

## Promoting sustainability in the agave-mezcal value chain through restoration and integrated management of biocultural landscapes in Oaxaca

### Part I: Project Information

**GEF ID**

10869

**Project Type**

FSP

**Type of Trust Fund**

GET

**CBIT/NGI**

CBIT No

NGI No

**Project Title**

Promoting sustainability in the agave-mezcal value chain through restoration and integrated management of biocultural landscapes in Oaxaca

**Countries**

Mexico

**Agency(ies)**

UNEP

**Other Executing Partner(s)**

**Executing Partner Type**

Pronatura Sur in coordination with the Oaxaca Secretariat of the Environment,  
Energy and Development (SEMAEDES)

CSO

**GEF Focal Area**

Multi Focal Area

**Taxonomy**

Focal Areas, Biodiversity, Species, Animal Genetic Resources, Plant Genetic Resources, Threatened Species, Wildlife for Sustainable Development, Protected Areas and Landscapes, Terrestrial Protected Areas, Productive Landscapes, Community Based Natural Resource Mngt, Biomes, Tropical Dry Forests, Mainstreaming, Certification -National Standards, Forestry - Including HCVF and REDD+, Agriculture and agrobiodiversity, Climate Change, Climate Change Mitigation, Agriculture, Forestry, and Other Land Use, Climate Change Adaptation, Ecosystem-based Adaptation, Land Degradation, Land Degradation Neutrality, Carbon stocks above or below ground, Sustainable Land Management, Sustainable Agriculture, Ecosystem Approach, Integrated and Cross-sectoral approach, Community-Based Natural Resource Management, Income Generating Activities, Restoration and Rehabilitation of Degraded Lands, Sustainable Livelihoods, Forest, Forest and Landscape Restoration, Influencing models, Strengthen institutional capacity and decision-making, Convene multi-stakeholder alliances, Transform policy and regulatory environments, Stakeholders, Communications, Behavior change, Public Campaigns, Awareness Raising, Education, Civil Society, Community Based Organization, Academia, Non-Governmental Organization, Type of Engagement, Consultation, Information Dissemination, Partnership, Participation, Private Sector, Financial intermediaries and market facilitators, SMEs, Individuals/Entrepreneurs, Indigenous Peoples, Gender Equality, Gender results areas, Capacity Development, Participation and leadership, Access to benefits and services, Knowledge Generation and Exchange, Gender Mainstreaming, Beneficiaries, Gender-sensitive indicators, Sex-disaggregated indicators, Capacity, Knowledge and Research, Innovation, Learning, Adaptive management, Indicators to measure change, Theory of change, Knowledge Exchange, Knowledge Generation

**Rio Markers**

**Climate Change Mitigation**

Climate Change Mitigation 2

**Climate Change Adaptation**

Climate Change Adaptation 0

**Duration**

60 In Months

**Agency Fee(\$)**

428,216.00

**Submission Date**

10/27/2021

A. Indicative Focal/Non-Focal Area Elements

Programming Directions	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
BD-1-1	GET	1,126,884.00	10,930,000.00
BD-2-7	GET	1,126,883.00	10,930,000.00
LD-1-3	GET	1,577,637.00	15,302,000.00
LD-1-4	GET	676,130.00	6,558,000.00
	<b>Total Project Cost (\$)</b>	<b>4,507,534.00</b>	<b>43,720,000.00</b>

## B. Indicative Project description summary

### Project Objective

To foster sustainable practices in the agave-mezcal value chain in the Oaxaca Mezcal Region through an integrated landscape management approach that privileges non-monoculture cultivation, species protection and the maintenance of ecosystems services.

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
Component 1: Strengthening of the National Regulatory and Governance Framework	Technical Assistance	<p><u>Outcome 1.1:</u></p> <p>Biodiversity, ecosystem services and sustainable practices mainstreamed in national governance and institutional frameworks linked to agave harvesting and the production of Mezcal.</p> <p><b>Indicators:</b></p> <p><i>National regulations and state level strategies updated or created, adopted, and under implementation by project mid-term</i></p> <p><b>Target:</b> 1 national regulation, 1 state strategy</p> <p><i>% Increase from baseline in Institutional Capacity Development Scorecard</i></p>	<p><u>Output 1.1.1:</u> National regulations and state level strategies and plans updated or created to safeguard ecosystems services and promote sustainable practices in the production of Mezcal.</p> <p><u>Output 1.1.2:</u> Multi-stakeholder capacity strengthened for the institutionalization of national regulations and state level strategies and plans for the sustainable production of Mezcal.</p> <p><u>Output 1.1.3:</u> Governance arrangements strengthened or created to oversee Mezcal production and other commodities in bio-cultural landscapes inclusive of national, state, and local actors.</p>	GET	429,289.00	4,153,400.00

**Target:** 20% increase from baseline

*Inter-institutional Coordination and Oversight Group for Mezcal Production strengthened or created by project mid-term*

**Target:** 1 Taskforce established and operational

**Indicators, baselines, and targets to be confirmed during PPG**

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Component 2: Mainstreaming Biodiversity Conservation and Integrated Landscape Management (ILM)	Technical Assistance	<p><u>Outcome 2.1:</u></p> <p>Increase in area of forests protected, ecosystems services restored and maintained, and threatened and keystone species of high biological value conserved.</p> <p><b>Indicators:</b></p> <p><i># Hectares of dry tropical forests protected through new Areas Voluntarily Destined to Conservation (ADVC)</i></p> <p><b>Target:</b> 9,000 ha</p> <p><i># Hectares of dry tropical forests protected through new effective area-based</i></p>	<p><u>Output 2.1.1:</u></p> <p>Dry tropical forests protected through the establishment of 6 Areas Voluntarily Destined to Conservation (ADVC) and other effective area-based conservation modalities.</p> <p><u>Output 2.1.2:</u></p> <p>Assessment, management, and monitoring of Pollinator and Keystone Species in bio-cultural landscapes subject to the production and harvesting of agave for Mezcal production.</p>	GET	2,661,592.00	25,751,080.00
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*conservation modalities.*

**Target:** 41,000 ha

-Conservation Management  
Units: 1,000 ha

-Community Management:  
25,000 ha

-Forest Management  
Programs: 15,000 ha

*# Of species of high  
biological value conserved*

**Target:** 3 agave species, 2  
feline, 2 birds

*# Of pollinator species  
conserved*

**Target:** 2 bats, 1 lepidotera,  
1 bee, 2 birds

Outcome 2.2:

ILM practices have reduced  
LD, increased soil and  
woody vegetation carbon  
sequestration, and enabled  
sustainable agricultural  
production on degraded  
lands.

Output 2.2.1:

2 Integrated Management  
Plans for Bio-Cultural  
Landscapes developed and  
under implementation.

**Indicators:**

*# Of integrated landscape management plans*

**Target: 2**

*# Of hectares of restored and/or under ANR*

**Target:**

3,000 ha of agriculture land

3,000 ha of ANR in degraded forests

*# Of hectares of agave subject to sustainable harvesting practices*

**Target: 8,000 ha**

*# Of hectares that have reversed monoculture cultivation*

**Target: 4,000 ha**

*# Metric tCO<sub>2</sub>e mitigated (direct)*

**Target: 210,889 tCO<sub>2</sub>e**

*# Hectares of bio-cultural landscapes subject to ILM best practices*

**Target: 20,000 ha**

Output 2.2.2:

Agave monoculture reversed, soil erosion decreased, carbon sequestration increased through agroforestry production and restoration of degraded lands.

Output 2.2.3:

Development of productive, resilient, and equitable food and integrated land management best practices in bio-cultural landscapes subject to agave harvesting.

**Indicators, baselines, and targets to be confirmed during PPG**

<p>Component 3: Establishing a Sustainable Agave-Mezcal Value Chain and Managing Associated Knowledge</p>	<p>Technical Assistance</p>	<p><b>Outcome 3.1:</b></p> <p>Strengthened Mezcal Value Chain based on sustainable practices.</p> <p><b>Indicators:</b></p> <p><i>% Of total Mezcal production subject to sustainability standards</i></p> <p><b>Target:</b> 5%</p> <p><i>% Of total Mezcal production subject to use of sustainably produced wood included in Forest Management Programmes.</i></p> <p><b>Target:</b> 5%</p> <p><i># Of cultural practices linked to agave production, harvesting and mezcal production supported by the project</i></p> <p><b>Target:</b> 2 cultural practices</p> <p>1. Intercropping with the milpa system (traditional form inherited from ancestors)</p> <p>2. Ancestral distillation using clay pots</p>	<p><b>Output 3.1.1:</b></p> <p>A sustainable Agave-Mezcal value chain is promoted through actions targeting the production and demand sides.</p> <p><b>Output 3.1.2:</b></p> <p>Promotion of sustainable plantations of wood for use in Mezcal production.</p> <p><b>Output 3.1.3:</b></p> <p>Cultural practices that define origin and uniqueness of Oaxacan Mezcal safeguarded.</p> <p><b>Output 3.1.4:</b></p> <p>A Knowledge Management Plan on sustainable mezcal production developed and under implementation.</p>	<p>GET</p>	<p>1,202,009.00</p>	<p>11,629,520.00</p>
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*# Of Knowledge  
Management Plans on  
sustainable mezcal  
production supported by the  
project*

**Target: 1**

Outcome 3.2:

An innovative finance mechanism to upscale sustainable harvesting and processing of agave.

**Indicators:**

*# of beneficiary institutions  
(i.e.: companies, community  
enterprises, cooperatives)  
benefiting from the finance  
mechanism*

**Target: 5**

*% Of capitalization from  
private sector origin*

**Target: 25%**

**Indicators, baselines and  
targets to be confirmed  
during PPG**

Output 3.2.1:

A finance mechanism for sustainable harvesting and processing of agave designed, formally established and operational

Sub Total (\$)

4,292,890.00

41,534,000.00

**Project Management Cost (PMC)**

GET

214,644.00

2,186,000.00

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<b>Sub Total(\$)</b>	<b>214,644.00</b>	<b>2,186,000.00</b>
<b>Total Project Cost(\$)</b>	<b>4,507,534.00</b>	<b>43,720,000.00</b>

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**C. Indicative sources of Co-financing for the Project by name and by type**

<b>Sources of Co-financing</b>	<b>Name of Co-financier</b>	<b>Type of Co-financing</b>	<b>Investment Mobilized</b>	<b>Amount(\$)</b>
Recipient Country Government	State of Oaxaca Environment, Energy and Sustainable Development Secretariat (SEMAEDES0)	In-kind	Recurrent expenditures	3,750,000.00
Recipient Country Government	State of Oaxaca Environment, Energy and Sustainable Development Secretariat (SEMAEDES0)	Grant	Investment mobilized	1,250,000.00
Recipient Country Government	State of Oaxaca Economy Secretariat	In-kind	Recurrent expenditures	2,250,000.00
Recipient Country Government	State of Oaxaca Economy Secretariat	Grant	Investment mobilized	5,250,000.00
Recipient Country Government	State of Oaxaca Secretariat for Indigenous and Afro-Mexican Peoples (SEPIA)	In-kind	Recurrent expenditures	100,000.00
Recipient Country Government	Oaxaca Secretariat of Agricultural Development, Fisheries and Aquaculture (SEDAPA)	Grant	Investment mobilized	1,625,000.00
Recipient Country Government	Secretariat of Environment and Natural Resources (SEMARNAT - UCAI)	In-kind	Recurrent expenditures	125,000.00
Recipient Country Government	National Commission of Protected Natural Areas (CONANP)	Grant	Investment mobilized	375,000.00
Recipient Country Government	Secretariat of Agriculture and Rural Development (SADER)	Grant	Investment mobilized	9,900,000.00
Civil Society Organization	Pronatura Sur	In-kind	Recurrent expenditures	35,000.00
Civil Society Organization	Certificadora de Productos Sustentables	In-kind	Recurrent expenditures	10,000.00

Other	Governors Climate and Forest Task Force (GCF TF)	Grant	Investment mobilized	50,000.00
Donor Agency	USAID- Sustainable Landscapes and Prosperous Communities in Southeastern Mexico	Grant	Investment mobilized	500,000.00
Other	WRI	In-kind	Recurrent expenditures	300,000.00
Other	WRI	Grant	Investment mobilized	8,000,000.00
Other	Agri3Fund	Grant	Investment mobilized	10,000,000.00
GEF Agency	United Nations Environment Programme (UNEP)	In-kind	Recurrent expenditures	200,000.00
<b>Total Project Cost(\$)</b>				<b>43,720,000.00</b>

#### **Describe how any "Investment Mobilized" was identified**

The co-financing sources identified above as 'investment mobilized' are time-bound expenditures specifically identified for complementary works to be carried out in the project intervention area, and thus contribute to the delivery of project objectives and global environmental benefits. They have been identified as follows: Investment mobilized from the State of Oaxaca Environment, Energy and Sustainable Development Secretariat (SEMAEDES) refers to the secretariat's investments to be conducted in Payment for Environmental Services at the state level, inclusive of the project intervention areas and will be the main driving force supporting the initial capitalization of the Finance Mechanism. Investments from the State of Oaxaca Economy Secretariat will fund the state's program of support to mezcal producers, including the construction of a training centre and procurement of infrastructure for the sustainable production of agave. Co-financing from the National Commission of Protected Natural Areas (CONANP) will be investments in community grant programs, technical advice, promotion of community governance for the construction of consensus for the declaration of ADVCS, and the monitoring of priority species. Investments from Pronatura Sur will be investment-readiness efforts connected with the Governors Climate and Forest Task Force (GCF TF – see below) Co-financing by the Governors Climate and Forest Task Force (GCF TF) are investments in empowerment of sub-national member jurisdictions and their partners to implement innovative programs for sustainable low-emission development, based on better forest governance. Support from the USAID-funded Sustainable Landscapes and Prosperous Communities in Southeastern Mexico will focus on investments in training, community governance and technical assistance. The US\$2,000,000 investment mobilized from the World Resources Institute (WRI) are linked to a landscape finance programme they are initiating in Mexico with support from USAID and will assist in the capitalization of the Finance Mechanism. The USD 10,000,000 investment mobilized from the Agri3Fund will also support the finance mechanism with credit enhancement tools and technical assistance. The Agri3Fund, a finance facility initiated by UNEP and Rabobank, is essentially an insurance provider, meaning it can in principle account for a multiple of the cash position it provides.

D. Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
UNEP	GET	Mexico	Biodiversity	BD STAR Allocation	2,253,767	214,108	2,467,875.00
UNEP	GET	Mexico	Land Degradation	LD STAR Allocation	2,253,767	214,108	2,467,875.00
<b>Total GEF Resources(\$)</b>					<b>4,507,534.00</b>	<b>428,216.00</b>	<b>4,935,750.00</b>

E. Project Preparation Grant (PPG)

PPG Required **true**

PPG Amount (\$)

150,000

PPG Agency Fee (\$)

14,250

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
UNEP	GET	Mexico	Biodiversity	BD STAR Allocation	75,000	7,125	<b>82,125.00</b>
UNEP	GET	Mexico	Land Degradation	LD STAR Allocation	75,000	7,125	<b>82,125.00</b>
<b>Total Project Costs(\$)</b>					<b>150,000.00</b>	<b>14,250.00</b>	<b>164,250.00</b>

## Core Indicators

### Indicator 1 Terrestrial protected areas created or under improved management for conservation and sustainable use

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
50,000.00	0.00	0.00	0.00

### Indicator 1.1 Terrestrial Protected Areas Newly created

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)
50,000.00	0.00	0.00	0.00

Name of the Protected Area	WDPA ID	IUCN Category	Total Ha (Expected at PIF)	Total Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)
ADVCs			9,000.00			

Community Management	25,000.00	
Forest Management Programmes	15,000.00	
UMAs	1,000.00	

**Indicator 1.2 Terrestrial Protected Areas Under improved Management effectiveness**

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)
0.00	0.00	0.00	0.00

Name of the Protected Area	WDPA ID	IUCN Category	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)	METT score (Baseline at CEO Endorsement)	METT score (Achieved at MTR)	METT score (Achieved at TE)
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**Indicator 3 Area of land restored**

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
6000.00	0.00	0.00	0.00

**Indicator 3.1 Area of degraded agricultural land restored**

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
3,000.00			

**Indicator 3.2 Area of Forest and Forest Land restored**

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
3,000.00			

**Indicator 3.3 Area of natural grass and shrublands restored**

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

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**Indicator 3.4 Area of wetlands (incl. estuaries, mangroves) restored**

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

**Indicator 4 Area of landscapes under improved practices (hectares; excluding protected areas)**

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
40000.00	0.00	0.00	0.00

**Indicator 4.1 Area of landscapes under improved management to benefit biodiversity (hectares, qualitative assessment, non-certified)**

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

20,000.00

**Indicator 4.2 Area of landscapes that meets national or international third party certification that incorporates biodiversity considerations (hectares)**

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
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Type/Name of Third Party Certification

**Indicator 4.3 Area of landscapes under sustainable land management in production systems**

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
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20,000.00

**Indicator 4.4 Area of High Conservation Value Forest (HCVF) loss avoided**

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
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**Documents (Please upload document(s) that justifies the HC VF)**

Title	Submitted
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**Indicator 6 Greenhouse Gas Emissions Mitigated**

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO <sub>2</sub> e (direct)	0	0	0	0
Expected metric tons of CO <sub>2</sub> e (indirect)	210889	0	0	0

**Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector**

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO <sub>2</sub> e (direct)				
Expected metric tons of CO <sub>2</sub> e (indirect)	210,889			

Anticipated start year of accounting	2023
Duration of accounting	20

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

<b>Total Target Benefit</b>	<b>(At PIF)</b>	<b>(At CEO Endorsement)</b>	<b>(Achieved at MTR)</b>	<b>(Achieved at TE)</b>
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Expected metric tons of CO <sub>2</sub> e (direct)
Expected metric tons of CO <sub>2</sub> e (indirect)
Anticipated start year of accounting
Duration of accounting

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

<b>Total Target Benefit</b>	<b>Energy (MJ) (At PIF)</b>	<b>Energy (MJ) (At CEO Endorsement)</b>	<b>Energy (MJ) (Achieved at MTR)</b>	<b>Energy (MJ) (Achieved at TE)</b>
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Target Energy Saved (MJ)
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Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)
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Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
<b>Female</b>	21,600			
<b>Male</b>	54,400			
<b>Total</b>	76000	0	0	0

Provide additional explanation on targets, other methodologies used, and other focal area specifics (i.e., Aichi targets in BD) including justification where core indicator targets are not provided

The target for Core Indicator 1 which includes 9,000 ha of ADVCS, refers to areas that are already on a path to certification as ADVCS by CONANP. There is already community will to declare these areas and develop the necessary studies on the biological importance of these polygons. In these selected sites, there is community buy-in to define polygons with greater precision to be certified as ADVC, which entails preparation of technical assessments and social consensus building. The ADVC are polygons identified by CONANP as areas of biological importance in the region, which present low deciduous forest vegetation to contain the monoculture of agave and coniferous forest for the maintenance of environmental services, mainly water. The remaining 41,000 hectares are as follows: 1,000 hectares proposed as Environmental Management Units that are in strategic connectivity sites of the dry forest being degraded by poor agricultural practices such as agave monoculture; 25,000 hectares of community-managed areas to be promoted in the region to regulate the land uses of different productive sectors; and 15,000 hectares that correspond to properties with non-timber forest management programs in the two project landscapes. The target for Core Indicator 3 includes 3,000 hectares of agricultural lands selected to implement productive landscape restoration in areas with agave monoculture. The increase in the target is due to meetings with COMERCAM (CRM) who received the project proposal very well and considered its viability. An additional 3,000 hectares were selected to undertake Assisted Natural Regeneration (ANR) with basis on opportunities provided by community forest management and land use planning programs. The target for Core Indicator 4 represents two biocultural landscapes identified by the agricultural practices present in each of them. The Yagul Landscape is characterized by "traditional" agriculture that dates back to the domestication of wild plants into crops from 12,000 BC. The Yautepec Landscape characterized by agriculture supported by technology. The feasibility of a 5,000 ha coverage in the Yautepec Landscape relates to a trend of new and emerging agriculture projects in this area while the Yagul Landscape hosts traditional agriculture crop systems, which justifies its larger extension and contribution to the target. The target for Core Indicator 6 was established by (SEMAEDES) of the State of Oaxaca with the technical support of the National Forestry Commission (CONAFOR) using the CONAFOR National Monitoring, Reporting and Verification System (SNMRV)'s methodological approach. Information on activities and their magnitude were provided by SEMAEDSO, while information on carbon densities and rates of change in carbon stocks per unit area were provided by data generated by the CONAFOR SNMRV's System for Biomass and Carbon Estimation (SEByC). Annex G presents both a brief technical note on the calculation of mitigation benefits and a table quantifying emission reductions and removals per area. The targets for Core Indicator 11 correspond to the population of the 4 districts where the project will be developed. The training activities will benefit mezcal producers in general, that is, beyond the intervention landscapes. The data used correspond to the latest available information from the population census. However, a beneficiary analysis throughout the value chain will have to be carried out during PPG to reconfirm these numbers.

## Part II. Project Justification

### 1a. Project Description

#### 1) The global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description)

##### Overview & Environmental Context

Mexico is the 13th largest country in the world and 5th for its biological and cultural diversity. Mexico is one of the world's five megadiverse countries inclusive of agrobiodiversity, with at least 118 plants of economic importance partially or fully domesticated by pre-Hispanic farmers. The country has identified 152 Priority Biodiversity Areas (PBA) and several of them are part of the World Database of Key Biodiversity Areas. These PBAs include relevant sites for their high ecosystem richness and presence of endemic species compared to the rest of the country[1].

The proposed project's interventions will concentrate primarily in the state of Oaxaca, which is in the south of Mexico, with a total area of 93,757 km<sup>2</sup> and 568 km of coastline. It has 570 municipalities grouped into eight regions and 30 districts. The capital of the state is the city of Oaxaca, located in the region of Valles Centrales and the Centro District[2]. The state has seven hydrological regions and 14 basins, a significant number of lagoons, mostly located in the Pacific Coast region, and 26 climatic subtypes. It is possible to find warm climates, from humid and sub-humid to arid and very arid, as well as temperate climates with a high degree of humidity, or those where aridity is an important factor, and semi-cold climates from humid to sub-humid. Warm, semi-warm and temperate climates occupy most of the Oaxacan territory. The state of Oaxaca has a great diversity of soils, presenting 16 of the 22 existing soil units in Mexico. This important edaphological wealth is in a clear risk because its inappropriate use has adverse effects on biodiversity, agricultural productivity, and the quality of the environment.

In accordance with the Strategy for the Sustainable Use of Biodiversity of the State of Oaxaca, and in terms of flora, 261 families, 1,824 genera and 9,130 species have been registered, of which 722 are endemic species to the state. The state has 309 species of plants with some category of risk, the majority in the group of 'threatened'. Sixty-five percent of the species in risk category are concentrated in seven families, of which the Orchidaceae, Cactaceae and Crassulaceae stand out in terms of number. Of particular importance to this proposed project is the fact that 58 species of agave are found in Oaxaca, of which 13 are endemic[3]. Regarding diversity of fauna, the state has 3,112 species of invertebrates with endemism of this group in mesophilic and coniferous forests, 1,654 species of vertebrates, 736 species of birds, 262 species of reptiles, 199 species of mammals, 140 species of amphibians, and 275 species of fish. In total there are 128 endemic species of vertebrates, with serious conservation problems, since 33% are in the nom-059-semarnat-2010 with some risk category, while 71 species (5%) are included in the lists of Birdlife International and IUCN.

The state has a wide variety of ecosystems and vegetation types, from thorny thickets in arid zones, green tropical forests and dry tropical forests, the marine ecosystem: coral reefs and mangroves on the Pacific coast, to fog forests, holm oaks, pine forests and oyamel forests. Of the state territory, 65.56% is covered by a forest area, while the remaining 34.44% are non-forest areas that include agricultural areas, human settlements, urban areas, water bodies and areas devoid of vegetation. The eleven forest formations considered at the national level are present in the state, being widely distributed in the high and medium forests, coniferous, broadleaved, and low forests. It should be said that within Oaxacan territory there are 23 of the 32 types of vegetation described for the country. Of direct relevance to this project are the areas of Tropical Dry Forests (TDF) where monoculture agave and the use of firewood for the mezcal production system are carried out<sup>[4]</sup>.

Tropical Dry Forests (TDF) receive less attention than high tropical forests, but they are home to high levels of biodiversity and are endangered by multiple factors such as agriculture, livestock, major tourism developments and global climate change. Nearly half of TDFs have been lost globally and less than 10% are protected. Within the Americas, the distribution of TDF has reduced by nearly 80%. Mexico is home to about 38% of the Neotropical dry forest. More than 70% of Mexico's dry forests have been converted for other uses, and only 0.2% is under protection. Mexico's Tropical Dry Forests contain 35% species of mammals, 33-42% of birds, 34% of reptiles and 23% of amphibians. They contain at least 246 endemic vertebrates: 40 mammals, 38 birds, 124 reptiles and 44 amphibians, but at least 47 vertebrates in the dry forest are at risk of global extinction<sup>[5]</sup>.

### Primary Environmental Problems and Root Causes

One of the main threats to TDF is land use change for agricultural use through slash, grave and burning, which has negative consequences on ecosystem processes. According to Oaxaca's State REDD+ Strategy<sup>[6]</sup>, the main direct drivers of deforestation and land use change are expansion of agricultural land, forest fires, pests and forest diseases and illegal logging. In 2018, the main products harvested in Oaxaca were grain corn, pastures, grasslands, coffee, sugar cane, sorghum beans, lemon, mango and wheat. Against this backdrop, agave monoculture has become an increasingly important driver of deforestation and land degradation alongside the use of firewood for the mezcal production system. In the mezcal production process, firewood is used not only as a source of energy, but also because of the organoleptic characteristics it confers to the finished product, thus the incentive to use firewood is twofold and synonymous to a sustained source of deforestation. Growing national and international demand for mezcal, has only been enhancing this trend and characterizing agave monoculture as both a current and future driver of forest loss and degradation. Mezcal is a protected product with appellation of origin. In the state of Oaxaca, the so-called "Mezcal Region" includes the municipalities of Solá de Vega, Miahuatlán, Yautepec, Santiago Matatlán, Tlacolula, Ocotlán, Ejutla and Zimatlán.<sup>[7]</sup> Oaxaca has a high participation in mezcal production at the national level for different aspects: it is the main producer of mezcal with 97.3% of total production in the country; in its interior there is a vast biodiversity of agaves, with 58 species; it is the headquarters of the Mezcal Regulatory Council (CRM) and is also, at the same time, the second poorest state in the country, with a poverty rate of 66.8% of its total population<sup>[8]</sup>. The area in Oaxaca that is subject to agave cultivation varies from year to year with 9,000 hectares in 1982, 16,185 hectares in 2006, and 10,000 hectares in 2019, which has caused a high impact on TDF ecosystems and the biodiversity they harbor. In 2019, there was a production of 6,438,000 liters of mezcal in 695 registered palenques<sup>[9]</sup>. In the last five years, total profits of mezcal producers increased 29.7% per year, going from 1.62 to 7.66 million U.S. dollars, due to an increase in production from 1.4 to 6.4 million liters. The demand for mezcal in the national and international market increases year after year, which has had a severe impact on the deforestation of TDFs.

In the early 1980s, tequila producers from Jalisco ventured into the Mezcal Region for two years, extracting and purchasing maguey<sup>[10]</sup> that otherwise would have been used for mezcal, at better prices in relation to those established by mezcal producers, triggering a trend towards agave monoculture to satisfy agave demand for both mezcal and tequila. Agave monoculture is the main driver of deforestation in Oaxaca's tropical dry forests, contributing to land and ecosystem service degradation, biodiversity loss, and socio-economic losses. In 2000, the purchase intensified, leading to a recomposition of agriculture through the expansion and increase of maguey planting leading to substantial deforestation, supported by remittances from international migration, under an economic rationale at the expense of environmental conservation, using inadequate production techniques and triggered by an increase in demand for the elaboration of tequila.

This became a problem of overproduction, causing abandonment and neglect of planting, interrupting the realization of traditional agricultural practices such as reseeding, among others. The foregoing caused the suppression of the ecosystem services offered by the maguey, such as its contribution to the retention of particles, nutrients, and soil moisture through its root system, thus avoiding soil degradation, in addition to the lack of rotation, association and the intercrop with basic crops such as corn, beans, squash that make it impossible to obtain food security in the communities<sup>[11]</sup>.

Based on studies carried out by CONAFOR and the Chapingo Autonomous University in 2013, the extent of degraded landscape in the state of Oaxaca was estimated at 1,631,231 ha. The degraded areas represent 18% of the rural territory (not including urban areas, human settlements, and bodies of water) and are distributed between areas of moderate (13.7%) and high (4.3%) degradation; 92.6% of degraded areas are on land for agricultural use, that is, 1.51 million hectares. Considering the percentage of degradation by category of vegetation and current use, it was estimated that 88.4% of agricultural plots are under a state of degradation of their ecosystem functions, of which 23.5% have a high or very high level of degradation; 36.7% of cultivated forests and 8.2% of livestock areas were identified to be in a situation of degradation<sup>[12]</sup>. Maps 4, 5, 6 and 7 in annex A below provide a vivid illustration of the extent of degradation of ecosystem functions in the State of Oaxaca as they relate to sediment retention, water recharge and contribution to base flow functioning, carbon capture and pollination.

Figure 1. Agave production on Dry Forest Landscapes in Oaxaca



### Socio-Economic Context

One-third of Mexico's population lives in rural regions, which means that more than 30 million Mexicans relate to agriculture production areas. Most indigenous communities are established in rural zones and depend greatly on agriculture for their wellbeing. The agriculture sector represents 8% of the Gross Domestic Product (GDP) and in the last decade has been growing at the same rate as the rest of the economy, generating employment and income from exports[13]. In the State of Oaxaca, in 2015 the population was 3,967,889 inhabitants: 1,888,678 men and 2,079,211 women, with a median age of 22 years.

More than 40% of the state's inhabitants are dedicated to agricultural, fishing and forestry activities. At the state level there is greater deterioration and increase in the fragmentation of the vegetation within the most populated regions and with the highest growth rates, such as the Coast, Istmo and Valles Centrales. On the other hand, in regions with a low population rate, it is still possible to observe wild spaces, less deforestation and low pressure on resources and urban areas, as occurs in the Sierra Norte, Papaloapan, Sierra Sur and some areas of the Mixteca.

In 2015, the Economically Active Population (EAP) was made up of 1,233,387 employed persons. In sectoral terms, the EAP of the services sector was the one with the highest coverage, with 37.9%, followed by that of the primary with 27.1%, then the secondary with 18.8% and at the end that of commerce with 14.5%. The living conditions in 70% of the municipalities are very unfavorable, with an increase in poverty from 61.9% in 2012 to 66.8% in 2014. In that same year Oaxaca was identified as a state with high vulnerability, since 63.3% of its people had an income below the welfare line and 34.4% a lower income to the

minimal welfare line. Oaxaca has 16 indigenous ethnic groups and a significant nucleus of black or Afro-Mexican population, whose social, cultural, and demographic parameters are in the process of recognition, definition, and construction. In Oaxaca, 65.72% of the population consider themselves indigenous and 4.94% Afro-descendant.

Agave plants have a long history of ethnobotanical importance to the peoples of Mexico. The plants have strong fibrous tissue in their leaves, which makes them useful for ropes, brushes, sandals, nets, sleeping mats, fires, clothing, and other similar items. Fermented agave sap, called pulque, was central to religious rituals and sacrifices in Mexico (Aztec) cultures and mezcal was popular with revolutionaries in cantinas across Mexico during the Mexican War of Independence<sup>[14]</sup>. For the Nahuatl, the original inhabitants of Western Mexico, agave was worshipped, representing the goddess Mayaheul's earthly power of wind, rain and crops. The plant was already ancient when the Spaniard Conquistadors arrived in 1492, was exported into the Old World in 1520, and was mentioned as a food of the Aztecs and natives in the Florentine Codex of 1580<sup>[15]</sup>. Ovens that may have been used to cook maguey cores have been found in archaeological sites across Mexico and in Western Mexico, ceramic vessels with depictions of agave plants have been recovered from several burials dated to the Classic period, highlighting the important role that this plant played in ancient Mexican societies<sup>[16]</sup>.

A unique aspect of socioeconomic organization in Oaxaca is the Ejido System of Land Tenure. Ejidos are a form of social and private property that contain a mix of individually parcelled land and some land which is held and used communally, based on Mexico's agrarian law. Ejidos have small plots of land owned by 'ejidatario' families and a specific area designed as ejido communal land, which is owned by everyone in the ejido. Ejidos establish their own rules and are governed through an Ejido Assembly and ejido governing bodies. Changes within the private plots and common land of ejidos cannot happen without the consent of the Ejido Assembly. All ejido members have voting rights to elect a leader (a comisariado). Ejidos and agrarian communities vary in size depending on the state. Any economic activity can be conducted on ejidos as long as it is permitted by law. 56.4% of social property in Mexico is used for agriculture and most of the plots of land are considered as smallholdings. Within these agrarian nuclei the main crops are maize, sugar cane and coffee, and many ejidos grow grasslands for livestock. Nevertheless, some ejido communities are engaged with tourism activities, forestry, arts & crafts, fishing and payment for ecosystem services schemes related to carbon capture and biodiversity conservation. Successful stories of the collective management of natural resources in ejidos and agrarian communities have been reported in Nuevo San Juan Parangaricutiro in Michoacán, and the Union of Zapotecan and Chinantecan Forestry Communities (UZACHI) in Oaxaca<sup>[17]</sup>. Areas being considered by the project for improved land management practices and as potential Areas Destined to Voluntary Conservation (ADVC) may include ejido-managed land, and as such, the ejido governance structures will play an important role in the project's implementation. Once the specific ejidos to be affected are confirmed during the PPG, the role of the Ejido Assembly and Comisariado can be better articulated.

## Regulatory & Institutional Context

In Mexico there is a broad legal framework that is linked to the conservation and use of biodiversity, both at the federal (national) and state levels and includes sector-specific legal and regulatory frameworks that are relevant for the conservation and management of biodiversity.

### *Key Elements of the Legal and Regulatory Framework for Biodiversity at the Federal (National) Level.*

- § Political Constitution of the United Mexican States
- § General Law of Ecological Balance and Protection of the Environment
- § Regulations of the General Law of Ecological Balance and Environmental Protection regarding Natural Protected Areas
- § General Wildlife Law
- § Regulations of the General Wildlife Law
- § General Law for Sustainable Forestry Development
- § Regulations of the General Law for Sustainable Forestry Development
- § General Law on Sustainable Fishing and Aquaculture
- § Mining Law
- § Regulations of the Mining Law
- § National Waters Law
- § Regulations of the National Water Law
- § Law for the Prevention and Comprehensive Management of Solid waste
- § Regulations of the General Law for Prevention and Comprehensive Waste Management
- § General Settlement Law
- § Agrarian Law
- § Sustainable Rural Development Law

*Key Elements of the Legal and Regulatory Framework for Biodiversity at the Oaxaca State Level:*

- § Political Constitution of the Free and Sovereign State of Oaxaca
- § Law of Ecological Balance of the State of Oaxaca
- § Sustainable Fishing and Aquaculture Law for the State of Oaxaca
- § Livestock Law of the State of Oaxaca
- § Beekeeping Law of the State of Oaxaca

- § Municipal Organic Law of the State of Oaxaca
- § Law of Territorial Organization and Urban Development of the State of Oaxaca
- § Climate Change Law for the State of Oaxaca
- § Sustainable Rural Development Law of the State of Oaxaca
- § Sustainable Forestry Development Law
- § Law on the Rights of Indigenous Peoples and Communities of the State of Oaxaca
- § Law on Civil Protection and Comprehensive Risk Management of Disasters for the State of Oaxaca

Emanating from the above legal and regulatory framework is a series of policy and strategy documents at both the federal and state levels that help to create an enabling framework for the development of project activities and in some cases, a historical baseline upon which the project intervention strategy is supported. Of relevance for this project at the national level are the National Development Plan 2019-2024, the National Strategy on Biodiversity of Mexico (ENBioMex) and Action Plan 2016-2030, the National Strategy for the Implementation of the 2030 Agenda in Mexico, and the National Strategy for the Conservation and Sustainable Use of Pollinators (ENCUSP). At the State of Oaxaca level, the following prioritized policies are applicable and relevant for this project: State Development Plan 2016-2022; State Climate Change Program 2016-2022; Strategy for the Conservation and Sustainable Use of Biodiversity of the State of Oaxaca (ECUSBEO), Investment plan for low-emission rural development in the State of Oaxaca, the Strategic Forest Development Plan of the State of Oaxaca 2016-2022, the State of Oaxaca REDD+ Strategy, and the Transversal Strategic Plan for Equality between Men and Women of the State of Oaxaca. Of specific relevance to the production and harvesting of agave is the Agriculture and Rural Development Sector Plan Derived from the National Development Plan 2019-2024, while for the production and marketing of mezcal there are 28 different regulations, with one of the key ones being Official Regulation of Mexico (NOM-070-SCFI-2016) for the Specifications of Mezcal as Alcoholic Beverages, and the Mezcal Certification Manual of 2019.

Within the context of this proposed project, the key institutions tasked with overseeing biodiversity conservation and management and sustainable agriculture development in rural communities are the Environment and Natural Resources Secretariat (SEMARNAT), the National Commission for Natural Protected Areas (CONANP), the National Forestry Commission (CONAFOR), National Commission for the Knowledge and Use of Biodiversity (CONABIO), Secretariat of Agriculture and Rural Development (SADER), State of Oaxaca Environment, Energy and Sustainable Development Secretariat (SEMAEDES), Oaxaca Secretariat of Agricultural Development, Fisheries and Aquaculture (SEDAPA), and Oaxaca Secretariat for Indigenous and Afro-Mexican Peoples (SEPIA). The institutional framework also contains instances for inter-institutional coordination, certification, and stakeholder participation. The primary ones include the Inter-Institutional Roundtable on Productive Landscape Restoration (MIIRP), Oaxaca's Citizen Council on Biodiversity (COCIBIO), the Mezcal Regulatory Council (CRM), Verificación y Certificación PAMFA, Certificación Mexicana (CMX), Centro de Innovación y Desarrollo Agroalimentario de Michoacán (CIDAM), and Regional Natural Resources Committees. Institutional oversight and compliance are ensured via a series of instruments including natural protected areas, declaration of wetlands of international importance, the Regional Ecological Ordinance Program of the Territory of the State of Oaxaca, Areas Voluntarily Destined to Conservation (AVDC), Wildlife Conservation Management Units, Payment for Environmental Services (PES), and Community Management of Lands.

## Project Sites

The project includes the districts of Zimatlan, Ocotlan, Tlacolula and Yautepec within the Mezcal Region of the State of Oaxaca (See map in Annex A), with a total area of 974,292.14 hectares. The Project intervention area includes 70 municipalities, 616 communities, and a population of 279,928 (Table 1), inclusive of 101,648 Zapotecan indigenous people.

Table 1. Municipalities and Population in the Project Intervention Area

District	No. of Municipalities	No. of Communities	Women	Men	Subtotal
Ocotlán	20	106	38,748	34,180	72,928
Zimatlán	13	142	29,749	26,539	56,288
Tlacolula	25	258	61,986	55,046	117,032
Yautepec	12	110	17,226	16,454	33,680
<b>Total</b>	<b>70</b>	<b>616</b>	<b>147,709</b>	<b>132,219</b>	<b>279,928</b>

Included within the project area are the Prehistoric Caves of Yagul and Mitla, a World Heritage Site, in the Valle Central of Oaxaca, in the Political District of Tlacolula. The project is part of three Key Biodiversity Areas (KBA) "Sierra Norte", "Cerro Piedra Larga" and "Sierra de Miahuatlán" and the polygon of the Alliance for Zero Extinction (AZE) "Sierra Norte de Oaxaca II", where the following species have been identified: *Ceratozamia mixeorum*, *Plectrohyla calthula*, *Plectrohyla psarosema*, *Pseudoeurycea aquatica* and *Pseudoeurycea mystax*. It is also part of the "Sierra Juárez" Area of Importance for Bird Conservation (IBA) which contains 485 species of wild birds described as category A1, A2 and A3 by Birdlife International. Three (3) threatened wild agave species (*Agave peacockii*, *Agave Guiengola*, and *Agave Chiapensis*) are found within the project area and will be specifically targeted in project interventions. Keystone species of high biological value such as the jaguar (*Panthera onca*), ocelote (*Leopardus pardalis*), jaguarundi (*Herpailurus yagouaroundi*) and tigrillo (*Leopardus wiedii*) and 3 migratory and local long-nosed bat pollinator species (*Leptonycteris nivalis* EN, *Leptonycteris curasoae* VU, *Leptonycteris yerbabuena*) also occur within the project area and will also benefit from project interventions.

## Long-term Solution and Barriers

The long-term solution sought by the project is to reverse deforestation and degradation of dry forests, protect biodiversity and ecosystem services, while improving the sustainability of the mezcal value chain. To achieve this, several barriers must be overcome.

Figure 2. Threatened Agave Species to Benefit from Project Interventions



*Agave chiapensis*



*Agave guiengola*



*Agave peacockii*

**Barrier 1 – Inappropriate Regulatory and Institutional Framework.** The current regulatory framework for biodiversity conservation and management at both the federal and state level is deficient in regulations to make them operational and effective on the ground. There are gaps to be filled as well as legislative overlaps that must be resolved to clarify contradictions and duplication of mandates. Sector level regulations do not incorporate biodiversity conservation and management or agroecological models, even though attempts to optimize selection of use have been made through land use plans. The regulatory framework in general, lacks incentives for sustainable agriculture production at the landscape level. A weakness in the regulatory framework that requires particular attention is the Maguey-Mezcal System for artisanal production. The main regulations that govern mezcal today were raised, first for the tequila industry and then for the industrial production of mezcal, and do not conform to the characteristics and specific values of sustainable and artisanal production, that is highly demanded by the market. Regulatory improvements in this regard would have a significant impact for small producers and the entire national industry, and for biodiversity protection and the maintenance of ecosystems services. Weak institutional capacity results in the regulatory framework not being enforced or implemented inadequately. Additionally, institutional tools and administrative procedures used to implement the existing framework are cumbersome and not user-friendly, and some policy instruments are unknown to the targeted population or are presented in culturally insensitive formats.

**Barrier 2 – Fragmented approach to the management of productive landscapes.** Soaring national and international demand for mezcal has set the industry into an unsustainable growth path. As indicated above, agave monoculture for mezcal production is the main driver of deforestation in Oaxaca's tropical dry forests, contributing to land and ecosystem service degradation, biodiversity loss, and socio-economic losses to smallholders. Most agaves used for agave distillates are pollinated mainly by bats and secondarily by moths, birds, and insects<sup>[18]</sup>. To meet the demand for agave, management practices have reduced dependence on bat pollination, using instead clonal shoots to replant fields and harvesting plants before flowering, thereby negatively affecting both bats (by

decreasing food availability) and agaves (by lowering their genetic diversity)<sup>1121</sup>. It is necessary for bat-friendly practices be incorporated into the production system to make it more sustainable. Under degraded conditions, the function of the productive landscape, defined by the set of its ecosystem functions (avoidance of topsoil erosion, water production for downstream communities, pollination of agricultural crops, water regulation, carbon sequestration, clean air, habitat for biodiversity, etc.), fails to provide an adequate level of services to maintain human well-being and the ecological environment. Coupled to this is the scant support for self-subsistence economies, the lack of public policies to take advantage of the productive potential that state biodiversity offers as a development option, and the loss of traditional values and cultural knowledge linked to the landscape. Under this scenario, the income and quality of life of the people in agave production areas are compromised in the short and medium term. A functional landscape is an indispensable prerogative to ensure the long-term sustainability of economic activities and to promote favorable conditions for the adaptation and resilience of productive systems.

To reverse the devastating effects of agave monoculture, an Integrated Landscape Management (ILM) approach is necessary with shared or agreed management objectives that encompass the full range of goods and services needed from the landscape including the preservation of traditional knowledge and cultural values; farm and forest practices that are designed to contribute to multiple objectives, including human well-being, food, climate change mitigation, and conservation of biodiversity and ecosystem services. Under a properly designed ILM approach, ecological, social, and economic interactions among different parts of the landscape are managed to realize positive synergies among interests and actors or to mitigate negative trade-offs<sup>[20]</sup>. Collaborative, community-engaged processes for dialogue, planning, negotiating, and monitoring decisions will need to be developed and made operational, and markets and public policies must be shaped to achieve the diverse set of landscape objectives. Institutional and governance arrangements must be strengthened, and necessary strategies and tools must be developed to support ILM implementation through-out the landscape.

***Barrier 3 – Insufficient incentives and limited know how to promote sustainable practices in the mezcal production process.*** The Agave-Mezcal production chain is the set of operations and actors that intervene in the transformation of the raw material from the maguey into the alcoholic-mezcal beverage, packaging and marketing until the product reaches the consumer. These are consecutive stages throughout a transformation process involving raw materials, technology, knowledge, human resources, forest and non-forest inputs, infrastructure, transportation, and sales venues, all of which interact in links. Five links have been officially identified for the mezcal productive chain, with multiple actors in each link, which vary according to artisanal production or industrial production<sup>[21]</sup>. Unsustainable practices in the Agave-Mezcal production chain are linked to the uncontrolled harvesting of wild species of agave, use of non-certified wood for the cooking and distillation process, inefficient energy use leading to excessive use of firewood (8kg for 1 liter of mezcal), inefficient production process requiring excessive use of water (20 liters for 1 liter of artisanal mezcal and 30 liters for 1 liter of industrial mezcal) and escape of alcohol to the atmosphere, and disposal into the environment of the bagasse by-product which heavily pollutes soils and water bodies and is difficult to be degraded biologically due to its excessively high acidic nature. There is a general lack of knowledge of practices that could render the value chain more sustainable. In addition, there are no effective incentive frameworks and financing mechanisms in place to tackle unsustainable agave cultivation and production practices. This issue is further exacerbated by the very low value addition to smallholders and actors at the early stages of the supply chain. Besides, the lack of organization by artisanal producers inhibits their ability to access subsidies and financing to improve production practices and aspire to certification and traceability of cultivated agave. A trend that leads to dire economic consequences for artisanal producers and their families. The cultural characteristics that are linked to the denomination of origin and certification of artisanal mezcal production are not currently protected, are vulnerable, and threaten the sustainability of the 'artisanal mezcal' brand.

## 2) The baseline scenario and any associated baseline projects

Mexico's last official report to the UNCCD was submitted in August 2018. The document outlines five strategic objectives, twelve indicators, and voluntary targets for each strategic objective. According to the report, areas covered by trees saw a decrease from 471,388.57 km<sup>2</sup> in 2002 to 458,713.35 km<sup>2</sup> in 2014, while grasslands saw a decrease from 1,099,302.77 km<sup>2</sup> to 1,081,189.5 km<sup>2</sup> for the same period, corresponding to a -12,625.22 km<sup>2</sup> and - 18,113.27 km<sup>2</sup> net change for areas covered with trees and grasslands, respectively. Deforestation, overexploitation, overgrazing, urbanization, and inappropriate management were flagged as the primary drivers leading to changes in land cover, with dry semi-arid and sub-humid arid zones experiencing the highest negative change. Areas covered by trees, grasslands, cultivated lands, wetlands, and artificial surfaces all saw a decreasing trend in productivity between 2002 and 2014 and are classified as being under stressed conditions. For 2014, wetlands experienced the highest change in organic carbon storage due to land conversion (64.62 t/ha) while grasslands saw the lowest change in organic carbon storage (24.52 t/ha).

The current status of LDN implementation in Mexico is not publicly known, since no official report has been published on the performance of the indicators and targets defined in the 2018 report. However, there have been efforts to develop revised national voluntary targets, but Mexico has not made an official submission to the UNCCD, as these are still in the consensus and inter-institutional validation process. The UNCCD liaison agency in Mexico has recently changed from CONAFOR to the National Commission for Arid Zones (CONAZA), which is linked to the Ministry of Agriculture. CONAZA has provided the following data on the proposed revised 2030 national voluntary targets to the project team:

1. Neutralize the deforestation rate of 105,200 hectares of wooded forest per year.
2. Recover, reconvert or restore (Neutralize) 160,000 hectares of shrub forest per year.
3. Increase the productivity of the land in: 478,070 wooded, 504,000 pastures and 423,000 crops: 1,404,570 annually.
4. Stabilize the rate from -12.5 to -60.5% of agricultural and livestock productivity.
5. Balance losses of Soil Organic Carbon stores, in agricultural lands: 10 t / ha in crops and 20 t / ha in pastures.

This proposed project is anchored on a solid baseline. As indicated above, in 2013 the extent of degraded landscapes in the State of Oaxaca was estimated at 1,631,231 ha and landscape functionality deemed to be disturbed to the point of failure to provide adequate ecosystem service levels to support the ecological environment and human wellbeing. The Government of Oaxaca has been leading a series of initiatives to address deforestation, land degradation and biodiversity loss in the state. Many of these were designed under GIZ's Economics of Land Degradation Initiative and Norway-funded Governors Climate and Forest Task Force (GCF TF) through inclusive multi-stakeholder consultations. This project's strategy is to support the implementation of such efforts:

- § Investment Plan for Low-Emission Rural Development (Oaxaca, GCF TF, IUCN)
- § Study on the Economics of Land Degradation in the Agave-Mezcal Value Chain in Oaxaca (on-going/ Oaxaca, GIZ)
- § Study on the economic valuation of soil degradation (Oaxaca, GIZ)

§ Restoration of degraded lands through sustainable production for food and commercial purposes study (Oaxaca, GCF TF, IUCN): included the mobilization of an Inter-Institutional Roundtable on Productive Landscape Restoration (MIIRP), a Restoration Opportunities Assessment Methodology (ROAM) analysis, investment opportunities and financial instruments analyses tailored to the agave-mezcal value-chain.

§ Oaxaca's Citizen Council on Biodiversity (COCIBIO): tabled demands from agave-mezcal producers for a strengthened regulatory framework supportive of conservation and sustainable use.

Oaxaca is currently developing a state-level social and environmental safeguards system (GCF TF) and aims to align it with requirements under the ART-TREES standard for REDD+ emission reductions. Social and environmental impact assessments within the remit of the present project will be aligned with this state-level system.

Some of the other primary initiatives constituting the project's baseline are described below.

*Governors for Climate and Forests Working Group (GCF Task Force).* This project's objective is the empowerment of sub-national member jurisdictions and their partners to implement innovative programs for sustainable low-emission development, based on better forest governance, novel technical and financial mechanisms, increased opportunities for local communities and indigenous peoples, and the continued leadership in climate policy forums at the national, regional and international levels. The project is part of a long-term initiative funded by the Government of Norway with no defined end date. This project provides US\$ 30,000 per year to support Oaxaca to manage and implement the "Investment Plan for low-emission rural development of the State of Oaxaca", and is implemented by the GCF Task Force Secretariat and Pronatura Sur A.C..

*Sembrando Vida Program.* This program seeks to turn ejidos and communities into a strategic sector for the development of the Mexican countryside, working together to increase the productivity of rural areas, under a focus on sustainability and regional development in the short, medium and long term, which contributes to reducing vulnerability of the poor in rural areas. This is a long-term program with no determined end date, and is implemented by the Federal Government of Mexico via the Ministry for Welfare. Under this program, the government plans to invest up to US\$250 per farmer/year in sustainable development practices.

*Biodiversity Friendly Practices in Magueyes (nationwide).* This project seeks to incorporate practices that favor the conservation of species such as, promotion of agroforestry practices, conservation and propagation of wild maguey species, avoid the use of agrochemicals, integral management of crop residues, harvest and distillation, among others. This project will be implemented through to November 2024 and key partners include SADER, CONABIO, and GIZ.

*Strengthen the ecological connectivity of the North Mountain Range of the Central Valleys of Oaxaca, through the consolidation of community governance and financial strategy, based on the Payment of Environmental Services.* This program aims to give continuity to community governance processes, to strengthen ecological connectivity and consolidate a financial management instrument that allows facilitating connectivity strategies between federal and state ANPs. The project is funded by the French Development Agency with an annual budget of US\$300,000 and will continue until 2023.

*Collaboration agreement to promote local payment mechanisms for environmental services through concurrent funds in communities of the northern mountain range of the central valleys of Oaxaca.* This recurring program will strengthen community management of 10 hydrological basins, in 10 agrarian nuclei of 9 municipalities in the Central Valleys region of Oaxaca. This program is financed by the Government of the State of Oaxaca with the National Forestry Commission (CONAFOR) with an annual budget of US \$ 4,999,796.

### 3) The proposed alternative scenario with a brief description of expected outcomes and components of the project

#### Intervention Logic – Theory of Change

The intervention logic is guided by the ‘drivers’, ‘assumptions’, and ‘logical pathways’ needed to achieve the ultimate objective of the project: *to foster sustainable practices in the agave-mezcal value chain in the Oaxaca Mezcal Region through an integrated landscape management approach that privileges non-monoculture cultivation*, and consequently deliver on anticipated global environmental benefits. The key drivers are those activities and processes that the project can potentially and directly sponsor (inputs), in support of project outputs and outcomes, while the assumptions are those conditions and circumstances that are necessary to achieve the desired project results but are outside the control of the project. The logical or impact pathways are the set of steps, consisting of activities, processes and assumptions that collectively will deliver the desired project objective (see TOC diagram in Figure 3).

The project’s proposed interventions/activities (drivers) build on the baseline conditions which already exist, and which were described above, and seek to drive those additional steps and processes required to achieve further incremental results. The project’s intervention logic also capitalizes on the enabling environment provided by the commitments of the Government of Mexico with respect to various international conventions and agreements, the main one being the Convention on Biological Diversity.

 A close-up of a plant Description automatically generated with medium confidence

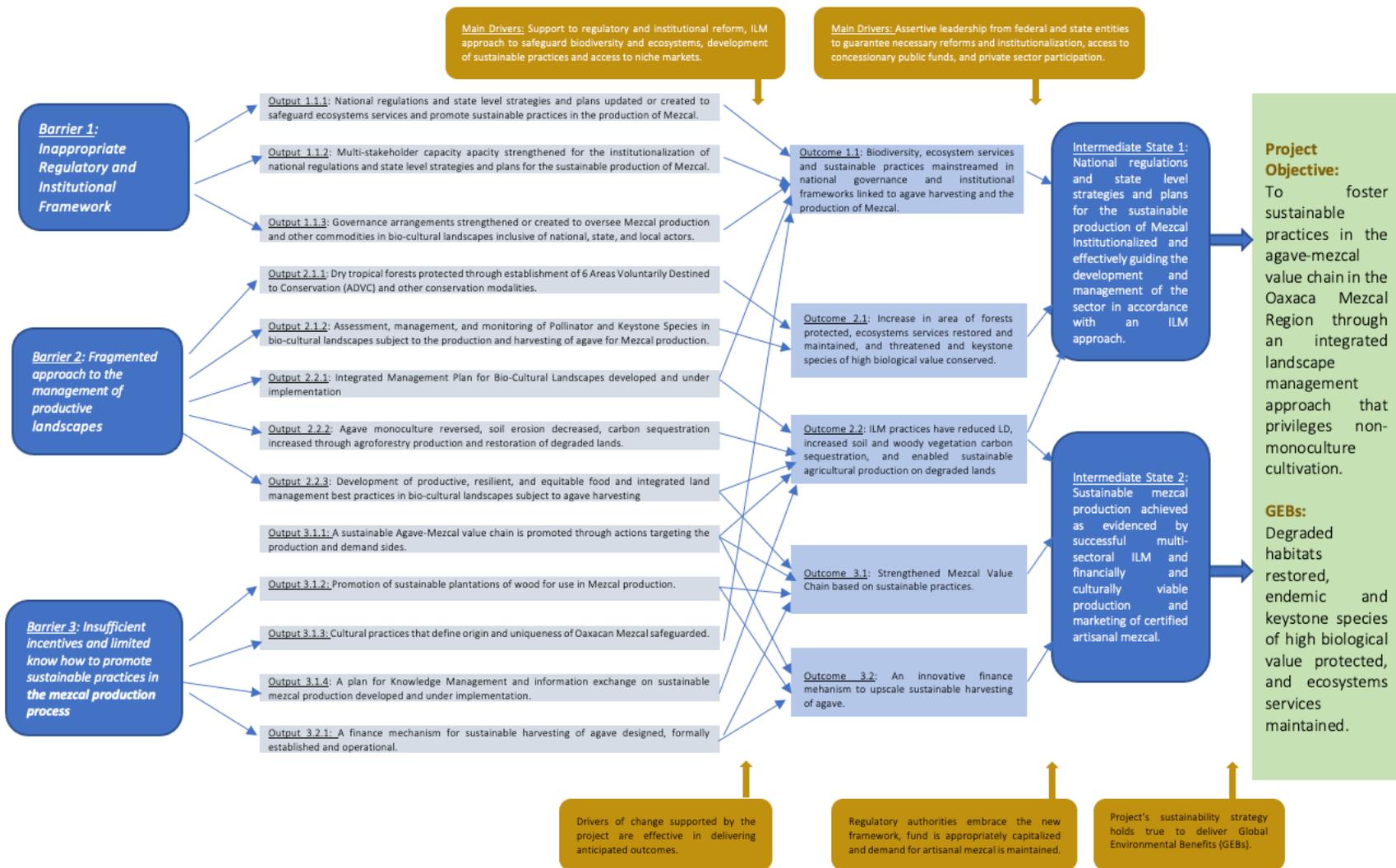
Primary drivers include:

§ Update or creation of national regulations, state level strategies and plans, and institutional strengthening to safeguard ecosystems services and promote sustainable practices in agave cultivation linked to the production of Mezcal.

§ The establishment of Areas Voluntarily Destined to Conservation (ADVC) and other effective area-based conservation; species baseline assessments, management plans, monitoring program, training, Integrated Management Plans for bio-cultural landscapes; and creation and or strengthening of inter-sectoral governance arrangements for decision-making at the landscape level.

The establishment of sustainable plantations of wood for use in mezcal production; safeguarding of cultural practices; water recycling; reforestation; efficiencies to reduce volume of wood, environmentally-friendly disposal of bagasse; legal and institutional structures to protect ancestral and cultural values; a Finance Mechanism to support artisanal agave production; and the development of strategies to create demand for sustainably-sourced mezcal and access high value markets for artisanal mezcal.

Theory of Change – Output to Impact Analysis



The project's key *assumptions* are:

a) **Outputs to Outcomes:** Drivers of change supported by the project are effective in delivering anticipated outcomes as indispensable inputs to reaching necessary intermediate states.

- b) **Outcomes to Intermediate States:** Regulatory authorities embrace the new framework, BFM is appropriately capitalized and demand for artisanal mezcal is maintained.
- c) **Intermediate States to Impact/GEBs:** Project's sustainability strategy holds true to deliver Global Environmental Benefits (GEBs).

The project's *logical pathways* are summarized below:

**Pathway 1:** This logical pathway proposes that if the national regulations and state level strategies and plans are either updated or created where necessary, gaps preventing systematic adoption of sustainable practices will be filled and legislative overlaps will be resolved, contradictions will be clarified, and duplication of mandates will be eliminated.

**Pathway 2:** This pathway advocates that if an Integrated Landscape Management (ILM) approach is promoted, ecosystem functions will be enhanced, sustainable agricultural production will improve, dry tropical forests, endemic species and species of high biological value and carbon sequestration will be enhanced in forest woody vegetation and in soils.

**Pathway 3:** This pathway proposes that if the project invests in sustainable incentives for nature-positive production, the agave-mezcal value chain can be transformed to include biodiversity-friendly policulture and sustainable incentives via the development and implementation of a Finance Mechanism and the development of strategies to create demand for sustainably-sources mezcal and access high value markets for artisanal mezcal.

The project approach is to deliver necessary activities to achieve its overarching objective via the three components below, that are responsive to the primary environmental problems, root causes and to the barriers identified.

**Component 1: Strengthening of the National Regulatory and Governance Framework (GEFTF \$429,289; Co-financing: \$4,116,191)**

Component 1 will seek to make the current regulatory framework for biodiversity conservation and management at both the federal and state level more operational and effective. Project interventions will also support the strengthening of institutional capacity to ensure proper implementation of the laws, regulations, policies, and strategies linked to the agave-mezcal system and the resultant impact on biodiversity and ecosystems services.

**Outcome 1.1.: Biodiversity and ecosystem services safeguards and sustainable practices mainstreamed in national governance and institutional frameworks linked to agave harvesting and the production of Mezcal.**

This outcome seeks to update or create national regulations and state level strategies and plans to safeguard ecosystems services and promote sustainable practices in the production of Mezcal linked to the production of Mezcal, strengthen multi-stakeholder capacity for the institutionalization of national regulations and state level strategies and plans for the sustainable production of mezcal, and strengthen or create governance arrangements to oversee Mezcal production and other commodities in bio-cultural landscapes inclusive of national, state, and local actors. This outcome will address regulatory gaps and legislative overlaps that must be resolved to clarify contradictions and duplication of mandates and will seek to create policies and incentives for protected and productive landscapes linked to the cultivation and harvesting of agave species. Biodiversity conservation and management and agroecological models will be incorporated into the regulatory framework and will also complement and strengthen existing state level land use plans. This outcome will particularly seek to address the regulations governing the Maguey-Mezcal System for artisanal production, which do not conform to the characteristics and specific values of sustainable and artisanal production, that is highly demanded by the market, inclusive of protection of the cultural values and practices linked to the production of mezcal. Lastly, this outcome will strengthen institutional capacity to enhance enforcement and implementation of the regulatory framework, will develop and improve institutional tools and administrative procedures to make them user-friendly and culturally sensitive, followed by extensive awareness building on the reforms made, new tools and procedures developed, and capacity building in their use.

## **Component 2: Mainstreaming Biodiversity Conservation and Integrated Landscape Management (GEFTF \$ 2,661,592; Co-financing \$25,520,381)**

This component will seek to reverse the primary impacts of land degradation linked to mezcal production, avoid soil degradation, in-situ forests, biodiversity and ecosystems protection, restoration of productive landscapes, the development and implementation of Integrated Landscape Management (ILM) plans, conservation of species of high biological value, and enhanced carbon sequestered in vegetation and soils.

### **Outcome 2.1: Increase in area of forests protected, ecosystems services restored and maintained, and threatened and keystone species of high biological value conserved**

This outcome will protect dry tropical forests through the establishment of Areas Voluntarily Destined to Conservation (ADVC) and other effective area-based conservation modalities. ADVCS are formal agreements between CONANP (federal level) and rural communities in Mexico to establish a No-Go zone for agriculture. ADVCS are formally recognized as protected areas and receive institutional and technical support from CONANP but are voluntarily declared. They have more flexibility of use, promote a broad landscape approach to management based on compatible uses, and incorporate a 'community perspective' of protection, with the community benefitting from the ecosystem goods and services provided by the ADVC. The project will support the creation of 6 ADVCS covering 9,000 hectares of dry tropical forests in the districts of Yautepec and Tlacolula. The project will also support the establishment and management of 1,000 hectares of Units for the Conservation, Management and Sustainable Use of Wildlife (UMA). An UMA can encompass extensive and intensive hatcheries of Wild Fauna, nurseries, and greenhouses as well as all the viable alternatives that allow the propagation of species and the elaboration of products and by-products that can be incorporated into the legal wildlife market. These UMAs are all the properties and facilities that operate in accordance with an approved management plan, and within which monitoring is carried out and they remain in a natural habitat state with the populations or specimens found there[22]. Also, to be supported are 25,000 hectares of forests under Community Land Management ('Ordenamientos Territoriales Comunitarios') and 15,000 hectares

under Forest Management Programs consisting of timber and non-timber species, in the Districts of Tlacolula and Yautepec with coverage of low deciduous forest to generate connectivity between federal and state protected areas and ADVCS. The new areas to be created and managed under this outcome will contribute 50,000 hectares to GEF 7 Core Indicator 1 'Terrestrial protected areas created or under improved management for conservation and sustainable use' and are the basis for project estimates of tCO<sub>2</sub>e consistent with GEF 7 Core Indicator 6 'Greenhouse Gas Emissions Mitigated'.

This outcome will also support the assessment, management, and monitoring of pollinator and Keystone Species in bio-cultural landscapes subject to the production and harvesting of agave for mezcal production. The assessment, management, and monitoring of endemic and migratory bird species will also be supported; the species to be monitored will be selected during the PPG phase. The project will support species baseline assessments, development of management plans inclusive of the design of a monitoring program, training and capacity building, and the actual implementation of monitoring to be able to report on change in the status of the selected species at the project's mid-term and at end of project. As part of the species monitoring programme, the project will also support the development of Community Biodiversity Monitoring Programmes.

**Outcome 2.2: ILM practices have reduced LD, increased soil, and woody vegetation carbon sequestration, and enabled sustainable agricultural production on degraded lands.**

This outcome will support the reversal of agave monoculture, decreased soil erosion, increased carbon sequestration, agroforestry production, and restoration of degraded lands. Integrated Management Plans for bio-cultural landscapes will also be developed and implemented, including productive, resilient, and equitable food and integrated land management best practices in bio-cultural landscapes subject to agave harvesting. These project interventions will lead to increased areas of forests and productive landscapes brought under ILM practices, while mainstreaming environmental concerns into the Agave Mezcal sector, with increased participatory governance and planning for landscape connectivity. The project will support the restoration of 1,500 ha of land degraded by agave monoculture in Yautepec and another 1,500 ha in San Lucas Quiavini and Santiago Matatlán through nature-based solutions centred on agroecology and ecosystem functions. The project will also support 3,000 ha of Assisted Natural Regeneration of degraded forests to be distributed as follows: 1,000 ha in Yautepec, 1,000 ha in Díaz Ordaz and Villa de Mitla, and 1,000 ha in Zimatlán de Álvarez and San Antonino el Alto. These project restoration efforts will contribute to the delivery of GEF 7 Core Indicator 3 'Area of land restored'. The ILM approach will be implemented in two landscapes that have been defined consistent with areas of seasonal agriculture and agave monoculture. The boundary of the first landscape (Landscape 1 "Yagul") encompasses portions of the districts of Zimatlan, Ocotlan and Tlacolula, with an estimated area of 237,972.71 hectares, inclusive of 10,041.80 hectares of tropical dry forestst and with 65,282.81 hectares under seasonal agricultural practices. A total of 15,000 hectares in Landscape 1 "Yagul" will directly be under sustainable land management in production systems as a result of project interventions. The boundary of Landscape 2 "Yautepec" encompasses portions of the districts Tlacolula and Yautepec, with an estimated area of 284,063 hectares, inclusive of 86,653.98 hectares of tropical dry forests and with 20,398.96 hectares under seasonal agricultural practices. A total of 5,000 hectares in Landscape 2 "Yagul" will be directly under sustainable land management in production systems as a result of project interventions. Project investments in these two landscapes will contribute directly to achieving GEF 7 Core Indicator 4 'Area of landscapes under improves practices (excluding protected areas)'. In addition to the expected results outlined above, it is anticipated that this outcome will support capacity-building efforts and extension services, the construction of community nurseries and gene banks, germplasm banks, as well as natural replanting of wild agaves and soil protection work with agave on contour lines. The creation and or strengthening of inter-sectoral governance arrangements for decision-making at the landscape level will also be supported by the project.

**Component 3: Establishing a Sustainable Agave-Mezcal Value Chain and Managing Associated Knowledge (GEFTG \$1,202,009; Co-financing \$11,525,333; See Annex D below for the Evolving Rationale under this Component)**

Component 3 will seek to address unsustainable practices in the Agave-mezcal production chain by generating business models that enable the commercial viability and market differentiation of the artisanal high-quality mezcal brand linked to a good origin narrative; safeguarding ancestral cultural practices and livelihoods associated with denomination of origin artisanal mezcal; and unlocking financial incentives for sustainable production and agroecological landscape restoration. In particular, the project will produce business models for certification, biolabeling and/ or the use of geographical indication as a mezcal decommmodification strategy[23] to generate higher added value to local producers and safeguard cultural practices. Besides, the project will co-finance the creation of a Finance Mechanism to incentivize investment in sustainable production and address uptake and scalability barriers. Thus, demonstrating that the high initial costs of sustainable harvesting and agroecological restoration may lead to medium to long-term cost effectiveness and yield returns. More on the evolving rationale under Component 3 can be found in Annex D below.

**Outcome 3.1: Strengthened Mezcal Value Chain based on sustainable practices.**

This outcome will promote sustainability in the Mezcal Value Chain through the development of sustainable practices at different points along the value chain from production to the creation of demand for sustainable Mezcal. The project's approach to sustainability will consider certification, bio-labelling and/ or geographical indications linked to decommmodification, promote sustainable plantations of wood for use in mezcal production, and safeguard cultural practices that define the origin and uniqueness of Oaxacan Mezcal. Project interventions will support water-use efficiency and water recycling, reforestation (sustainable plantations), access and use of firewood from the residual production of forestry companies, efficiencies to reduce the volumes of harvested wood, environment-friendly disposal or reuse of bagasse from the mezcal production process, and legal and institutional structures to protect ancestral and cultural values linked to mezcal production.

All reforestation efforts will be conducted using native species known for their nitrogen fixing qualities in soil, wildlife attracting capability, and evidence of successful use in other reforestation efforts in the country. The species to be used are listed below in their local and botanical names:

- § Mezquite (*Prosopis laevigata*)
- § Huamúchil (*Pithecellobium dulce*)
- § Huaje (*Leucaena esculenta*)
- § Tepehuaje (*Lysiloma acapulcense*)
- § Cucharita (*Quercus conzattii*)
- § Encino Blanco (*Quercus glabrescens /Quercus obtusata*)
- § Encino Rojo (*Quercus castanea Née*)
- § Ocote (*Pinus montezumae*)

Business models will be designed to inform the certification process and ensure increased returns from differentiated production and upscale market segments attracted to high-quality mezcal of origin. Efforts to establish a sustainable value chain will promote sustainable agave harvesting, conservation of wild agave and migratory-bat pollinator species, and secure local livelihoods. Biodiversity-friendly agave production centred on 3 migratory and local long-nosed bat pollinator species will be informed by lessons learned from certifications schemes such as 'Bat-Friendly Tequila', certified coffee (Certified Organic, Certified Fair Trade, Shade Grown, Bird Friendly, etc.), and Sustainable Palm Oil in Mexico. Each of these efforts provides important lessons learned on the creation of niche markets for sustainable and biodiversity-friendly products. These efforts will be closely coordinated with SADER's and CONABIO 'BioSello' initiative on labelling biodiversity-friendly production in key Mexican agricultural supply chains, including agave-mezcal. Any attempts by the project at certification will comply with the Official Regulation of Mexico (NOM-070-SCFI-2016) for the Specifications of Mezcal as Alcoholic Beverage and the 2019 Mezcal Certification Manual. Coordination with one or more of the four mezcal certifying bodies approved by the Ministry of Economy and endorsed by the Mexican Accreditation Entity (EMA) will be crucial. In addition to promoting criteria for sustainable practices, the project will equally design and implement strategies to generate demand and market access for sustainably-sourced mezcal (such as the 'Restoration Marketplace' online platform currently being developed by UNEP), a Knowledge Management Plan to guide information exchange and best practice dissemination on sustainable mezcal production. The extent to which certification and bio-labelling may be effectively implemented by the project will be fully assessed and articulated during the PPG phase.

### **Outcome 3.2: Innovative finance mechanism to upscale sustainable harvesting and processing of agave.**

Outcome 3.2 will seek to operationalize and implement an innovative Finance Mechanism aimed at incentivizing and upscaling sustainable harvesting and processing of agave and functional restoration of productive landscapes. These efforts will largely build upon preliminary design elements proposed by a State of Oaxaca-commissioned IUCN study[24]. A Private Trust focused on landscape restoration more broadly and governed by a multi-stakeholder civil association Trustee will be created through a pool of resources, including GEF funds, public finance largely anchored on SEMAEDESO's multi-year state budget, international partners (UNEP, WRI, and others), and eventually be capitalized by private finance (Agri3Fund and others). This mechanism will act as a revolving fund that mobilizes public and private resources, contemplates different financial products, and offers a combination of grants and loans with the overarching objective of enabling producers who incorporate sustainable practices and adopt productive landscape restoration models to become investment-ready and access lower cost and more favourable financing. Public funds are expected to play a catalytic role in mobilizing private finance, most notably given the negative returns expected in the initial years of agroecological restoration associated to agave production. The idea is that public money, in the form of grants, pays for the risky early development of sustainable solutions and is gradually crowded out by private capital once the profitability has been proven and objective risks are lowered. Besides, an integral part of the finance mechanism will be a capacity-building platform to provide technical assistance to beneficiaries on agronomic, forestry, commercial and financial aspects of the production chain. An investment-sequencing approach will underpin these efforts by identifying and supporting solutions across the investment cycle. The project will therefore identify appropriate distribution mechanisms and associated types of players, structure cultivating plots and cooperatives through targeted technical assistance and market-readiness support, bring commercial agreements to bare through concerted matchmaking with off-takers, impact investors, and other commercial actors. GEF resources will co-finance the spectrum of activities proposed as well as play a strategic role in supporting SEMAEDESO to coherently mobilize the vast array of national and international initiatives in Oaxaca to collaborate by delivering both technical and financial assistance. Observance of socio-environmental standards will also be core features of the Finance Mechanism. While GEF funds can only foreseeably support a limited amount of community enterprises and companies during project duration, the Finance Mechanism is expected to be the conduit for sustainability of restoration financing beyond project duration.

#### 4) Alignment with GEF focal area and/or Impact Program strategies

The project is aligned with the GEF-7 Biodiversity Focal Area in the following objectives:

BD-1-1 (Mainstream biodiversity across sectors as well as landscapes and seascapes through biodiversity mainstreaming in priority sectors)

BD-2-7 (Address direct drivers to protect habitats and species and improve financial sustainability, effective management, and ecosystem coverage of the global protected area estate)

The project will directly support the following expected outcomes:

**Expected Outcome 3:** Economic sectors affecting significant biodiversity adopt sustainable supply chains and/or clean production processes, thus minimizing their impacts on biodiversity.

**Expected Outcome 4:** Loss, fragmentation, and degradation of significant natural habitats, and associated extinction debt, is reduced, halted or reversed, and conservation status of known threatened species is improved and sustained, including through monitoring, spatial planning, incentives, restoration, and strategic establishment of protected areas and other measures.

**Expected Outcome 5:** Biodiversity supporting key agricultural ecosystems, such as through pollination, biological pest control, or genetic diversity, is conserved and managed, contributing to sustainable agricultural production.

**Expected Outcome 9:** The ecological representativeness of protected area systems, and their coverage of protected areas, and other effective area-based conservation measures, of particular importance for biodiversity is increased, especially habitats for threatened species.

The project is aligned with the two global objectives of the GEF-7 Land Degradation Focal Area: *Objective 1. Support on the ground implementation of SLM to achieve LDN* and *Objective 2. Creating an enabling environment to support voluntary LDN target implementation*, and with the following sub-objectives:

LD-1-3 (Forest Landscape Restoration - FLR)

LD-1-4 (Integrated Landscapes and Resilience – INRM)

Proposed project activities will support sustainable land management, diversification of crops, and the restoration of degraded production landscapes, all of which collectively support LDN in Mexico. The declaration of ADVCS and other effective area-based conservation modalities will avoid and consequently reduce further degradation of land and protect critical habitat for pollinator and Keystone Species. The promotion of agave polyculture will seek to optimize the use of current productive lands and by so doing, reduce the demand for more land to produce monoculture crops. Land restoration and Assisted Natural Regeneration of 6,000 hectares with native species to be supported by the project will increase the vegetation and tree coverage generating significant benefits for conserving biodiversity outside protected areas, will reverse past degradation, and will increase carbon sequestration in vegetation and soil. The Integrated Landscape Management (ILM) approach to be supported by the project will promote agave production that is more sustainable and environmentally friendly, the sustainable supply of wood, efficient use of land, soil, water, and vegetation in crop and livestock production systems, thus contributing directly to efforts to combat land degradation while protecting the livelihoods of smallholder farmers and local communities. Also consistent with the priorities defined in this GEF Focal area, are the project's proposed investments in policy and regulatory reforms, institutional strengthening for improved governance at the landscape level, and the implementation of an innovative finance mechanism accessible to artisanal agave producers.

#### **5) Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing**

This project seeks to mobilize USD 5.1 million of GEF resources split equally between the biodiversity and land degradation focal areas and USD 43.72 million in co-financing. It is incremental in that it will seek to make the current regulatory framework for biodiversity conservation and management at both the federal and state level more operational and effective, infuse parameters for sustainable production in national-level agave-mezcal regulations, reverse the primary impacts of land degradation linked to mezcal production related to the suppression of the ecosystem services offered by the agave, and address the unsustainable practices of the Agave-Mezcal production chain, inclusive of an innovative blended finance mechanism and mainstream pollinator conservation in agave farming.

In 2018, 66.4% of the population of Oaxaca lived in poverty of which 23.3% was living in extreme poverty. The deterioration of the environment and rural production systems causes migration, especially of young people due to lack of economic alternatives. In the case of the agave-mezcal production system, artisan producers are represented by adults of advanced ages due to migration of the younger population. The change in the focus of production promoted by the project will provide incentives to keep the younger generation nearer their roots in Oaxaca. In this context, the project is incremental in that it will directly contribute to a reduction of poverty and indirectly impact migration to the United States. Similarly, in the Oaxacan tradition, mezcal is more than a drink; it is culture, identity, religion and worship. Its ancestral production involves entire families. When talking about the production of mezcal, it is essential to talk about the festive and ecological cycle that governs the patronal and Catholic celebrations of the state. Cultural ownership has been lost, by promoting industrial production systems, not personalized in the mezcal teachers. The project will have an impact on this cultural rescue associated with the care of nature, as part of the cultural heritage.

## 6) Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF)

The project will support global biodiversity by supporting KBAs, an IBA, threatened endemic species, and keystone species of high biological value. The project is part of three Key Biodiversity Areas "Sierra Norte", "Cerro Piedra Larga" and "Sierra de Miahuatlán" and the polygon of the Alliance for Zero Extinction (AZE) "Sierra Norte de Oaxaca II", where the following species *Ceratozamia mixeorum*, *Plectrohyla calthula*, *Plectrohyla psarosema*, *Pseudoeurycea aquatica* and *Pseudoeurycea mystax* have been identified. It is also part of the "Sierra Juárez" Area of Importance for Bird Conservation which contains 485 species of wild birds described as category A1, A2 and A3 by Birdlife International. Three (3) wild agave species (*Agave peacockii*, *Agave Guiengola*, and *Agave Chiapensis*), listed as threatened and subject to special protection in NOM-059-SEMARNAT-2010, are found within the project area and will be specifically targeted in project interventions. Keystone species of high biological value such as the jaguar (*Panthera onca*), ocelote (*Leopardus pardalis*), jaguarundi (*Herpailurus yagouaroundi*) and tigrillo (*Leopardus wiedii*). Both the jaguar and ocelot are listed as in danger of extinction in NOM-059-SEMARNAT-2010. 3 migratory and local long-nosed bat pollinator species (*Leptonycteris nivalis* EN, *Leptonycteris curasoae* VU, *Leptonycteris yerbabuena*) also occur within the project area and will also benefit from project interventions. The project will further privilege the conservation of the *Melipona beecheii* bee species, which are pollinators of the ecosystems of the tropics, including dry forests. The conservation of two bird species with seed dispersal functions in dry forest ecosystems listed as in danger of extinction in NOM-059-SEMARNAT-2010 will also be privileged; they are: *Eupherusa cyanophrys* (Oaxaca Hummingbird) and *Amazona finschi* (Lilac-crowned Amazon).

Implementation of the three project's components linked to the agave-mezcal production system will lead to a suite of global environmental benefits including:

- § preserves the diversity of native species and local varieties of agave
- § genetic diversity of agave populations is increased and / or maintained
- § increases the resilience of agave populations to pests, diseases or extreme weather events
- § biotic interactions are maintained by providing habitat and resources for insects, rodents, reptiles, bats, and birds
- § increases the resilience of agave populations by maintaining the diversity and structure of the populations
- § preservation of population stability of managed agaves and permanence of agave populations beyond harvesting activities
- § reduce the incidence of pests and diseases
- § reduce areas prone to erosion and soil degradation
- § maintain and promote soil formation
- § maintain organic edaphological profiles that maintain diversity of local microbiota and native vegetation
- § increase water infiltration, especially in sloping areas
- § favors the recharge of aquifers and bodies of water
- § conservation of a broad spectrum of species and food chains
- § regulation of microclimatic conditions by cushioning sudden changes in temperature, rains or intense winds for the agaves and the system.
- § creation and maintenance of habitat and resources for flora and fauna
- § formation, stability and retention of soil.
- § greater availability of water for vegetation and improvement of the quality and quantity of groundwater

§ increases carbon capture and biomass creation.

## 7) Innovation, sustainability and potential for scaling up

The project strengthens the agave-mezcal value chain to make it economically viable for small producers dependent on the land, is based on sustainable agroecological practices and promotes the conservation of associated ecosystems. Therefore, the implementation of the project will trigger, with partner support, enhanced returns associated with certification of sustainable production and access to differentiated markets. GEF financing will be directed to actions that overcome barriers in the value chain that prevent direct benefits to producers and cause ecosystem degradation and biodiversity loss. These barriers are difficult to overcome exclusively through institutional and governance efforts, so the project will also create a financial mechanism to ensure the sustainability of results over time by structuring a finance facility that, once fully operational and capitalized by public and private resources, will not be depended on the project to remain operational. Moreover, the finance mechanism is expected to support best practices that can be replicated and scaled-up. The project's investments in strengthening the regulatory and institutional framework will go a long way in ensuring the sustainability of systems and processes needed for sustainable mezcal production. Similarly, the innovative Finance Mechanism will be specifically designed to ensure the sustainability of the agave-mezcal value chain and upscaling of sustainable agave harvesting across the other mezcal-producing states in the country.

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[8] <file:///C:/Users/HP/Downloads/9286-Texto%20del%20art%C3%ADculo-29154-3-10-20170605.pdf>

[9] Palenque is where the production, fermentation, distillation, grinding, and cooking process of mezcal occurs and where multiple agave producers work.

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[21] Palma, F. *et al.* (2016). *Diagnostico de la Cadena de Valor Mezcal en la Regiones de Oaxaca*, 83p

[22] CONAFOR. 2009. *Manejo de Vida Silvestre. Manual tecnico para beneficiaries*. Comision Nacional Forestal, SEMARNAT, Mexico, 34p

[23] During the project preparation (PPG) phase, the best approach to differentiate mezcal emanating from sustainable practices – i.e.: certification, biolabeling or geographical indication linked to mezcal decommodification efforts - will be explored through a feasibility analysis. The main goal will be to ensure the project adopts the approach that is most likely to guarantee a higher premium for the end-product in a way that generates value to producers, thus contributing to a fairer distribution of benefits across the value-chain. While certification and eco-labelling may ensure the observance of social and environmental standards, global practice demonstrates this may not necessarily translate into improved livelihoods to small-holders or increased returns in all instances. Geographical indication links the produce to the physical and unique characteristics of the product area, or “terroir”. Decommodification (i.e. separation of the raw material – agave – from the commodity – mezcal) is a strategy to differentiate the product in order to reduce the substitutability between suppliers, thus increasing the added value captured by the supplier/ small-holder.

[24] Simonit, S., et al. (2020). *Oportunidades de restauración funcional del paisaje en el Estado de Oaxaca, México*. San José, Costa Rica: UICN ORMACC, y Gobierno del Estado de Oaxaca, México

**1b. Project Map and Coordinates**

**Please provide geo-referenced information and map where the project interventions will take place.**

Please see map in Annex A.

## 2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Indigenous Peoples and Local Communities Yes

Civil Society Organizations Yes

Private Sector Entities Yes

If none of the above, please explain why:

In addition, provide indicative information on how stakeholders, including civil society and indigenous peoples, will be engaged in the project preparation, and their respective roles and means of engagement

Meetings and presentations of the project were held with SEMARNAT, SEDAPA, SEPIA, CONAFOR, SADER, CONANP, and the Ministry of Economy-Oaxaca during August and September 2021. Project goals and counterpart contributions were jointly discussed and agreed, as well as possible roles on the project's governing bodies. There is an interest on the part of these institutions to continue promoting this type of project due to mutual concern about issues such as deforestation, equitable distribution of mezcal profits, value-chain environmental footprint, support for producers, and the growing demand for mezcal. Meetings were held with COMERCAM (CRM) to receive comments on the proposal and obtain information on the value chain and identified problems. A meeting was also held with "The Women of Maguey and Mezcal" where the proposal was presented and information obtained on the role of women and the need to make women and gender visible in the mezcal production chain, as well as the identification of specific training needs for women.

Meetings were also held with GIZ, to monitor technical cooperation projects in priority agroforestry systems in Oaxaca, including the agave mezcal system. A coordination meeting was held with WRI for the financial instrument component, to strengthen the fund with significant counterparties. Finally and in addition to the above, during the process to develop the PIF in excess of twelve (12) meetings were held between SEMAEDESO, Pronatura, CONANP, UNEP and PIF Development Consultant. Table 2 provides a detailed list of stakeholders that will be relevant for the development of the project during the PPG, and most of which will also be relevant for project implementation.

Table 2. Project Stakeholder List

Institution/organization	Mission/Objectives	Role in PPG phase
PRONATURA Sur A.C.	The conservation of ecosystems and their processes, promoting diverse and equitable societies in harmony with the Earth in Southern Mexico.	Project Executing Agency
Secretariat of Environment and Natural Resources (SEMARNAT)	The protection, restoration and conservation of ecosystems, natural resources, goods and environmental services, environmental management, climate change, protected areas, protection of the environment.	Policy direction and Member of Project Steering Committee
National Commission of Protected N	Contributes to the preservation and sustaina	Policy direction and Mem

atural Areas (CONANP)	bility of ecosystems and natural environment s of Mexico, through the planning, management, and effective, equitable, honest, and transparent administration of the Mexican System of Protected Natural Areas.	ber of Project Steering C ommittee
National Commission for the Knowledge and Use of Biodiversity (CONABIO)	Promote, coordinate, support and carry out activities aimed at the knowledge of biological diversity, as well as its conservation and sustainable use for the benefit of society.	Coordination, data source and policy support
National Forestry Commission (CONAFOR)	Develop, support, and promote the conservation and restoration of Mexico's forests, as well participating in the development of plans, programs, and policies for sustainable forestry development.	Policy direction and Member of Project Steering C ommittee
Secretariat of Agriculture and Rural Development (SADER)	Promote the exercise of a support policy that allows better production, better use of the comparative advantages of the agricultural sector and integrating rural activities into the productive chains of the rest of the economy.	Coordination, data source and policy support
Commission for Arid Zones (CONAZA)	Decentralized body linked to SADER in charge of the management of arid zones. National Focal Point to the UNCCD and institution with oversight over Mexico's voluntary LDN targets.	Coordination, data source and policy support
Oaxaca Secretariat of the Environment, Energy and Development (SEMAED ESO)	Preserve and restore the ecological balance and protect the environment in the state territory through the application of the legal framework on environmental matters.	Project Execution at the state level, policy direction and Member of Project Steering Committee
Oaxaca Economy Secretariat	Design and implement public policies focused on the economic strengthening of the productive sectors of the state.	Coordination, data source and policy support
Oaxaca Secretariat of Agricultural Development, Fisheries and Aquaculture (SEDAPA)	Plan, regulate, encourage, and promote the agricultural, livestock, fishing, and aquaculture development of the State.	Coordination, data source and policy support
Oaxaca Secretariat for Indigenous and Afro-Mexican Peoples (SEPIA)	Formulate, organize, promote, monitor, and execute policies and actions for compliance with constitutional provisions on indigenous matters, international treaties, the Law on the Rights of Indigenous Peoples and Communities of the State of Oaxaca and other corresponding legal systems.	Coordination, data source and policy support in indigenous affairs
General Coordination of the State Planning Committee for the Development of Oaxaca (CG-COPLADE)	Instruct the work related to the planning for the preparation, formulation, and validation of the State Development Plan.	Coordination, data source and policy support
Secretary of Finance (SEFIN-Oaxaca)	Direct and control the fiscal, budgetary, finance, and investment policy of the State Government to consolidate equitable, inclusive, and sustained economic growth that strengthens	Data source and technical support

	sustained economic growth that strengthens the well-being of the population.	
Proyecto Mixteca Sustentable A.C.	Contribute to the functional restoration of the landscape, for the conservation of ecosystem services that allow improving the livelihoods of communities in the Mixteca region of Oaxaca.	Data source and technical support
Committee for the Productive Agave Mezcal System A.C.	Consortium of mezcal industrialists, marketers and producers promoted by the State Secretariat of Economy and the State Secretariat of Agriculture for the agave-mezcal production chain.	Data source, technical support, access and convening of agave producers
Geográfica Física, A.C.	Agave plantations specialist and Community Land Planning local expert.	Data source and technical support
Mezcal Regulatory Council (CRM/CO MERCAM)	Mezcal certification body based on the provisions of the Official Mexican Standard NOM-070-SCFI-1994.	Coordination, data source and policy support
National Institute of Forestry, Agricultural and Livestock Research (INIFAP)	Dedicated to scientific and technological research and improvement in relation to forestry, agriculture, and livestock.	Coordination, data source and policy support
Interdisciplinary Research Center for Integral Regional Development (CIIDIR) - Oaxaca Unit	Academic research institution in the State of Oaxaca.	Data source and technical support
Inter-Institutional Roundtable on Productive Landscape Restoration (MIIRP)	Multi-stakeholders coordination mechanism for Promoting low-emissions rural development.	Coordination, data source and policy support
Oaxaca's Citizen Council on Biodiversity (COCIBIO)	Multi-stakeholder oversight mechanism for the implementation of the State Strategy for the Conservation and Sustainable Use of Biodiversity of Oaxaca.	Coordination, data source and policy support
Union of Agave-Mezcal Producers "Raíces Soltecas"	Small-scale mezcal producers union (cooperative).	Collaboration, private sector input, access and convening of agave producers
Trust Fund for Rural Development (FIRA)	Carry out credit and discount operations and grant credit guarantee for the agricultural, forestry and fishing sectors, as well as for agro-industry and other related activities.	Collaborating partner in Finance Mechanism
National Finance for Agricultural, Rural, Forestry and Fisheries Development (FND)	Promotes the development of rural areas through inclusive financing for producers and small and medium enterprises.	Collaborating partner in Finance Mechanism
BanOaxaca	Offer credit to small and medium enterprises in all sectors in the State of Oaxaca.	Collaborating partner in Finance Mechanism
Financing Rural Development (Findecra)	Offer accessible financial services that contribute to the development of the rural sector in the social sphere of the south-southeast of Mexico.	Collaborating partner in Finance Mechanism
Governors Climate and Forest Task Force (GCF TF)	Facilitates subnational leadership to reduce deforestation and advance inclusive, equitable	Coordination, data source and technical support

	e, low-emissions development in states and provinces and across entire regions.	
Conservation International	International NGO and GEF Implementing Agency for projects	Coordination, data source and technical support
International Union for the Conservation of Nature (IUCN)	International NGO and GEF Implementing Agency for projects	Data source and technical support
German Corporation for International Cooperation GmbH (GIZ)	International Implementing Agency for German Cooperation projects	Data source and technical support
Civil Society Organizations (CSO)	Advocacy for rights of communities and protection of the environment.	Data source and technical support
Agave Producers	Direct beneficiaries of project interventions.	Consultation and project ownership
Mujeres del Agave y del Mezcal (Agave & Mezcal Women)	Network of agave women producers focuses in making the role of women in the agave-mezcal value-chain visible in the states of Mexico with designation of origin.	Coordination, data source and technical support to gender mainstreaming activities.
Autonomous University of Chapingo	Research and formal education in agricultural disciplines	Data source and technical support
United Nations Environment Programme (UNEP)	Organization of the United Nations. Sets the global environmental agenda, promotes the coherent implementation of the environmental dimension of sustainable development within the United Nations system and serves as an authoritative advocate for the global environment. Technical advice, project oversight and quality control.	GEF Implementing Agency and Member of Project Steering Committee

### 3. Gender Equality and Women's Empowerment

**Briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis).**

The world of artisanal mezcal production in Oaxaca shares certain experiences among the women who participate in its production, through the kitchen, administration and direction of the palenques. Each experience has a specificity because the biodiversity, linguistic, cultural, religious and economic conditions of each region vary throughout the state. However, a shared axis that many of them have is the omission of their participation and importance in mezcal production as an ancestral-traditional drink, idealizing everything that permeates its production. Women, whether they are mezcal teachers or not, have a highly relevant role in the process of making mezcal, thanks to their daily support work, in addition to their knowledge of the processes associated with agave and mezcal. Therefore, it is essential to rescue the ancestral production of mezcal through the inclusion of sustainability criteria, valuation, visibility and decision-making of women in the value chain.

During the PIF design stage, project proposers consulted with the Mujeres del Agave y del Mezcal (Agave & Mezcal Women). This group was created to make the role of women in the agave production chain visible, including different agave distillates (includes other distillates such as bacanora, sotol, tequila, raicilla, and mezcal). This women's group operates in all states of Mexico, with a designation of origin in the following states: Sonora, Durango, Aguascalientes, Chihuahua, Tamaulipas, Zacatecas, Jalisco, Michoacan, Guanajuato, Edo de Mexico, Morelos, Guerrero, Puebla, Oaxaca, and Chiapas. This group of women recognizes the fundamental role they currently play in the management of nurseries and seedbeds of mezcal plants, with special emphasis on the reproduction of wild agaves by seeds. In the field, they carry out supervision activities for the selection of mezcal 'pineapples' to be harvested, but they do not participate in the harvest due to the high physical nature of these activities. They also acknowledge the existence of 'women mezcal teachers' (Maestras Mezcaleras), who have not had the same opportunities as male counterparts to promote the mezcal they produce.

The Oaxaca chapter of Las Mujeres del Agave y del Mezcal, which is currently being formally set up, has preliminarily identified the following areas where the project can provide support in mainstreaming gender: making the role and work that women perform in the agave-mezcal value chain visible; creating a support platform for the empowerment of women; and promoting the training of women in topics such as administration, accounting, English, polyculture systems, pest treatment, and building knowledge of sustainable practices including polyculture and organic schemes.

The project will be fully compliant with the GEF and UNEP's Gender Policy. In this regard, the project will have to be genuinely gender mainstreamed throughout implementation and impact evaluation. The Project will seek to institutionalize gender mainstreaming at all levels of intervention and operation of the project. In its efforts to fully integrate gender mainstreaming, the Project will be guided by the principles that gender elements are important drivers and incentives for achieving global environmental benefits, and in ensuring gender equity and social inclusion. The Project also embraces the fact that the needs, interests, and capabilities of women are contextually different from those of men, in relation to the access, use, and management of biodiversity resources within project intervention areas, and thus, must be given special consideration in ensuring equal access to the resources and services of the Project. A comprehensive Gender Analysis and Gender Mainstreaming and Action Plan will be developed for the project during the PPG phase.

**Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment? Yes**

**closing gender gaps in access to and control over natural resources;** Yes

**improving women's participation and decision-making; and/or** Yes

**generating socio-economic benefits or services for women.** Yes

**Will the project's results framework or logical framework include gender-sensitive indicators?**

Yes

#### 4. Private sector engagement

**Will there be private sector engagement in the project?**

Yes

**Please briefly explain the rationale behind your answer.**

The private sector is a fundamental link in the agave-mezcal value chain, both from a commercial and a financial perspective. A significant part of this sector is linked to the Mezcal Regulatory Council (CRM), which aims to verify and certify compliance with NOM-070 and safeguard the Denomination of Origin (DOM) in Mexico and abroad, guarantee the authenticity and quality of mezcal and generate timely, truthful and useful information to the maguey-mezcal production chain. The private sector, from small enterprises to large producers, will be able to participate in the financial mechanism that benefits the entire value chain. Financial actors, from impact investors to commercial banks, will represent an important source to the capitalization of the Finance Mechanism. More on the evolving rationale on private sector engagement and Component 3 can be found in Annex D below.

## 5. Risks to Achieving Project Objectives

Indicate risks, including climate change, potential social and environmental risks that might prevent the Project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the Project design (table format acceptable)

Risk	Risk Level	Proposed mitigation measures
Impacts of the COVID-19 Pandemic	High	<p>A key risk of COVID-19 is prolonged social distancing measures and recurring national quarantine measures in project landscapes. To guarantee the continuation of the project despite prolonged social distancing requirements, project meetings and the engagement processes could transition on-line or a combination of in-person and virtual participants to minimize contagion risks. Remote technological infrastructure would be used to facilitate this type of engagement including easily accessible videoconferencing services. For those who cannot participate remotely and to ensure effective engagement of small-holders from indigenous groups and local communities, in-person meetings could be held with a reduced number of participants and holding social distancing and hygiene best. The development of the crisis will be closely monitored, and creative responses will be explored and implemented along the way focused on advancing project outcomes through alternative forms of engagement, and flexibility in case meetings and field visits must be rescheduled. Similarly, innovative ways of ensuring co-financing funds can be effectively deployed under a COVID-19 risk scenario may also have to be explored. The project will exercise extreme caution in ensuring that its activities do not increase the risk of transmission and spread.</p> <p>COVID-19 may affect the physical availability of technical expertise to provide in-situ support due to travel restrictions and limitations on physical gatherings imposed by the authorities. As suggested above, virtual means of delivery will be used in such cases and required adjustments to the timeline to accommodate the effects of the pandemic will be given due consideration during the project's annual planning processes.</p> <p>The project provides an opportunity for green recovery and building back better through the development of sustainable landscape practices linked to agave-mezcal production, which supports biodiversity conservation, ecosystem services, and the livelihoods of rural communities.</p>
Lack of demand for sustainably produced mezcal	Medium	<p>As part of efforts to generate demand for sustainably-sourced mezcal, the project will actively develop and implement a Communication Strategy aimed at sensitizing and educating the consumer public in both Mexico and abroad on the existence and social and environmental benefits of sustainably produced mezcal. Additionally, the project will systematically build upon evidence on the creation of niche markets for other similar sustainably produced commodities including tequila, coffee, and Palm Oil in either Oaxaca in particular or Mexico more broadly to ensure successful demand generation and market access strategies are put in place.</p>

Lack of interest in or resistance to conservation actions by local communities	Medium	The project will use community-based mechanisms as established in the Agrarian Law such as the 'Ejidos' system, and will follow the guidance of community level governance frameworks to engage with local communities and secure their input and support.
Political instability or changes alter governmental priorities related to biodiversity conservation.	Low	To mitigate the potential effects of political changes on the project, this project integrates a wide variety of actors, from governmental officials at the national and sub-national level to civil society to groups in the private sector, as project participants. Through the involvement of a wide range of stakeholders, the project aims to mitigate potential changes in the governmental sector by ensuring continued support of participants in other sectors. If the national government express disinterest in biodiversity conservation, the project will focus efforts even more strongly with the state governmental agencies and civil society as a path forward for achieving project objectives
Lack of participation of local Indigenous Communities and/or of the financial sector	Medium	Robust efforts to solicit the participation of Indigenous Communities and the financial sector during the project design phase should strengthen the participation of both groups during project implementation, as well as compliance with the Indigenous Peoples Planning Framework to be developed for the project.
Weak or poor commitment by government agencies	Medium	Alignment of the project's objectives with national and state level policies, strategies and plans will mitigate this risk. The project management team will also conduct early exploration of attitudes and reservation on the part of government institutions and will use the mechanism of the Project's Steering Committee to quickly seek confirmation of commitment acquired under the project.
Climate Change affects the delivery of project impacts	Medium	The project will complete the GEF Climate Risk Screening Form during the PPG, to determine if impacts of climate change may be limited, transient or manageable, and whether financial, environmental and social underperformance or failure is likely, and whether the system has the capacity to manage volatility, shocks, stressors or changing climate trends. Project design will be adjusted accordingly to mitigate any potential risks.
Gender mainstreaming by the project may be undermined without a proper strategy.	Low	The project will have to be genuinely gender mainstreamed, from the initial design phase, through the implementation, and impact evaluation. Particular attention must be paid to addressing all possible information gaps that may place women in an unfavorable position. The project will develop a Gender Mainstreaming Plan, inclusive of a Gender Action Plan, to ensure that the project truly gender-sensitive and minimize any potential gender risks.

## 6. Coordination

**Outline the institutional structure of the project including monitoring and evaluation coordination at the project level. Describe possible coordination with other relevant GEF-financed projects and other initiatives.**

A Consortium of Partners composed of the State of Oaxaca Environment, Energy and Sustainable Development Secretariat (SEMAEDES), the Environment and Natural Resources Secretariat (SEMARNAT), the National Protected Area Agency (CONANP), the National Forestry Commission (CONAFOR) plus UNEP, will steer project execution and ensure cross-sectoral coordination. SEMARNAT will support national regulatory framework, and biodiversity conservation and mainstreaming activities, CONANP will guide the creation of ADVCS, CONAFOR will support landscape restoration, and UNEP will act as implementing agency.

Besides, the Inter-Institutional Roundtable on Productive Landscape Restoration (MIIRP), Oaxaca's Citizen Council on Biodiversity (COCIBIO), and the Mezcal Regulatory Council (CRM), all established multi-stakeholder governance platforms, will be systematically mobilized to ensure consensus-building and impact. MIIRP was established in 2020 under the Investment Plan for Low-Emission Rural Development; it involves six permanent members including state Secretariats for Environment, Agriculture Development, and Indigenous Peoples and Afro Mexicans, the Planning Coordination and State Forest Commission, and mobilizes civil society, private sector and international organizations on demand. COCIBIO is a citizens' forum of government, civil society, academia and producer organizations, including the agave-mezcal sector. CRM represents all 9 producing states, certifies denomination of origin, and comprises actors across the supply chain. Coordination will be sought with a consortium of local organizations including Mixteca Sustentable, the Union of Agave-Mezcal Producers "Raices Soltecas" and others, thus strengthening local institutional capacity. A partnership with the Trust Fund for Rural Development (FIRA), financial institutions and donors will underpin the financing mechanism for sustainable agave-mezcal production and restoration.

UNEP is a founding Implementing Agency of the GEF and Secretariat to the Conventions on Biological Diversity and Conservation of Migratory Species of Wild Animals and the Inter-governmental Panel on Climate Change (IPCC), thus gathering directly relevant expertise. It promotes the science-policy interface and innovation in GEF investments. UNEP has a Representation Office in Mexico City and a history of successful collaboration dating back to GEF-1, including a project on the poverty-ecosystem services nexus in Oaxaca's Mixteca region. Restoration is a UNEP corporate priority as it co-leads the UN Decade on Ecosystem Restoration with FAO. Besides, UNEP is a UN-REDD lead agency and hosts a dedicated practice on unlocking private finance to decouple deforestation from commodity production. It executes finance components under the GEF projects Good Growth Partnership and The Restoration Initiative, implements the global GEF project "Green Finance for Sustainable Landscapes"; manages the Seed Capital Restoration Facility and has recently launched the Business Alliance for Scaling Climate Solutions with WWF, EDF and companies like Amazon, Microsoft and Unilever to increase business investments in nature-based solutions; these initiatives directly relate to the blended finance mechanism envisaged.

Pronatura Sur (PNS), a leading Southern Mexico conservation NGO with 30 years of experience, [in coordination with the Oaxaca Secretariat of Environment, Energy and Development \(SEMAEDES\)](#) will act as Executing Agencies. It integrates the Pronatura System, an association of sub-national chapters that collectively represents one of the most important conservation NGOs in Mexico. PNS manages an annual budget of around USD 1,250,000. PNS' main attribute is the technical expertise of its 30+ multi-disciplinary staff. PNS abides to sound financial management and is frequently audited by international

firms. PNS has a track-record of inclusive conservation management and partnerships with the agricultural sector. PNS acts as the Secretariat of the Governors Climate and Forest Task Force in Mexico; a key aspect since this project's baseline is significantly derived from Oaxaca's engagement in this initiative. PNS will have a catalytic role engaging smaller Mexican organizations and building national institutional capacity.

The project will coordinate with other GEF-funded projects in the country, but in particular with the projects *Mainstreaming Biodiversity in Rural Landscapes of Mexico (GEF ID: 10574)* and *Conservation and sustainable use of biological diversity in priority landscapes of Oaxaca and Chiapas (GEF ID: 9445)*. Both of these projects have objectives and outcomes that are directly complementary to this proposed project and will create significant opportunities for synergy, replication, and exchange of lessons learned. The production models inclusive of biodiversity criteria defined in GEF Project 10574 will serve as a basis for activities in agricultural areas of the two selected landscapes of the present project, namely: Yagul and Yautpec. Efforts will be made to foster experience exchange between producers (women) mobilized by both projects to strengthen the gender-sensitive capacity-building efforts and promote gender equity. The exchange of best practices on biodiversity monitoring with a special focus on pollinators will also be sought.

This project will coordinate with GEF project ID 9445 to promote experience exchange on value chain management, territorial ecological zoning programs and ADVC management. SEMAEDSO is part of the board of directors of the GEF project ID 9445 and will lead the Steering Committee of the present project, thus naturally facilitating programmatic-level coordination. Besides, connectivity between the ADVCs of Ocotlán and Yautpec supported by both projects with those of Miahuatlán supported by Project GEF ID 9445 will be sought. The consolidation of the Interinstitutional Table for Productive Landscape Restoration, which will also be part of the governance arrangements of this project, will facilitate communications and coordination with other projects. Most notably given the participation of SADER and CONANP as well as other actors such as the Private Sector and academia in this institutional arrangement.

## 7. Consistency with National Priorities

**Is the Project consistent with the National Strategies and plans or reports and assessments under relevant conventions?**

Yes

**If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc**

- National Action Plan for Adaptation (NAPA) under LDCF/UNFCCC
- National Action Program (NAP) under UNCCD
- ASGM NAP (Artisanal and Small-scale Gold Mining) under Mercury
- Minamata Initial Assessment (MIA) under Minamata Convention
- National Biodiversity Strategies and Action Plan (NBSAP) under UNCBD
- National Communications (NC) under UNFCCC
- Technology Needs Assessment (TNA) under UNFCCC
- National Capacity Self-Assessment (NCSA) under UNCBD, UNFCCC, UNCCD
- National Implementation Plan (NIP) under POPs
- Poverty Reduction Strategy Paper (PRSP)
- National Portfolio Formulation Exercise (NPFE) under GEFSEC
- Biennial Update Report (BUR) under UNFCCC
- Others

The project is consistent with Mexico's National Biodiversity Strategy and 2016-2030 Action Plan; the National Strategy for the 2030 Agenda (SDGs 1, 5, 6, 7, 8, 11, 12, 13, 15); Aichi Targets 1, 2, 3, 4, 5, 6, 7, 8, 12, 14, 15, 18, 19, and 20; Mexico's NDC; the UN Decade on Ecosystem Restoration; the Bonn Challenge and 20x20 Initiative.

The project also aligns with Oaxaca-level policies including the Strategy for the Conservation and Sustainable Use of Biodiversity, Spatial Planning Programme, and the 2016-2022 Development and Climate Change Plan, and the Investment plan for low-emission rural development in the State of Oaxaca.

## 8. Knowledge Management

**Outline the knowledge management approach for the Project, including, if any, plans for the Project to learn from other relevant Projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.**

Knowledge Management (KM) is a transversal theme across the project. Core to this project objective will be the development of a knowledge management plan for the project that ensures a robust information exchange to increase awareness and engagement on the topics of sustainable agave-mezcal production and functional restoration of productive landscapes. This will be ensured through the creation of a KM platform to disseminate lessons learned from the project, promoting best practices and for advancing sustainable mezcal production. KM will promote learning and continuous improvement, generate documents for upscaling of lessons learned and aids with strong collaboration across sectors at the national and state levels. The lessons learned will be communicated to the direct and indirect beneficiaries in various ways, mainly: training activities, technical publications, educational material, and awareness campaigns.

The project will help to develop the tools needed to systematize, extract, and organize the acquired knowledge, and disseminate the results, lessons, and good practices. Information will be tailored to different groups so that it is accessible, through online toolkits, webinars and seminars, workshops and trainings, and other communication strategies.

## 9. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification\*

PIF

CEO Endorsement/Approval MTR

TE

Medium/Moderate

Measures to address identified risks and impacts

Provide preliminary information on the types and levels of risk classifications/ratings of any identified environmental and social risks and potential impacts associated with the project (considering the GEF ESS Minimum Standards) and describe measures to address these risks during the project design.

<https://documentcloud.adobe.com/link/review?uri=urn:aaid:scds:US:3874c2c6-8bf3-4ef3-889e-61ba0b46b4ed>

**Supporting Documents**

Upload available ESS supporting documents.

Title	Submitted
Safeguard Risk Identification Form (revised)	
Safeguard Risk Identification Form (SRIF)	

**Part III: Approval/Endorsement By GEF Operational Focal Point(S) And GEF Agency(ies)**

**A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the Operational Focal Point endorsement letter with this template).**

<b>Name</b>	<b>Position</b>	<b>Ministry</b>	<b>Date</b>
Mrs. Regina Rosales Talamas	GEF Operational Focal Point for Mexico	Ministry of Finance and Public Credit	10/22/2021

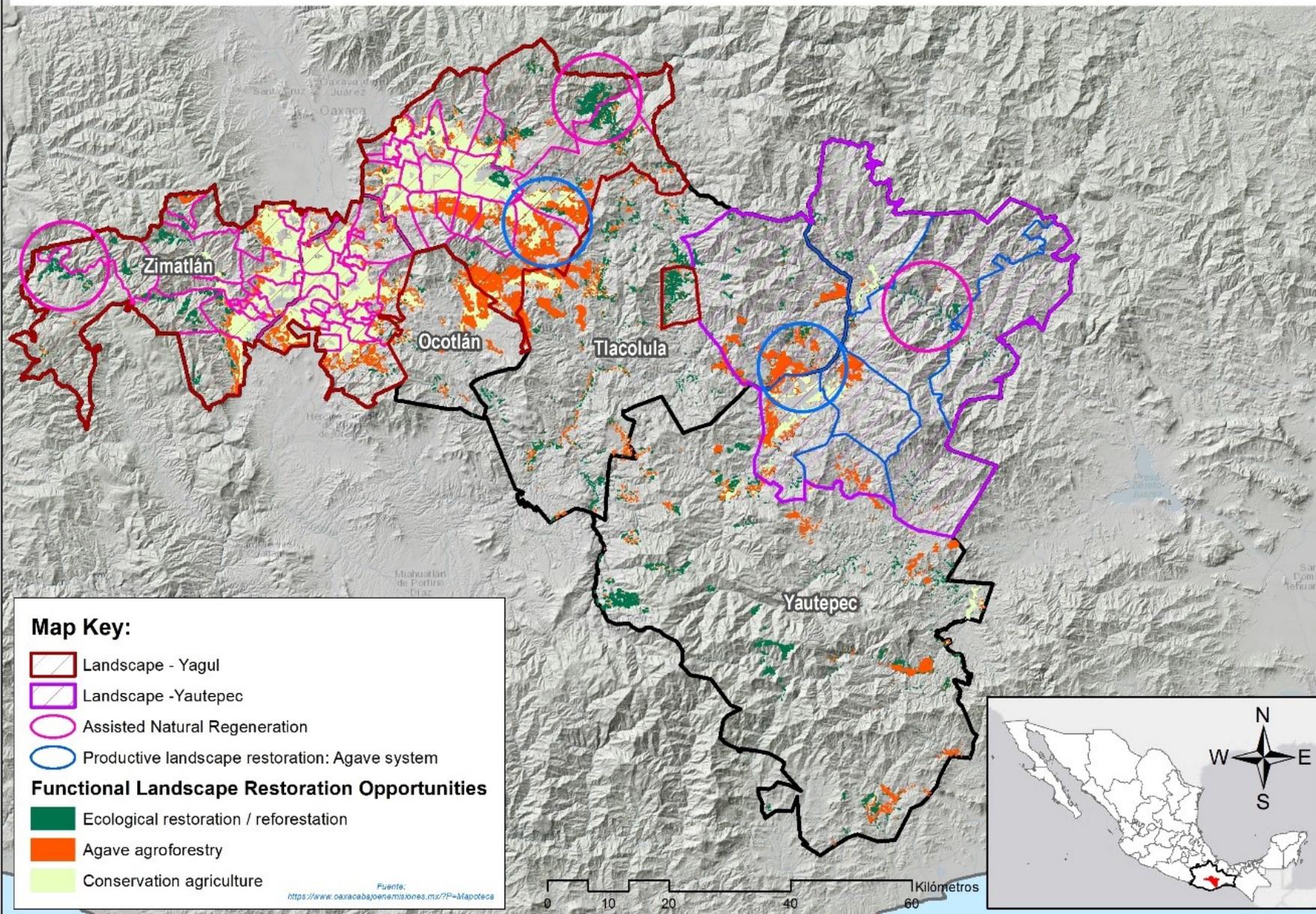
**ANNEX A: Project Map and Geographic Coordinates**

Please provide geo-referenced information and map where the project intervention takes place

PROGRAM/PROJECT MAP AND GEOGRAPHIC COORDINATES

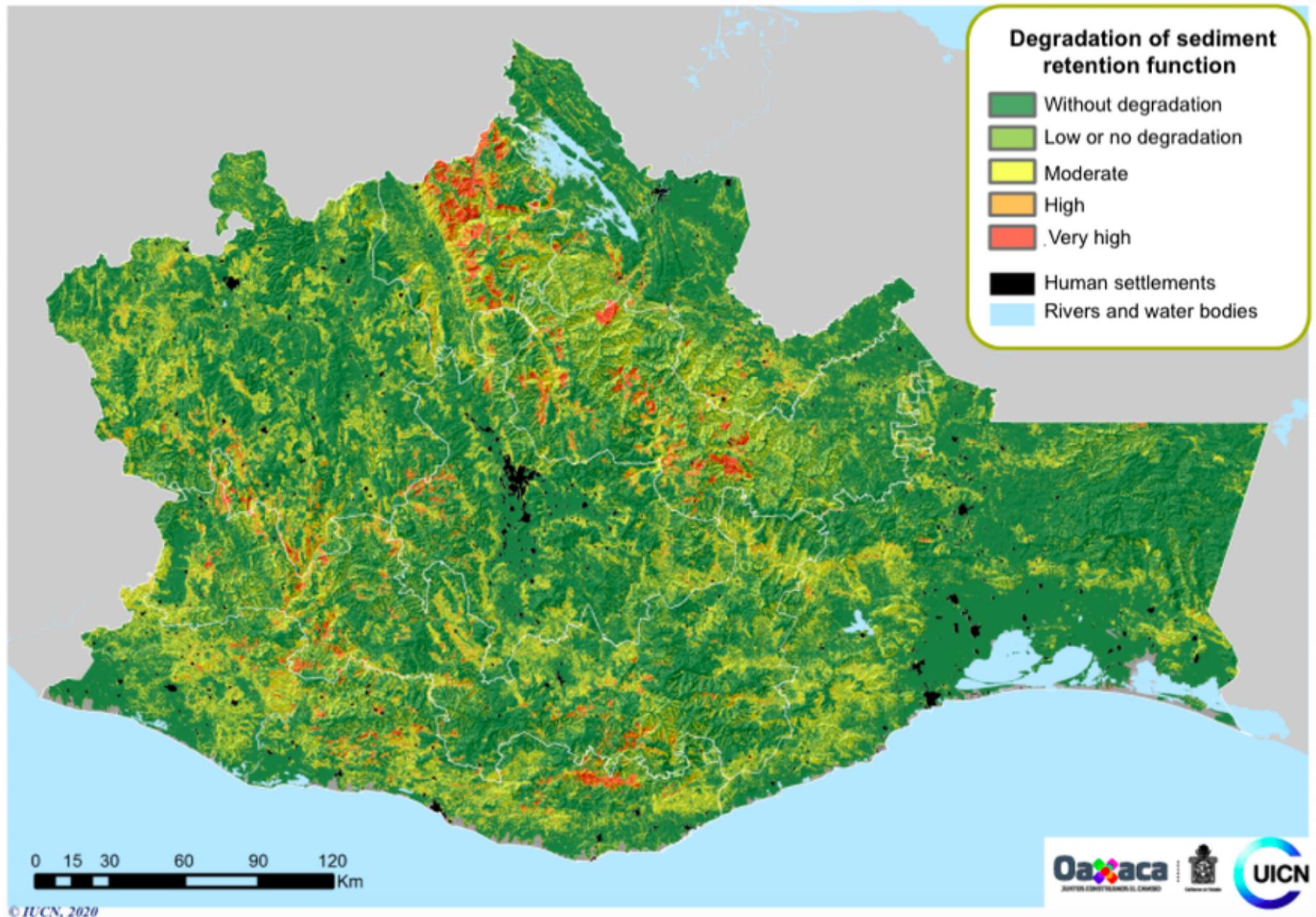
(when possible)

**Map 1 – Project Intervention Areas**

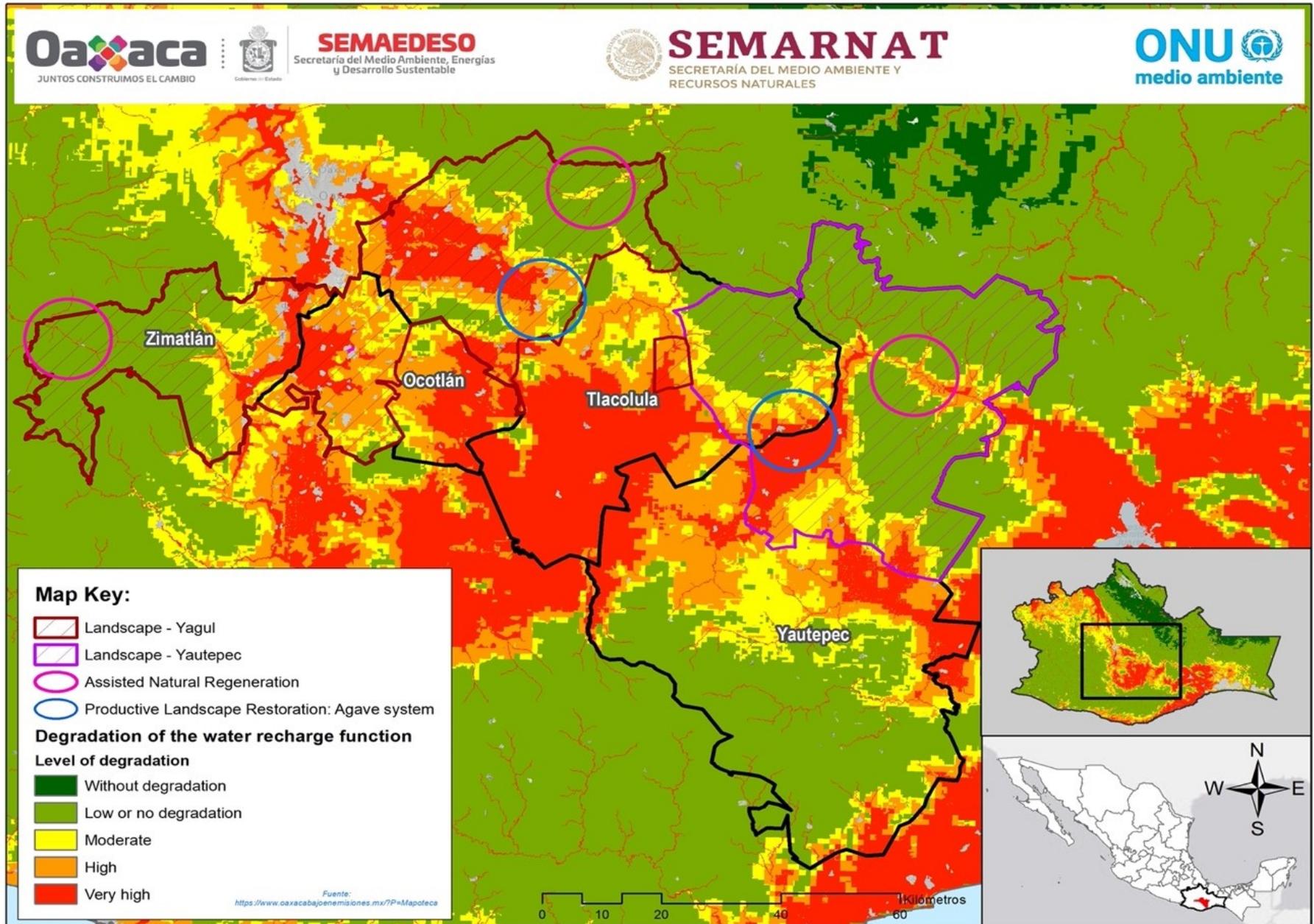




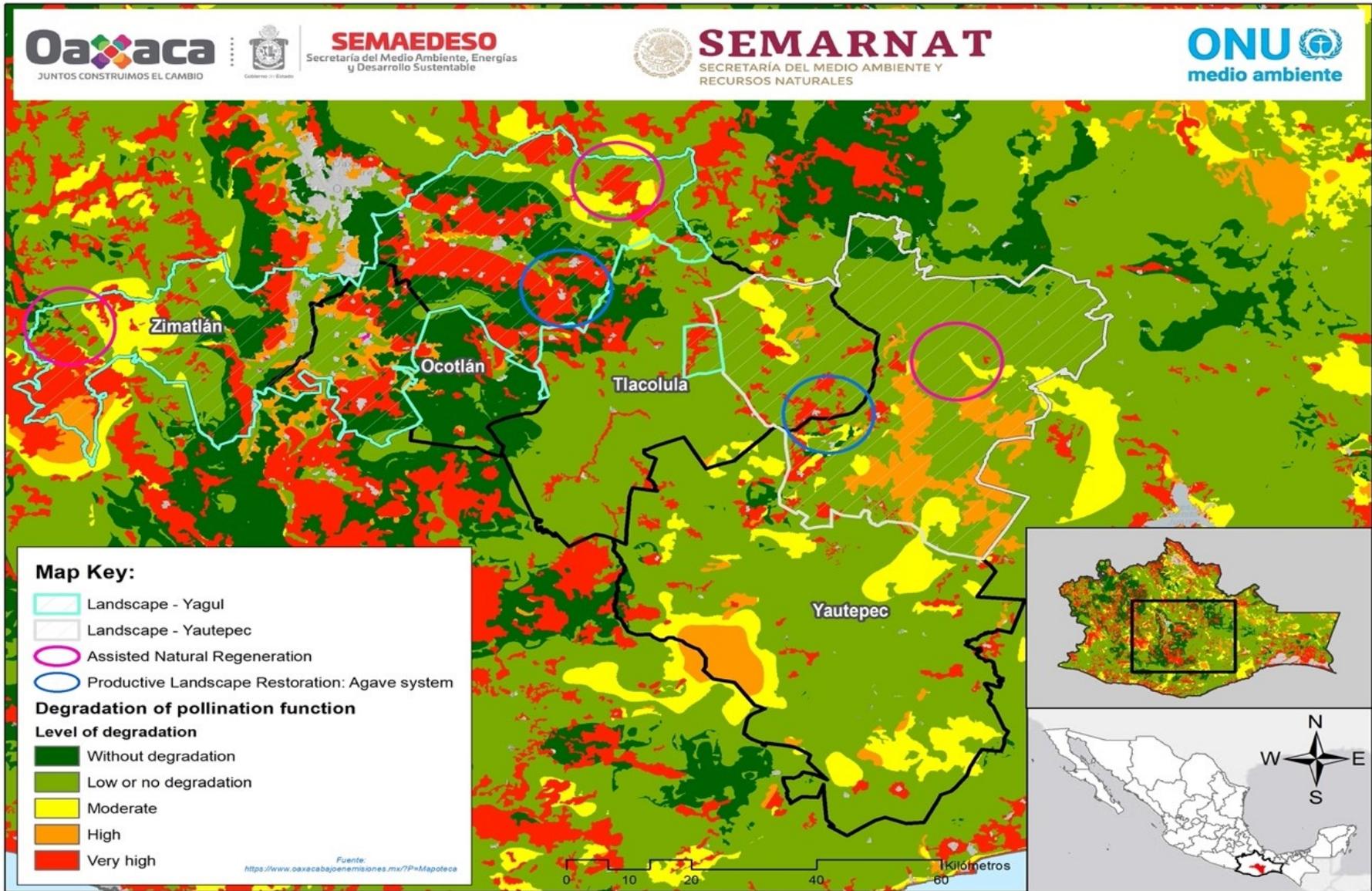
Map 3 – Degradation of sediment retention ecosystem function in the State of Oaxaca



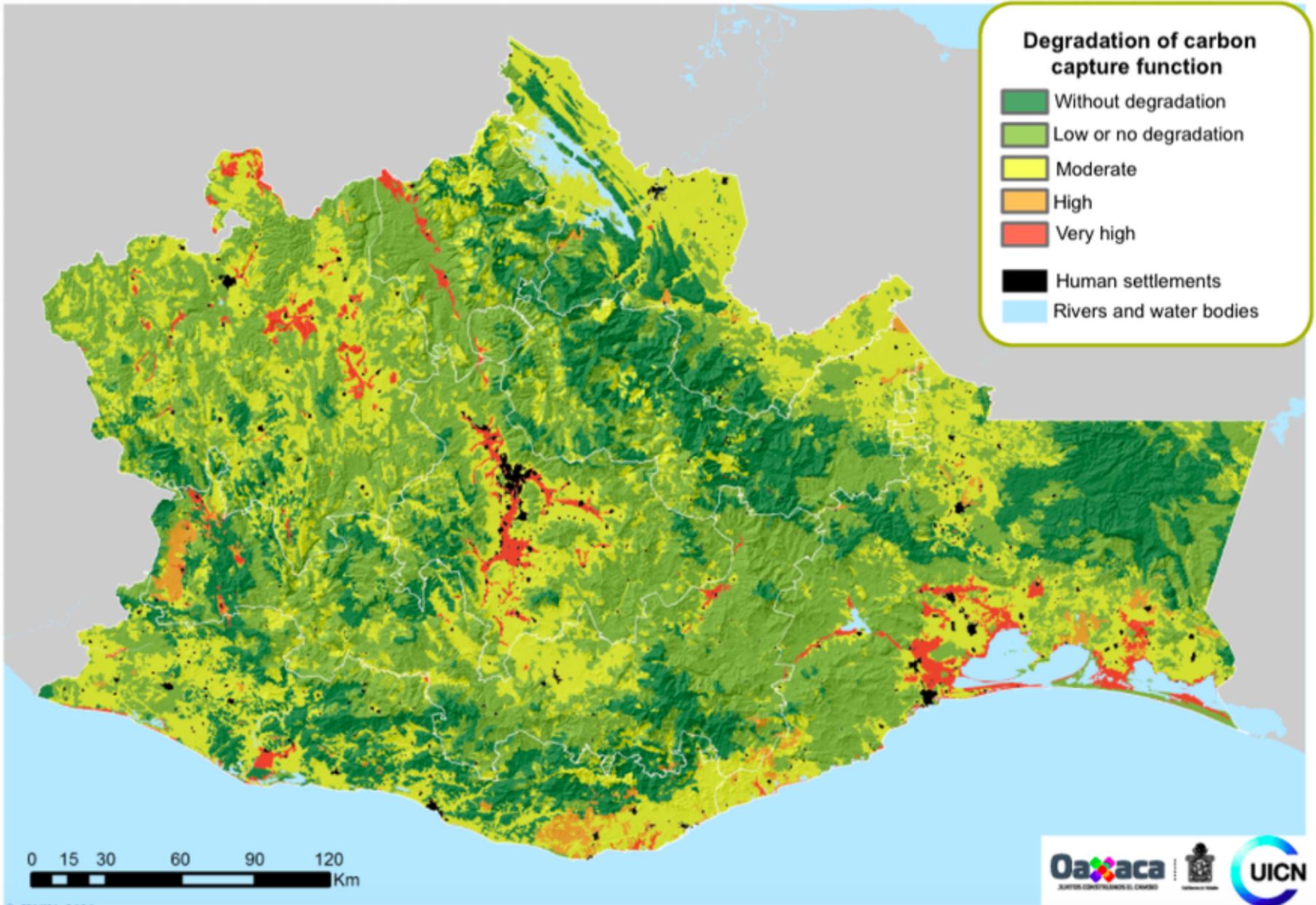
Map 4 – Degradation of water recharge function overlaid with project intervention areas



Map 5. Degradation of the pollination function overlaid with project intervention areas



Map 6. Degradation of the carbon capture function



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