors, such as infrastructure, demographic growth and agriculture expansion on deforestation (Ellis y Porter-Bolland, 2008; Skutsch *et ál*., 2013a). These management activities or practices contribute to mitigate climate change by strengthening natural and social resiliency as well as the financial profitability of communities.

Acronyms

Acronyms	Meaning
AC	Civil Association, Nonprofit Civil Associations
ADL	Local Development Agent
APDT	Public Agent for Territorial Development
ARS	Regional Producer Associations
ATREDD+	REDD+ Early Actions
CICC	Inter-Secretariat Commission on Climate Change
CCRB	Corridor and Biological Resource Coordination
CDI	National Commission for the Development of Indigenous Peoples
CIDRS	Inter-Secretariat Commission on Sustainable Rural Development
UNFCCC	United Nations Framework Convention on Climate Change
CONABIO	National Commission for the Knowledge and Use of Biodiversity
CONAFOR	National Forestry Commission
CONANP	National Commission for Natural Protected Areas
COUSSA	Conservation and Sustainable Use of Land and Water Components
ENAIPROS	National Strategy on Sustainable Forest Management to Increase Production and Productivity 2013-2018
ENAREDD+	National Strategy on REDD+
FAO	Food and Agriculture Organization of the United Nations
FIP	Forest Investment Program
GHG	Greenhouse gases
IRE	Emission Reduction Initiative
JIRA	Inter-Municipal Board on the Environment for the Integrated management of the Lower Ayuquila River Basin
JIRCO	Inter-Municipal Board on the Coahuayana River
JISOC	Inter-Municipal Board on the Western Mountain Ranges-Coast
JICOSUR	Inter-Municipal Board on the South Coast
INECC	National Institute of Ecology and Climate Change
INEGI	National Institute of Statistics and Geography
LGDFS	General Law for Sustainable Forest Development

Acronyms	Meaning
LDRS	Law for Sustainable Rural Development
OPD	Decentralized Public Agency
PECCJ	Special Program on the Jalisco Coastal Basin
PROCYMAF	Community Forest Development Program
PEPY	Special Program on the Yucatan Peninsula
PESA	Strategic Project on Food Security
PESL	Special Program on the Lacandon Jungle
PMFM	Program on Forest Harvesting Management
PROFEPA	Federal Office for Environmental Protection
PROFOS	Program for Social Organization Promotion
PRONAFOR	National Forestry Program
PROAGRO	Program for Agriculture Promotion; PROAGRO Production Component
PROGAN	Program for Stock Promotion; PROGAN Production Component
PST	Technical service providers
REDD+	Reduction of Emissions caused by Deforestation and Degradation
SAGARPA	Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food
SC	Civil Societies
SEDESOL	Ministry of Social Development
SENER	Ministry of Energy
SCT	Ministry of Communications and Transportation
SECTUR	Ministry of Tourism
SEDATU	Ministry of Agrarian, Territorial and Urban Development
SEP	Ministry of Public Education
SEMARNAT	Ministry of Environment and Natural Resources
UC	Community Alliance
LULUCF	Land Use, Land-Use Change, and Forestry

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